

AGENDA
BOARD OF CITY COMMISSIONERS
SEPTEMBER 18, 2023 AT 6:00 PM
COMMISSION CHAMBERS AT CITY HALL
16 WEST 9TH STREET
SHAWNEE, OKLAHOMA

Official action can only be taken on items which appear on the agenda. The public body may adopt, approve, ratify, deny, defer, recommend, amend, strike, or continue any agenda item. When more information is needed to act on an item, the public body may refer the matter to Staff or back to Committee or the recommending body. Under certain circumstances, items are deferred to a future date or stricken from the agenda entirely.

CALL TO ORDER

DECLARATION OF A QUORUM

INVOCATION

FLAG SALUTE

1. Citizens Participation (A three-minute limit per person)
(A twelve-minute limit per topic)
2. Consider approval of Consent Agenda:
 - a. Acknowledge staff will proceed in the instant meeting with the opening and consideration of bids as set forth in Item No. 9.
 - b. Minutes from the August 21, 2023 regular meeting.
 - c. Acknowledge the following minutes and reports:
 - Shawnee Beautification, Parks, and Recreation Committee Minutes from the July 20, 2023 regular meeting.
 - Shawnee Senior Citizens Advisory Board Minutes from the May 9, 2023 regular meeting.
 - License Payment Report for August, 2023.
 - Project Payment Report for August, 2023.
 - d. Lake Lease Transfer:

- Coffman Tract Lot 3, 15403 Perry Rd
From: Charles Moore and Sue Sigman
To: Sue and Jimmy Sigman
 - Belcher Tract Lot 19, 33402 Post Office Neck
From: Carol Kaye Hopkins
To: The DM Revocable Trust Dated March 3, 2020
- e. Acknowledge the resignation of Cody Smithson from the Airport Advisory Board.
- f. Mayor's Appointments

Airport Advisory Board

Keith Layne	1st Partial Term	Expires: July 1, 2025
<i>Replaces Cody Smithson</i>		
<i>- Resigned</i>		

Shawnee Hospital Authority

Angi Mohr	1st Full Term	Expires: September 30, 2029
<i>Reappointment</i>		
Tina Hanna	1st Full Term	Expires: September 30, 2029
<i>Reappointment</i>		

Shawnee Urban Renewal Authority

Sydney Davidson	1st Partial Term	Expires: February 2, 2025
<i>Replaces Tosha</i>		
<i>Tanquary - Resigned</i>		

3. Presentation of the Pet of the Month by Animal Control.
4. Presentation of Governor's Approval of the City of Shawnee Charter Amendments.
5. Presentation of the Shawnee Fire Department - Agency Evaluation and Cultural Assessment by Emergency Services Consulting International (ESCI).
6. Discussion regarding amending Chapter 8 of the Shawnee Municipal Code by

creating a new Article XI of Chapter 8, prohibiting feeding operations in the downtown area.

7. Consideration of an agreement with the Oklahoma Water Resources Board for High Hazard Potential Dam (HHPD) Grant.
8. Consideration of a Memorandum of Understanding between the City of Shawnee and Pottawatomie Go related to a collaborative partnership.
9. Consider Bid(s):
 - a. Independence Avenue Waterline Project (Award)
 - b. Thompson Heights Waterline Project (Open)
 - c. Sewer Pipe Bursting (Open)
10. Acknowledge Monthly Sales Tax Report.
11. Administrative Report(s):
 - a. Santa Fe Depot Update - Rian Harkins, Community Development Director
12. New Business (Any matter not known or which could not have been reasonably foreseen prior to the posting of the agenda.)
13. Commissioners Comments
14. Adjournment

Respectfully submitted,



Lisa Lasyone, CMC, City Clerk

The City of Shawnee encourages participation from its citizens in public meetings. If participation is not possible due to a disability, notify the City Clerk, in writing, at least forty-eight hours prior to the scheduled meeting, and necessary accommodations will be made. (ADA 28 CFR 36)

DRAFT

BOARD OF CITY COMMISSIONERS PROCEEDINGS

AUGUST 21, 2023 AT 6:00 PM

The Board of City Commissioners of the City of Shawnee, County of Pottawatomie, State of Oklahoma, met in Regular Session in the Commission Chambers at City Hall, 16 West 9th Street, Shawnee, Oklahoma on, Monday, August 21, 2023 at 6:00 PM, pursuant to notice duly posted as prescribed by law on Thursday, August 17, 2023, at 5:25 PM. Mayor Bolt presided and called the meeting to order. Upon roll call, the following members were in attendance.

Ed Bolt
Mayor

Daniel Matthews
Commissioner Ward 1

Cami Engles
Commissioner Ward 2

Travis Flood
Commissioner Ward 3

Darren Rutherford
Commissioner Ward 4 - Vice Mayor

Absent
Commissioner Ward 5

Absent
Commissioner Ward 6

ABSENT: Mark Sehorn, Lauren Richter

CALL TO ORDER

DECLARATION OF A QUORUM

INVOCATION

FLAG SALUTE

1. Recognition of BancFirst, SSM Health, and Shawnee Mills for their generous donation of funds for the West Farral Street Welcome Sign.

Mayor Bolt presented Certificates of Recognition to BancFirst, SSM Health and Shawnee Mills representatives for their generous donations of funds for the West Farrall Street Welcome Sign.

AGENDA ITEM NO. 4 WAS MOVED BEFORE AGENDA ITEM NO. 2 BY POWER OF THE CHAIR.

4. Mayor's Proclamation(s)

a. "National Suicide Prevention Month", September 2023

Ms. Angi Mohr, SSM Health, accepted the Mayor's Proclamation for "National Suicide Prevention Month" from Mayor Bolt.

2. Citizens Participation (A three-minute limit per person) (A twelve-minute limit per topic)

Ms. Kaye Steele, Mr. Fred Turner, Mr. Rob Morris, Mr. Rick Young, Mr. Beau Dorrough, Ms. Mindy Mew-Palmer, Mr. Pete Carrels, and Mr. Michael Barksdale spoke during Citizens Participation.

3. Consider approval of Consent Agenda:

a. Acknowledge staff will proceed in the instant meeting with the opening and consideration of bids as set forth in Item No. 21.

b. Minutes from the July 17, 2023 regular meeting and the August 7, 2023 special call meeting.

c. Acknowledge the following minutes and reports:

- Board of Adjustment Minutes from the May 18, 2023 regular meeting.
- Planning Commission Minutes from the July 5, 2023 regular meeting.
- Shawnee Beautification, Parks, and Recreation Committee Minutes from the June 15, 2023 regular meeting.

- Shawnee Urban Renewal Authority from the November 1, 2022 rescheduled regular meeting.
 - License Payment Report for July 2023.
 - Project Payment Report for July 2023.
- d. Authorize a right-of-way easement be given to Canadian Valley Electric Cooperative, Inc., to serve an existing City Lake Lot Lease at Shawnee Twin Lakes.
 - e. Acceptance of public water line improvements along American Way and place Maintenance Bond into effect.
 - f. Acceptance of a right-of-way utility easement agreement for property along 417 South Lindale Avenue.
 - g. Acceptance of right-of-way utility easement agreement for property along 408 South Lindale Avenue.
 - h. Acceptance of right-of-way utility easement agreement for property along 1532 East Farrall Street.
 - i. Acceptance of right-of-way utility easement agreement for property within Out Lot 7 of Elliott's Addition.

- j. Acceptance of right-of-way utility easement agreement for property along 1530 East Farrall Street.
- k. Acceptance of right-of-way utility easement agreement for property along 1703 East Farrall Street.
- l. Acknowledge the resignation of Tosha Tanquary from the Shawnee Urban Renewal Authority.
- m. Mayor Appointments:

Shawnee Senior Citizens Advisory Board

Barry Fogerty <i>Replaces Janice Orlauski - Term Expired</i>	1st Full Term	Expires: July 1, 2026
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Pamela Pensoneau <i>Replaces Jeanni Pruitt - Term Expired</i>	1st Full Term	Expires: July 1, 2026
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Shawnee Housing Authority

Daniel Jordan Resident Commissioner <i>Replaces Tamara Hale - Term Expired</i>	1st Partial Term	Expires: February 1, 2026
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A motion was made by Commissioner Matthews, seconded by Commissioner Engles, to approve Consent Agenda Item Nos. 3(a-m). Motion carried 5-0-0.

AYE: Matthews, Engles, Flood, Bolt, Rutherford

NAY: None

ABSTAIN: None

5. Shawnee Twin Lake No. 1 Briefing - Seth Barkhimer, Director of Engineering

Director of Engineering Seth Barkhimer spoke regarding the Shawnee Twin Lake No. 1 Briefing. Items he discussed included:

- Continuous Monitoring;
- Recent Timeline;
- Terracon's Initial Findings;
- Next Steps

6. Consideration of an agreement between the City of Shawnee and Terracon Consultants, Inc. for Geotechnical Engineering Services.

Director of Engineering Seth Barkhimer advised that the proposed agreement would allow Terracon Consultants, Inc. to conduct a geo-technical investigation of the full length of the dam at Shawnee Twin Lake No. 1.

A motion was made by Commissioner Engles, seconded by Commissioner Flood, to approve an agreement between the City of Shawnee and Terracon Consultants, Inc. for Geotechnical Engineering Services. Motion carried 5-0-0.

AYE: Engles, Flood, Bolt, Rutherford, Matthews

NAY: None

ABSTAIN: None

7. Consideration of a proposal with Elevation Land Surveying to provide Professional Survey Services at Shawnee Twin Lake No. 1.

Director of Engineering Seth Barkhimer advised this is the next phase to land surveying at Lake No. 1. If approved, the proposal would allow the process of replatting a portion of Lake No. 1 into lots and blocks.

A motion was made by Commissioner Matthews, seconded by Commissioner Flood, to approve a proposal with Elevation Land Surveying to provide Professional Survey Services at Shawnee Twin Lake No. 1. Motion carried 5-0-0.

AYE: Matthews, Flood, Bolt, Rutherford, Engles

NAY: None

ABSTAIN: None

8. Consideration of a resolution authorizing the application for a Shawnee-specific Continuum of Care from the United States Department of Housing and Urban Development.

Community Development Director Rian Harkins said the proposed resolution allows the City to file for an application for a Shawnee-specific Continuum of Care with the United States Department of Housing and Urban Development. He advised this would provide more direct access to funding sources and further strengthen the collaboration between community stakeholders involved in the Homeless Program.

A motion was made by Mayor Bolt, seconded by Commissioner Flood, to approve a resolution authorizing the application for a Shawnee-specific Continuum of Care from the United States Department of Housing and Urban Development.

Resolution No. 6708 was introduced.

A RESOLUTION APPROVING THE APPLICATION FOR A SHAWNEE-SPECIFIC CONTINUUM OF CARE WITH THE UNITED STATES DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.

Motion Carried 5-0-0.

AYE: Bolt, Flood, Rutherford, Matthews, Engles

NAY: None

ABSTAIN: None

9. Consideration of a resolution declaring certain items of personal property surplus and no longer needed for City purposes; describing said items; and authorizing disposal at the City's discretion.

Deputy Public Works Director Shane Lomeli provided a Staff report.

A motion was made by Commissioner Matthews, seconded by Vice Mayor Rutherford, to approve a resolution declaring certain items of personal property surplus and no longer needed for City purposes; describing said items; and authorizing disposal at the City's discretion.

Resolution No. 6709 was introduced.

A RESOLUTION DECLARING CERTAIN ITEMS OF PERSONAL PROPERTY SURPLUS AND NO LONGER NEEDED FOR CITY PURPOSES; DESCRIBING SAID ITEMS; AND AUTHORIZING SALE OR DISPOSAL AT THE CITY'S DISCRETION.

Motion carried 5-0-0.

AYE: Matthews, Rutherford, Engles, Flood, Bolt

NAY: None

ABSTAIN: None

10. Consideration of a contract renewal between Central Oklahoma Community Action Agency and the City of Shawnee's Community Development Block Grant program for administration of Transitional Housing for Shawnee Urban Renewal Authority property.

Community Development Director Rian Harkins advised this item is the continuation of an agreement between Central Oklahoma Community Action Agency (COCAA) and the City of Shawnee's Community Development Block Grant (CDBG) program to provide administrative services for the transitional housing for a Shawnee Urban Renewal Authority (SURA) home at 1309 East Highland.

A motion was made by Commissioner Matthews, seconded by Commissioner Engles, to approve a contract renewal between Central Oklahoma Community Action Agency and the City of Shawnee's Community Development Block Grant program for administration of Transitional Housing for Shawnee Urban Renewal Authority property. Motion carried 5-0-0.

AYE: Matthews, Engles, Flood, Bolt, Rutherford

NAY: None

ABSTAIN: None

11. Consider an agreement between the City of Shawnee and the AARP for participation in the Senior Community Service Employment Program offered by the AARP Foundation.

City Manager Andrea Weckmueller-Behringer provided a Staff report regarding the AARP Senior Community Service Employment Program.

A motion was made by Commissioner Engles, seconded by Commissioner Flood, to approve an agreement between the City of Shawnee and the AARP for participation in the Senior Community Service Employment Program offered by the AARP Foundation. Motion carried 5-0-0.

AYE: Engles, Flood, Bolt, Rutherford, Matthews

NAY: None

ABSTAIN: None

12. Public hearing of a request for a Conditional Use Permit (CUP) for telecommunications housing on property located at 43008 East MacArthur Street.

Case No. CUP02-23 | Applicants: Tim & Donna Russell

Community Development Director Rian Harkins advised that the request for a Conditional Use Permit (CUP) is to locate a telecommunications housing for fiber optics north of the existing building. He stated Staff and Planning Commission recommend approval with conditions. The conditions include:

- Acknowledgment by the applicant that the Approval of a Conditional Use Permit (CUP) does not negate or circumvent the other requirements of development as stated in the City Codes, which include the Zoning Code and the adopted Building and Fire Codes.
- Acknowledgment by the applicant that additional permits may be required, and standard inspections will be conducted.Options:

Mayor Bolt declared a public hearing in session for a Conditional Use Permit (CUP) for telecommunications housing on property located at 43008 East MacArthur Street. No one spoke during the public hearing. The public hearing was closed.

13. Consideration of approval for a Conditional Use Permit (CUP) for telecommunications housing at the property located at 43008 East MacArthur Street.

Case No. CUP02-23 | Applicants: Tim & Donna Russell

Community Development Director Rian Harkins advised that Staff and Planning Commission recommend approval.

A motion was made by Commissioner Flood, seconded by Vice Mayor Rutherford, to approve a Conditional Use Permit (CUP) for telecommunications housing at the property located at 43008 East MacArthur Street. Motion carried 5-0-0.

AYE: Flood, Rutherford, Matthews, Engles, Bolt

NAY: None

ABSTAIN: None

14. Consideration of an ordinance of the City of Shawnee, Oklahoma amending portions of Chapter 4 "Alcoholic Beverages", by creating a complimentary beverage license for a certain purpose and providing for a definition; providing for severability; providing for codification; and providing for repealer.

Director of Engineering Seth Barkhimer advised that Chapter 4 of the City of Shawnee's Municipal Code currently addresses alcohol sales but does not account for complimentary drinks. To align with state regulations and assist diverse businesses, such as art galleries and hair salons, City Staff recommends introducing a new ordinance that relates to complimentary beverages.

A motion was made by Commissioner Matthews, seconded by Commissioner Engles, to approve an ordinance of the City of Shawnee, Oklahoma amending portions of Chapter 4 "Alcoholic Beverages", by creating a complimentary beverage license for a certain purpose and providing for a definition; providing for severability; providing for codification; and providing for repealer.

Ordinance No. 2792NS was introduced.

AN ORDINANCE OF THE CITY OF SHAWNEE, OKLAHOMA AMENDING PORTIONS OF CHAPTER 4 "ALCOHOLIC BEVERAGES", BY CREATING A COMPLIMENTARY BEVERAGE LICENSE FOR A CERTAIN PURPOSE AND PROVIDING FOR A DEFINITION; PROVIDING FOR SEVERABILITY; PROVIDING FOR CODIFICATION; AND PROVIDING FOR REPEALER.

Motion carried 5-0-0.

AYE: Matthews, Engles, Flood, Bolt, Rutherford

NAY: None

ABSTAIN: None

Ordinance No. 2792NS was adopted by the City Commission.

15. Consideration of a resolution updating the City Fee Schedule by setting the complimentary beverage license fee pursuant to Article I of Chapter 4 "Alcoholic Beverages" of the Shawnee Municipal Code; and providing for the readoption of the City Fee Schedule in whole.

Director of Engineering Seth Barkhimer advised that the proposed resolution sets the fee for Agenda Item No. 14 and places the fee in City's Fee Schedule.

A motion was made by Commissioner Matthews, seconded by Commissioner Flood, to approve a resolution updating the City Fee Schedule by setting the complimentary beverage license fee pursuant to Article I of Chapter 4 "Alcoholic Beverages" of the Shawnee Municipal Code; and providing for the readoption of the City Fee Schedule in whole.

Resolution No. 6710 was introduced.

A RESOLUTION UPDATING THE CITY FEE SCHEDULE BY SETTING THE COMPLIMENTARY BEVERAGE LICENSE FEE PURSUANT TO ARTICLE I OF CHAPTER 4 "ALCOHOLIC BEVERAGES" OF THE SHAWNEE MUNICIPAL CODE; AND PROVIDING FOR THE READOPTION OF THE CITY FEE SCHEDULE IN WHOLE.

Motion carried 5-0-0.

AYE: Matthews, Flood, Bolt, Rutherford, Engles

NAY: None

ABSTAIN: None

16. Consideration of an ordinance amending portions of the Shawnee Municipal Code, Chapter 6 "Aviation", providing for repeal; providing for codification; providing for severability; and setting the effective date.

Airport Manager Bonnie Wilson provided advised Staff has received several inquiries from several aviation companies looking at Shawnee for base operations for cargo services. At this time, the airport does not have section in minimum standards for cargo services. The Federal Aviation Administration (FAA) advises airports to publish minimal Standards governing the use of airport facilities, and to periodically review and update those standards.

A motion was made by Commissioner Engles, seconded by Vice Mayor Rutherford, to approve an ordinance amending portions of the Shawnee Municipal Code, Chapter 6 "Aviation", providing for repeal; providing for codification; providing for severability; and setting the effective date.

Ordinance No. 2793NS was introduced.

AN ORDINANCE AMENDING PORTIONS OF THE SHAWNEE MUNICIPAL CODE, CHAPTER 6 "AVIATION"; PROVIDING FOR REPEAL; PROVIDING FOR CODIFICATION; PROVIDING FOR SEVERABILITY; AND SETTING THE EFFECTIVE DATE.

Motion carried 5-0-0.

AYE: Engles, Rutherford, Matthews, Flood, Bolt

NAY: None

ABSTAIN: None

17. Public hearing on an amendment to the Capital Improvement Plan to add two projects at the Shawnee Municipal Airport.

Assistant Finance Director Angel Odom stated that the Capital Improvement Plan (CIP) for Fiscal Years (FY) 2024-2028 was adopted on June 20, 2023. City staff is requesting an amendment to the CIP to add two (2) projects at the Shawnee Municipal Airport. The two (2) projects are a Terminal Area Plan and a Pavement Condition Rating.

Mayor Bolt declared a public hearing in session for an amendment to the Capital Improvement Plan to add two (2) projects at the Shawnee Municipal Airport. Mr. Rob Morris spoke in favor of the amendment. Mr. Fred Turner spoke in favor and against the amendment. The public hearing was closed.

18. Consideration of an amendment to the Capital Improvement Plan to add two projects at the Shawnee Municipal Airport.

A motion was made by Commissioner Matthews, seconded by Commissioner Flood, to approve an amendment to the Capital Improvement Plan to add two projects at the Shawnee Municipal Airport. Motion carried 5-0-0.

AYE: Matthews, Flood, Bolt, Rutherford, Engles

NAY: None

ABSTAIN: None

19. Consideration and approval of a Memorandum of Understanding with Oklahoma Baptist University to allow nursing students to embed within the Homeless Resource Center.

Community Development Director Rian Harkins stated that the proposed Memorandum of Understanding (MOU) would allow nursing students from Oklahoma Baptist University to embed within the Homeless Resource Center as part of a clinical rotation. Staff recommends approval.

A motion was made by Commissioner Flood, seconded by Commissioner Engles, to approve a Memorandum of Understanding with Oklahoma Baptist University to allow nursing students to embed within the Homeless Resource Center. Motion carried 5-0-0.

AYE: Flood, Engles, Bolt, Rutherford, Matthews

NAY: None

ABSTAIN: None

20. Consideration of the following budget amendments for Fiscal Year 2023 – 2024:

- a. Gifts & Contributions Fund - Fund 706 - To fund the installation of the Shawnee Gateway sign on West Farrall Street funded by donations received in FY23.
- b. General Fund - Fund 001 - to appropriate fund balance for FY22-23 Encumbrances for which goods or services will be received or rendered in FY23-24.
- c. Hotel/Motel Surcharge Fund - Fund 106 - to appropriate fund balance for FY22-23 Encumbrances for which goods or services will be received or rendered in FY23-24.

- d. Capital Improvement Fund - Fund 301 - to appropriate fund balance for FY22-23 Encumbrances for which goods or services will be received or rendered in FY23-24.
- e. Street Improvement Fund - Fund 302 - to appropriate fund balance for FY22-23 Encumbrances for which goods or services will be received or rendered in FY23-24.
- f. 2018 Capital Improvement Fund - Fund 303 - to appropriate fund balance for FY22-23 Encumbrances for which goods or services will be received or rendered in FY23-24.
- g. American Rescue Plan Fund - Fund 304 - to appropriate fund balance for FY22-23 Encumbrances for which goods or services will be received or rendered in FY23-24.
- h. Grant Fund - Fund 010 - to appropriate fund balance for remaining FY23 balance in the Grant Fund for the emergency services contracts due to the April 19, 2023 tornado event.

Assistant Finance Director Angel Odom advised that the proposed budget amendments are to appropriate fund balance related to encumbrances for prior fiscal year goods and services that were not received by June 30, 2023 and are expected to be received in the current fiscal year and require associated budget appropriation.

A motion was made by Commissioner Engles, seconded by Commissioner Flood, to approve the budget amendments listed in Agenda Item Nos. 20(a-h). Motion carried 5-0-0.

AYE: Engles, Flood, Bolt, Rutherford, Matthews

NAY: None

ABSTAIN: None

21. Consider Bid(s):

a. Independence Avenue Waterline Project (Open)

<u>BIDDER</u>		<u>AMOUNT</u>
Downey Contractors, LLC Oklahoma City, Oklahoma	Base Bid	\$2,116,425.00
	Alternate No. 1	\$ 461,718.00
	Alternate No. 2	\$ 546,488.00
Circle B Underground, LLC Bristow, Oklahoma	Base Bid	\$1,291,791.00
	Alternate No. 1	\$ 255,951.00
	Alternate No. 2	\$ 236,020.00
Marsau Enterprises, Inc. Enid, Oklahoma	Base Bid	\$1,943,209.00
	Alternate No. 1	\$ 431,258.50
	Alternate No. 2	\$ 570,991.00
Orr Construction, Inc. Davenport, Oklahoma	Base Bid	\$1,439,730.00
	Alternate No. 1	\$ 308,530.00
	Alternate No. 2	\$ 310,335.00

Director of Engineering Seth Barkhimer read four (4) bids into the record. Mr. Barkhimer requested that the bid award be deferred in order for Staff to review each bid.

A motion was made by Commissioner Flood, seconded by Commissioner Engles, to defer the item to a future City Commission meeting. Motion Carried 5-0-0.

AYE: Flood, Engles, Bolt, Rutherford, Matthews

NAY: None

ABSTAIN: None

22. Acknowledge Monthly Sales Tax Report.

Assistant Finance Director Angel Odom reported sales tax is up Five Hundred Forty Thousand Seven Hundred Forty-Three Dollars (\$540,743.00) or Eleven

Percent (11%), over the projected budget year-to-date. She stated that use tax collections are up One Hundred Thirteen Thousand One Hundred Seventy-Three Dollars (\$113,173.00) or Eighteen Point Six Percent (18.6%), above the projected budget year-to-date.

23. Administrative Report(s):

- a. Designated Camp & Shelter Site, Proposed Operations Model and Set-up Requirements - Andrea Weckmueller-Behringer, City Manager and Rian Harkins, Community Development Director

City Manager Andrea Weckmueller-Behringer and Community Development Director Rian Harkins provided an administrative report on Designated Camp and Shelter Site, Proposed Operations Model and Set-Up Requirements. Items discussed included:

- Immediate Next Steps
- Dockery Park
- Benefits
- Researched
 - Unorganized vs. Organized
 - Governance Models
 - Memorandum of Understanding Components
- Set-Up
 - Shelter Needs
 - Examples - Tents and Conestoga Huts
 - Other Needs
 - Cost Estimate
- Ongoing Costs

24. New Business (Any matter not known or which could not have been reasonably foreseen prior to the posting of the agenda.)

City Manager Andrea Weckmueller-Behringer stated that on August 7, 2023, the City Commission approved a transfer of the properties at 502 South Kickapoo and 210 South Kickapoo to Southern Pointe Community, LLC, under whose care the aforementioned assisted-living dwelling units for South Central Industries

(SCI) IDD clients will be built. Ms. Weckmueller-Behringer advised that within the last twenty-four (24) hours, it has come to the attention of City Staff that the approval of the property transfer and readoption of the Covenants, Conditions, and Restrictions (CC&R) inadvertently created a situation where both the previous as well as the new set of CC&R's were attached to the properties. The proposed documents provided at the current meeting would release and terminate the previous covenants and revert and put in place the appropriately amended and restated CC&R's for both affected properties.

A motion was made by Commissioner Flood, seconded by Commissioner Matthews, to affirm consent to transfer previously conveyed real estate property from South Central Industries, Inc. to Southern Pointe Community, LLC and Amendment and Restatement of Covenants. Motion carried 5-0-0.

AYE: Flood, Matthews, Engles, Bolt, Rutherford

NAY: None

ABSTAIN: None

25. Commissioners Comments

Commissioner Matthews commented on the recognitions for the West Farrall Street sign, the update on the lake, sales tax and the homeless presentation.

Commissioner Engles thanked the citizens that spoke.

Commissioner Flood said he was pleased to see how many individuals came and spoke on items important to them.

Vice Mayor Rutherford stated that Cops N Kids event will be on Saturday, August 26, 2023 at Heart of Exposition Center starting 11:00 am to 3:00 pm.

Mayor Bolt commented on the Cops N Kids event, the new sign in the Dunbar Heights neighborhood, and the homeless presentation.

26. Adjournment

There being no further business to be considered, the meeting was adjourned by power of the Chair. (8:41 p.m.)

ED BOLT, MAYOR

ATTEST:

LISA LASYONE, CMC
CITY CLERK

**SHAWNEE BEAUTIFICATION, PARKS, AND RECREATION COMMITTEE
PROCEEDINGS**

JULY 20, 2023 AT 4:00 PM

The Shawnee Beautification, Parks, and Recreation Committee of the City of Shawnee, County of Pottawatomie, State of Oklahoma, met in Regular Session in the Commission Chambers at City Hall, 16 West 9th Street, Shawnee, Oklahoma on, Thursday July 20, 2023 at 4:00 p.m., pursuant to notice duly posted as prescribed by law at 1:42 p.m. on July 18, 2023. Chairperson Payn presided and called the meeting to order. Upon roll call, the following members were in attendance.

Chad Payn
Chairperson

Sherry Lankford
Vice Chairperson

Absent
Committee Member

Absent
Committee Member

Sue Nelson
Committee Member

Vickie Winters
Committee Member

Absent
Commissioner/Committee Member

ABSENT: Ian Hayes, Zach Foster, Travis Flood

CALL TO ORDER

DECLARATION OF QUORUM

1. Consideration of approval of the Minutes from the June 15, 2023 regular meeting.

A motion to approve the minutes was made by Vickie Winters. A 2nd was made by Sherry Lankford. Motion carried 3-0.

Aye: Chad Payn, Sherry Lankford, and Vickie Winters.

Nay: None

Obstain: Sue Nelson

2. Staff Reports

Projects at Woodland Park are moving forward. All tree debris from the tornado has been removed. We are in the 9th season at Splash and everything is going well. The junior volunteers are finishing up their time and the last day of

operation will be August 12, 2023. The Splash Pad at Boyscout park is closed due to a flood that damaged the computer system. An insurance claim has been filed, but unfortunately it will not be opened back up this season. We have a lot of activities going on at the Recreation Center and Community Center. Project Heart meals are continuing to be served at the Community Center. KidSpace activities are going great and the park is well attended. Security cameras and pet waste stations have been installed.

3. Discussion and Approval of Park Rules

Board members looked over the handout of park rules and decided to add item to the August agenda to form a subcommittee. Once a sub committee has been formed, they will get community input and propose changes to be made to existing rules and ordinances to be approved.

4. Citizens Participation (A three-minute limit per person) (A twelve-minute limit per topic)

Emily Flemming inquired about the status of the YMCA ball fields. She discussed the need for baseball and softball fields for younger kids' teams to have a place to have practice and ball games. She stated that the organization her children play for would be interested in leasing the fields when they are ready to be used. Kerri let her know the city is waiting on FEMA and insurance to reply on claims and stated that we anticipate the fields to be bigger and better than they were previously.

5. Committee Comments

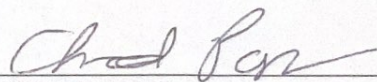
Sherry Lankford discussed the opening of KidSpace stating that all who attended seemed to enjoy all the activities. Community comments about the park have been really good. People do wonder if there will ever be water activities in the park. Chad was very pleased with the advertisement of the park, such as social media, newspapers and local news stations promoting the park,

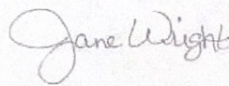
6. Adjournment

A motion to adjourn was made by Sherry Lankford at 5:06. A 2nd was made by Vickie Winters. Motion carried 4-0.

Aye: Chad Payn, Sherry Lankford, Vickie Winters, and Sue Nelson.

Nay: None


CHAD PAYN
CHAIRPERSON



JANE WRIGHT
SECRETARY

SHAWNEE SENIOR CITIZENS ADVISORY BOARD PROCEEDINGS

MAY 9, 2023 AT 9:30 AM

The Shawnee Senior Citizens Advisory Board of the City of Shawnee, County of Pottawatomie, State of Oklahoma, met in Regular Session in the Senior Recreation Center, 401 North Bell Avenue, Shawnee, Oklahoma on, May 9, 2023, pursuant to notice duly posted as prescribed by law at 10:27 A.M on May 5, 2023. Vice Chairperson Albert Rice presided and called the meeting to order. Upon roll call, the following members were in attendance:

<u>Absent</u> Chairperson	
<u>Albert Rice</u> Vice Chairperson	<u>Jeanni Pruitt</u> Member
<u>Absent</u> Member	<u>Phyllis Crosswell</u> Member
<u>Shirley Gregory</u> Member	<u>Bill Haley</u> Member
<u>Sally Murphy</u> Member	<u>Ed Bolt</u> Mayor / Commission Representative
<u>Janice Orlauski</u> Member	
ABSENT: John Belzer and Ann Dowdy	

CALL TO ORDER

DECLARATION OF QUORUM

1. Consideration of approval of the Minutes from the March 14, 2023 regular meeting.

A motion to approve was made by Phyllis Crosswell. It was 2nd by Jeanni Pruitt. Motion carried 6-0.

Aye: Bill Haley, Jeanni Pruitt, Phyllis Crosswell, Sally Murphy, Janice Orlauski, Ed Bolt.

Nay: None

Obstained: Albert Rice, Shirley Gregory.

2. Staff Reports

Amy Riggins discussed the hiring of 2 new Recreation Center Aides and 29 lifeguards for Splash. She also discussed Health Week is the end of May with May 31, 2023 being National Senior Health and Fitness Day. Pickleball is really taking off at the Recreation Center and we will have outdoor pickleball at Kidspace Park and Woodland Park when they re-open. Janice Orlauski asked about the activities going on at the Community Center, with Amy letting the group know that Project Heart has resumed serving meals, morning fitness classes are being held 3 times a week, as well as bingo.

3. Citizens Participation

(A three-minute limit per person)
(A twelve-minute limit per topic)

We had no citizens participation at this meeting.

4. Board Comments

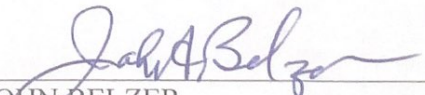
Phyllis Crosswell wanted to let everyone know she has been hearing how citizens are enjoying pickleball and dancing at the Recreation Center. Mayor Bolt and Amy discussed the possibility of Zumba classes. Albert asked Mayor Bolt for an update on tornado clean up, with Mayor Bolt letting the group know about the Small Business Administration and FEMA being set up to assist the community as well as all the debris clean up taking place.

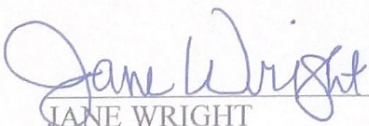
5. Adjournment

A motion to adjourn was made by Phyllis Crosswell at 10:05. A 2nd was made by Janice Orlauski. Motion carried 7-0.

Aye: Albert Rice, Shirley Gregory, Jeanni Pruitt, Janice Orlauski, Phyllis Crosswell, Sally Murphy, Ed Bolt.

Nay: None


JOHN BELZER
CHAIRPERSON


JANE WRIGHT
SECRETARY



Entity Payment Report

08/01/2023 - 08/31/2023

Payment Date	Name	Payment Type	Receipt #	Payment Amount
8/31/2023	ANYTIME PLUMBING	IBX CC	2561	75.00
8/31/2023	FIESTA TACOS LLC	IBX CC	2563	50.00
8/31/2023	BRATCHER ENTERPRISES	IBX CC	2562	100.00
8/31/2023	ANYTIME SEPTIC HVAC	IBX CC	2564	100.00
8/30/2023	A/C DOCTORS, LLC	Check	2560	75.00
8/30/2023	ALEX ELECTRIC INC	Check	2558	100.00
8/30/2023	KEY & SONS HEAT & AIR	Check	2557	100.00
8/30/2023	THE DM REVOCABLE TRUST DATED MARCH 3, 2020	Check	2555	1,851.00
8/30/2023	WHY NOT TRAVEL? LLC	Check	2554	50.00
8/30/2023	DHS - POTTOWATOMIE RETAIL	Check	2553	50.00
8/30/2023	JOHNSON CONTROL	IBX CC	2551	100.00
8/30/2023	HUSE PLUMBING LLC	IBX CC	2559	75.00
8/30/2023	M73 MECHANICAL	IBX CC	2552	100.00
8/30/2023	RANDY E WOLFE	IBX CC	2556	776.00
8/29/2023	J CURRY ELECTRIC CO INC	Check	2550	75.00
8/28/2023	B'S SMOKEHOUSE	Check	2549	50.00

8/25/2023	DEAN & BEVERLY MABRY	Check	2548	776.00
8/25/2023	CITIZEN POTAWATOMI NATION	Check	2547	75.00
8/25/2023	TAILORED EVENTS	Check	2545	50.00
8/25/2023	OMEGA POWER COMPANY	IBX CC	2544	100.00
8/25/2023	AVVIO SERVICES LLC	IBX CC	2546	100.00
8/24/2023	SOONER HVAC, IN	IBX CC	2543	100.00
8/23/2023	JACKSON ELECTRICAL CONSTRUCTION	Check	2542	75.00
8/23/2023	AAE ELECTRIC, INC	IBX CC	2541	100.00
8/22/2023	SISSONS PLUMBING	Check	2540	100.00
8/21/2023	ADVANCE ELECTRIC, INC	Check	2539	75.00
8/21/2023	ALDI (TEXAS) LLC dba ALDI'S STORE #7	Check	2538	450.00
8/21/2023	IMAGINE DISPENSARY	Check	2537	15.00
8/21/2023	RUSSELL ADAMS	Check	2536	776.00
8/21/2023	GALAXY DISTRIBUTION LLC	Cash	2534	50.00
8/21/2023	TOM GABEL	IBX CC	2535	776.00
8/18/2023	LAHOMA GALLAGHER	Cash	2533	776.00
8/18/2023	JOHN & JASON HAYS	Check	2531	776.00
8/18/2023	VISION ELECTRIC LLC	Check	2529	75.00
8/18/2023	RED BONE ELECTRIC	IBX CC	2530	100.00
8/18/2023	GOLDEN TICKET CINEMAS	IBX CC	2532	50.00
8/17/2023	SHAWNEE DINER LLC dba BOOMARANG DINER	Check	2528	50.00

8/17/2023	CITIZEN POTAWATOMI NATION	Check	2526	75.00
8/17/2023	SUE & JIMMY SIGMAN	Check	2524	1,851.00
8/17/2023	ROSS DRESS FOR LESS #1059	Check	2523	15.00
8/17/2023	CC CANNON, LLC	Check	2522	776.00
8/17/2023	A-TEAM HEATING COOLING	IBX CC	2527	75.00
8/17/2023	DONALD LOVELACE & SHAWN SMOTHERS	IBX CC	2525	776.00
8/16/2023	PAULA BARNETT & KENNETH SMITH	Check	2521	776.00
8/16/2023	JOHNSON ELECTRIC	Check	2520	75.00
8/15/2023	TRESSA MARBACH	Check	2519	15.00
8/15/2023	RUSSELL HEAT & AIR LLC	IBX CC	2517	75.00
8/15/2023	JKB MECHANICAL	IBX CC	2518	100.00
8/14/2023	ROBERT MURPHY	Check	2515	776.00
8/14/2023	GNC ELECTRICAL ENTERPRISES, LLC	Check	2514	100.00
8/14/2023	COWBOYS PLUMBING	Check	2513	75.00
8/14/2023	BRIAN EUGENE HUGHES	IBX CC	2516	776.00
8/11/2023	HOMETOWN FULL SERVICE ELECTRIC LLC	Check	2512	75.00
8/11/2023	MONICA & JOSHUA FREED	Check	2511	776.00
8/10/2023	KICKAPOO RED BALL LIQUOR	Check	2509	905.00
8/10/2023	THE SMOKING CRAB & SEAFOOD	IBX CC	2510	50.00

8/10/2023	VOLT ELECTRIC LLC	IBX CC	2508	100.00
8/9/2023	BRAD MOSMAN	Check	2507	15.00
8/9/2023	PAUL E DAVIS	Check	2506	15.00
8/9/2023	TEAM UPTOWN ELECTRIC	Check	2505	75.00
8/9/2023	TARZANS TREE SERVICE	Cash	2504	25.00
8/9/2023	SCHULER ACQUISITIONS dba SCHULER PLUMBING	IBX CC	2503	100.00
8/9/2023	LECCE TRADING LLC	IBX CC	2498	50.00
8/9/2023	FAMILY DOLLAR #24216	IBX CC	2502	50.00
8/9/2023	MIDWEST SIGNS	IBX CC	2500	75.00
8/9/2023	FAMILY DOLLAR #21491	IBX CC	2501	50.00
8/9/2023	ARROWHEAD SOLAR LLC dba ARROWPOINT SOLAR	IBX CC	2497	100.00
8/9/2023	BISON FAMILY THERAPY INSTITUTE	IBX CC	2499	50.00
8/7/2023	JAMES TRANTHAM JR	Cash	2496	25.00
8/7/2023	TYE MOORE ELECTRIC, INC	Check	2495	75.00
8/7/2023	ALL COMFORT SPECIALIST LLC	Check	2494	75.00
8/7/2023	W & PHYLLIS HERRON	Check	2493	15.00
8/7/2023	FRONTIER PLUMBING	Check	2492	75.00
8/7/2023	FRONTIER PLUMBING	Check	2491	75.00
8/4/2023	BUILDING ELECTRICAL SYSTEMS, INC	IBX CC	2490	75.00
8/3/2023	KONA ICE OF SHAWNEE	Check	2489	50.00
8/3/2023	TERESA & CODY ROE	Check	2488	776.00
8/3/2023	BROADWAY	Check	2486	905.00

	LIQUOR STORE			
8/3/2023	BRIAN BURTON	Check	2485	776.00
8/3/2023	EMI	IBX CC	2487	100.00
8/2/2023	DERRICK CARPENTER	Check	2483	776.00
8/2/2023	DERRICK CARPENTER	Check	2482	776.00
8/2/2023	DERRICK & JESSICA CARPENTER	Check	2481	776.00
8/2/2023	BENNY M GRAHAM	Check	2480	15.00
8/2/2023	DANA BROWNING	Check	2479	776.00
8/2/2023	RIDERS IN THE SKY LLC dba KUSH GARDENS	Check	2478	1,500.00
8/2/2023	SHAWNEE NEWS STAR / CHERRYROAD MEDIA	Cash	2477	50.00
8/2/2023	MOUNT ELECTRIC LLC	IBX CC	2484	100.00
8/1/2023	A KIDS LIFE CHILD DEVELOPMENT CENTER	IBX CC	2476	50.00
8/1/2023	MICHAEL TURNER	IBX CC	2475	30.00
				25,890.00

Total Records: 90

9/1/2023



Monthly - City Clerk

08/01/2023 - 08/31/2023

Permit #	Permit Date	Permit Type	Parcel Address	Applicant Name	Description	Project Cost	Square Feet	Total Fees
20231493	8/28/2023	B - Accessory Structure	803 N MADELINE DR	AUSTON KIDNEY	ACCESSORY BUILDING	530	80	
20231392	8/11/2023	B - Accessory Structure	7602 N KICKAPOO AVE	GOTCHA COVERED INC	NEW CONSTRUCTION	103,750	3,200	\$684.50
20231354	8/8/2023	B - Accessory Structure	318 W 32ND ST	C & H CARPORTS, INC	NEW CONSTRUCTION	6,150	400	\$89.50
20231348	8/7/2023	B - Accessory Structure	36005 OLD HWY 270	AMERICAN STEEL ARPORTS, INC	NEW CONSTRUCTION	20,000	1,500	\$323.25
20231343	8/7/2023	B - Accessory Structure	8 JUEL DR	RONNIE CUE	NEW CONSTRUCTION	15,000	900	\$195.75
20231387	8/10/2023	B - Carport	1421 N PHILADELPHIA	DIAMOND B ROOFING	NEW CONSTRUCTION	8,200	700	\$153.25
20231477	8/24/2023	B - Commercial - New	4785 N HARRISON	INTERTECH DESIGN SERVICES, INC	NEW CONSTRUCTION	1,500,000	8,970	\$2,972.00
20231422	8/17/2023	B - Commercial - New	1 EAGLE RD	DAVID COTTINGHAM	NEW CONSTRUCTION	0	0	\$50.00
20231502	8/29/2023	B - Commercial - Remodel	121 W 45TH ST	KEITH SHAW CMS, INC	NEW CONSTRUCTION	1,300,000	8,122	\$2,035.00
20231496	8/29/2023	B - Commercial - Remodel	2131 N KICKAPOO	MIRA ENTERPRISES	REMODEL	29,650	730	\$29.50
20231494	8/28/2023	B - Commercial - Remodel	3954 N KICKAPOO AVE	NATALIE HISLE	REMODEL	145,000	4,100	\$1,029.50
20231486	8/25/2023	B - Commercial - Remodel	2301 N KICKAPOO AVE	JON GIULIANO	RE-DECK / RE-ROOF	0	0	\$54.50
20231479	8/24/2023	B - Commercial	1329 N HARRISON ST	ROBBIE BEAVER	REMODEL	2,000	800	

		- Remodel						
20231406	8/15/2023	B - Commercial - Remodel	8032 INDUSTRIAL DR	APOLLO BUILDING SYSTEMS, INC	REMODEL / FINISH	13,000,000	50,000	\$10,629.50
20231384	8/10/2023	B - Commercial - Remodel	323 E MAIN	JIM MCLEOD	REPAIR	1,800	1,000	\$29.50
20231364	8/8/2023	B - Commercial - Remodel	1307 N KICKAPOO	OL' RUGGED CROSS CONSTRUCTION LLC	REPAIR	6,000	350	\$29.50
20231327	8/1/2023	B - Commercial - Remodel	418 W MACARTHUR ST	SHAWN LEWIS	awning	7,695	153	\$42.75
20231381	8/10/2023	B - Residential - Multi Family	510 S KICKAPOO AVE	ONE RED OAK, LLC	NEW CONSTRUCTION	600,000	3,690	\$1,513.63
20231380	8/10/2023	B - Residential - Multi Family	502 S KICKAPOO	ONE RED OAK, LLC	NEW CONSTRUCTION	600,000	3,690	\$1,513.63
20231379	8/10/2023	B - Residential - Multi Family	323 W 9TH ST	ONE RED OAK, LLC	NEW CONSTRUCTION	1,500,000	10,056	\$2,866.40
20231513	8/30/2023	B - Residential - New	33103 CLEARPOND RD	HAROLD STRICKLAND	NEW CONSTRUCTION	162,000	3,200	\$684.50
20231474	8/23/2023	B - Residential - New	712 W MAIN	BUILDERS INVESTMENT GROUP	NEW CONSTRUCTION	92,000	924	\$200.85
20231473	8/23/2023	B - Residential - New	414 N AYDELOTTE AVE	BUILDERS INVESTMENT GROUP	NEW CONSTRUCTION	92,000	924	\$200.85
20231472	8/23/2023	B - Residential - New	203 S OAK	BUILDERS INVESTMENT GROUP	NEW CONSTRUCTION	92,000	924	\$200.85
20231471	8/23/2023	B - Residential - New	325 N CLEVELAND	BUILDERS INVESTMENT GROUP	NEW CONSTRUCTION	92,000	924	\$200.85
20231470	8/23/2023	B - Residential - New	327 S AYDELOTTE AVE	BUILDERS INVESTMENT GROUP	NEW CONSTRUCTION	92,000	924	\$200.85
20231469	8/23/2023	B - Residential - New	1124 E PARKER ST	BUILDERS INVESTMENT GROUP	NEW CONSTRUCTION	92,000	924	\$200.85
20231416	8/16/2023	B - Residential - New	1411 MADISON AVE	RAUSCH COLEMAN HOMES	NEW CONSTRUCTION	160,000	1,817	\$1,115.61
20231415	8/16/2023	B -	1414 LEXI DR	RAUSCH COLEMAN	NEW	160,000	1,902	\$1,133.68

		Residential - New		HOMES	CONSTRUCTION			
20231414	8/16/2023	B - Residential - New	1412 LEXI DR	RAUSCH COLEMAN HOMES	NEW CONSTRUCTION	160,000	2,234	\$1,204.23
20231346	8/7/2023	B - Residential - New	1008 BURNING WOOD DR	L & L CONSTRUCTION SOLUTIONS	NEW CONSTRUCTION	213,000	1,100	\$285.00
20231333	8/3/2023	B - Residential - New	4531 REDBIRD	RICK LANDES	NEW CONSTRUCTION	210,000	2,518	\$1,264.58
20231462	8/22/2023	B - Residential - Remodel	605 N AYDELOTTE	JAMES DUECK	REPLACE TORNADO DAMAGE	5,000	240	\$29.50
20231424	8/17/2023	B - Residential - Remodel	2006 N DOROTHY	TOM BIERD	REMODEL	25,000	875	\$190.44
20231419	8/16/2023	B - Residential - Remodel	613 W DILL	PHILLIP T HAMMONS	REMODEL	11,000	1,200	\$259.50
20231413	8/16/2023	B - Residential - Remodel	5 SHAMROCK CIR	DELAROSA BROTHERS CONST., LLC	REMODEL	0	0	\$29.50
20231398	8/14/2023	B - Residential - Remodel	537 N AYDELOTTE	ROBERT PAUL LOCKNER JR	REMODEL	0	0	\$29.50
20231397	8/14/2023	B - Residential - Remodel	1407 E WALNUT	MATT MILLER	REMODEL	8,300	1,090	\$236.13
20231372	8/9/2023	B - Residential - Remodel	7 TIMBER CREEK CI	SIPES ROOFING	REMODEL	125,000	1,200	\$259.50
20231495	8/28/2023	B - Roof Redeck	606 N BEARD AVE	STEVE SLAWSON	REDECK	10,000	2,400	\$54.50
20231480	8/24/2023	B - Roof Redeck	11 JUEL DR	TAILORED ROOFING	RE-DECK	13,468	3,000	\$54.50
20231458	8/21/2023	B - Roof Redeck	323 N AYDELOTTE	CARRISAL INC	RE-DECK	7,800	1,500	\$54.50
20231452	8/18/2023	B - Roof Redeck	412 N BEARD	VANBUSKIRK CONSTRUCTION	REPAIR	28,500	0	\$54.50
20231374	8/9/2023	B - Roof Redeck	418 W MACARTHUR ST	RON DEGRAFFENREID	redeck	3,000	153	\$54.50
20231371	8/9/2023	B - Roof Redeck	27 INTERSTATE PARKWAY	EAGLE TRADING INTERNATIONAL CORP dba ROOFING SOURCE	RE-DECK	0	0	\$54.50

20231357	8/8/2023	B - Roof Redeck	804 E FRANKLIN	TAILORED ROOFING	ROOF RE-DECK	16,246	255	\$54.50
20231347	8/7/2023	B - Roof Redeck	27 W CHICAGO	LARRY SLOVEN	REPAIR - ROOF RE-DECK	10,000	1,224	\$54.50
20231487	8/25/2023	B - Solar Panels	520 N BEARD AVE	AVVIO SERVICES LLC	SOLAR PANELS	51,283	538	\$118.81
20231423	8/17/2023	B - Solar Panels	717 W WOOD	NIVO SOLAR	SOLAR PANELS	76,954	559	\$123.28
20231411	8/16/2023	B - Solar Panels	2003 N TUCKER	SOLAR POWER OF OKLAHOMA	NEW INSTALLATION	46,311	499	\$110.54
20231367	8/8/2023	B - Solar Panels	2708 LEGACY PL	GREEN LIGHT SOLAR	NEW INSTALLATION	23,939	72	\$29.50
20231417	8/16/2023	B - Storm Shelter	5 HARDESTY DR	FIRESTORM SEPTICS AND SHELTERS	STORM SHELTER / OUTDOOR	0	0	\$29.50
20231402	8/14/2023	B - Storm Shelter	1901 GLENBROOK DR	OKLAHOMA SHELTERS	IN GARAGE STORM SHELTER	0	0	\$29.50
20231376	8/9/2023	B - Storm Shelter	1116 ADELINE DR	JOSEPH & DELORES THIERRY	NEW INSTALLATION	3,500	32	\$29.50
20231329	8/1/2023	B - Storm Shelter	2500 SUTTON CT	JON LARSH	NEW INSTALLATION	4,400	35	\$29.50
20231521	8/31/2023	E - Electrical	2128 N DOROTHY AVE	RODGERS ELECTRIC	METER RESTORE	0	0	\$54.50
20231514	8/30/2023	E - Electrical	5 SHAMROCK CIR	ALEX ELECTRIC	NEW SERVICE	0	0	\$54.50
20231507	8/29/2023	E - Electrical	2505 WINGED FOOT WAY	ABOVE ALL ELECTRICAL SOLUTIONS LLC	NEW SERVICE	0	0	\$54.50
20231506	8/29/2023	E - Electrical	1602 N LOUISA	ROLLERS ELECTRIC	METER RESET	0	0	\$54.50
20231501	8/29/2023	E - Electrical	1307 E WALLACE ST	AG SOLAR	PANEL CHANGE OUT	0	0	\$54.50
20231499	8/29/2023	E - Electrical	2202 N AIRPORT DR	RETHFORD ELECTRIC	REPAIR SERVICE	0	0	
20231498	8/29/2023	E - Electrical	2202 N AIRPORT DR	RETHFORD ELECTRIC	REPAIR SERVICE	0	0	
20231491	8/25/2023	E - Electrical	520 N BEARD AVE	AVVIO SERVICES LLC	NEW INSTALLATION	0	0	\$54.50
20231490	8/25/2023	E - Electrical	813 S PHILADELPHIA	24/7 ELECTRICAL SERVICES & REPAIRS LLC	TEMPORARY POLE	0	0	\$54.50
20231489	8/25/2023	E - Electrical	613 W DILL	eck electric	TEMP POLE/ 200 AMP SERVICE	0	0	\$79.50
20231485	8/25/2023	E - Electrical	903 W 39TH ST	OMEGA POWER COMPANY	METER RESET	0	0	\$54.50

20231482	8/24/2023	E - Electrical	3306 N KICKAPOO	SELECT SERVICE ELECTRIC	MIECELLANEOUS WIRING	0	0	\$54.50
20231478	8/24/2023	E - Electrical	4737 N KICKAPOO	C FORD ELECTRIC	REPIR/REPLACE LIGHTING	0	0	\$54.50
20231467	8/23/2023	E - Electrical	1301 N KENNEDY	AAE ELECTRIC INC	STORM REPAIR	0	0	\$54.50
20231456	8/21/2023	E - Electrical	417 N MEAD AVE	RED RIVER ELECTRIC	REMODEL	0	0	\$54.50
20231438	8/18/2023	E - Electrical	67 GRANADA	RED BONE ELECTRICAL CONSTRUCTORS	NEW INSTALLATION	0	0	\$54.50
20231432	8/18/2023	E - Electrical	4795 N HARRISON AVE	ALL BOLT ELECTRIC	FINISH OUT	0	0	\$54.50
20231425	8/17/2023	E - Electrical	717 W WOOD	NIVO SOLAR	NEW SERVICE 200 AMP	0	0	\$104.50
20231421	8/16/2023	E - Electrical	101 N PHILADELPHIA AVE	GNC ELECTRICAL ENTERPRISES LLC	disconnect hard wired tables / install 7 tr duplex receipts	0	0	\$54.50
20231420	8/16/2023	E - Electrical	323 W 32ND ST.	M3 ELECTRIC LLC	REMODEL	0	0	\$54.50
20231412	8/16/2023	E - Electrical	2003 N TUCKER	SOLAR POWER OF OKLAHOMA	NEW INSTALLATION	0	0	\$54.50
20231409	8/16/2023	E - Electrical	749 E INDEPENDENCE	JOHNSON ELECTRIC LLC	200 AMP SERVICE	0	0	\$54.50
20231395	8/14/2023	E - Electrical	317 N PHILADELPHIA	AMERICAN AIR CONDITIONING AND HEATING INC	REPAIR MAST	0	0	\$54.50
20231393	8/14/2023	E - Electrical	1830 N BEARD AVE	MARSH ELECTRIC LLC	NEW SERVICE #B	0	0	\$154.50
20231390	8/11/2023	E - Electrical	491 HARDESTY DR	SOLAR POWER OF OKLAHOMA	NEW INSTALLATION	0	0	\$54.50
20231386	8/10/2023	E - Electrical	3303 N HARRISON	MARSH ELECTRIC LLC	NEW SERVICE	0	0	\$54.50
20231370	8/9/2023	E - Electrical	1510 N PARK	VOLT ELECTRIC LLC	REMODEL	0	0	\$54.50
20231368	8/8/2023	E - Electrical	2708 LEGACY PL	GREEN LIGHT SOLAR	NEW INSTALLATION	23,939	72	\$54.50
20231361	8/8/2023	E - Electrical	2404 WHISPERING PINE BLVD	LARRISON ELECTRIC	NEW INSTALLATION	0	0	\$54.50
20231356	8/8/2023	E - Electrical	2403 OVAL DR	JESSE LEWIS INC	REMODEL	0	0	\$54.50
20231353	8/7/2023	E - Electrical	27 W CHICAGO	RODGERS ELECTRIC	SERVICE AND REWIRE	0	0	\$104.50
20231349	8/7/2023	E - Electrical	40601 WOLVERINE RD	WILSON ELECTRIC	NEW SERVICE	0	0	\$54.50

20231342	8/4/2023	E - Electrical	1820 N PARK	CREED SOLAR LLC	REMODEL / NEW SERVICE	0	0	\$104.50
20231341	8/4/2023	E - Electrical	2826 N KICKAPOO	BUILDING ELECTRICAL SYSTEMS, INC	NEW SERVICE	0	0	\$54.50
20231326	8/1/2023	E - Electrical	420 S AYDELOTTE AVE	ALL PHASE ELECTRIC INC	Bonding for csst gas pipe	0	0	\$54.50
20231453	8/21/2023	F - Burn	324 E 40TH ST	KYLE WIGGINS	FIRE	0	0	\$29.50
20231407	8/16/2023	F - Burn	806 S POTTENGER AVE	KEITH BONNER	BURN PERMIT	0	0	\$29.50
20231330	8/1/2023	F - Burn	2205 COPPER CREEK LN	KEVIN HANNA	BURN PERMIT	0	0	\$29.50
20231426	8/17/2023	F - Carnival / Fair	2110 W INDEPENDENCE ST	POTT COUNTY FREE FAIR	POTT COUNTY FREE FAIR	0	0	\$54.50
20231362	8/8/2023	F - Carnival / Fair	2600 N HARRISON	ENGAGE FREE CLINIC	EXHIBIT / TRADE SHOW	0	0	\$54.50
20231399	8/14/2023	F - Fire Alarm / Smoke Control System	2323 N HARRISON AVE	LYON SECURITY	NEW INSTALLATION	0	0	\$104.50
20231369	8/9/2023	F - Fire Alarm / Smoke Control System	2505 OVAL DR	STYKER INTEGRATED SOLUTIONS	NEW INSTALLATION	0	37,866	\$861.82
20231523	8/31/2023	M - Mechanical	704 W AYRE PARRKING LOT	ANYTIME SEPTIC & HVAC	CHANGE OUT	0	0	\$904.50
20231522	8/31/2023	M - Mechanical	702 W AYRE PARRKING LOT	ANYTIME SEPTIC & HVAC	CHANGE OUT	0	0	\$224.50
20231520	8/31/2023	M - Mechanical	321 N MCKINLEY	BRATCHER ENTERPRISES	CHANGE OUT	0	0	\$64.50
20231519	8/31/2023	M - Mechanical	126 N BROADWAY	LOVES HVAC	NEW INSTALLATION	0	0	\$104.50
20231517	8/30/2023	M - Mechanical	314 W MACARTHUR ST	A/C DOCTORS	24.5 change out	0	0	\$494.50
20231515	8/30/2023	M - Mechanical	225 E MACARTHUR	Key & Sons	change out	0	0	\$454.50
20231510	8/30/2023	M - Mechanical	1600 N KICKAPOO AVE	M73 MECHANICAL	CHANGE OUT	0	0	\$204.50
20231488	8/25/2023	M - Mechanical	1016 N CHAPMAN AVE	TRADEPROS LLC	CHANGE OUT	0	0	
20231475	8/24/2023	M -	4501 N	AC DOCTORS	CONDENSOR	0	0	\$84.50

		Mechanical	KICKAPOO AVE		CHANGE OUT			
20231468	8/23/2023	M - Mechanical	4737 N KICKAPOO	SOONER HVAC INC	CHANGE OUT	0	0	\$1,264.50
20231465	8/23/2023	M - Mechanical	2524 N HARRISON AVE LOT 80	AIR COMFORT SOLUTIONS	CHANGE OUT	0	0	\$54.50
20231448	8/18/2023	M - Mechanical	1510 N KICKAPOO	SOLACE AIR, LLC	CHANGE OUT	0	0	\$474.50
20231447	8/18/2023	M - Mechanical	1510 N KICKAPOO SUITE 7&8	SOLACE AIR, LLC	CHANGE OUT	0	0	\$84.50
20231446	8/18/2023	M - Mechanical	1510 N KICKAPOO SUITE 6	SOLACE AIR, LLC	CHANGE OUT	0	0	\$84.50
20231445	8/18/2023	M - Mechanical	1510 N KICKAPOO SUITE 5	SOLACE AIR, LLC	CHANGE OUT	0	0	\$84.50
20231444	8/18/2023	M - Mechanical	1510 N KICKAPOO SUITE 4	SOLACE AIR, LLC	CHANGE OUT	0	0	\$84.50
20231443	8/18/2023	M - Mechanical	1510 N KICKAPOO SUITE 3	SOLACE AIR, LLC	CHANGE OUT	0	0	\$84.50
20231442	8/18/2023	M - Mechanical	1510 N KICKAPOO SUITE 2	SOLACE AIR, LLC	CHANGE OUT	0	0	\$84.50
20231441	8/18/2023	M - Mechanical	1510 N KICKAPOO	SOLACE AIR, LLC	CHANGE OUT	0	0	\$184.50
20231440	8/18/2023	M - Mechanical	600 W INDEPENDENCE ST 1100	SOLACE AIR, LLC	CHANGE OUT	0	0	\$154.50
20231439	8/18/2023	M - Mechanical	600 W INDEPENDENCE ST 1000	SOLACE AIR, LLC	CHANGE OUT	0	0	\$84.50
20231428	8/17/2023	M - Mechanical	1316 INVERNESS CIR	SPARKS HEAT & AIR	CHANGE OUT	0	0	\$64.50
20231427	8/17/2023	M - Mechanical	1911 N KICKAPOO	A-TEAM HTG & COOLING	14 TONS	0	0	\$284.50
20231373	8/9/2023	M - Mechanical	601 N BROADWAY #9	SPARKS HEAT & AIR INC	CHANGE OUT	0	0	\$104.50
20231363	8/8/2023	M - Mechanical	323 W 32ND ST.	DAVIS AIR & HEAT	CHANGE OUT	0	0	\$64.50
20231339	8/4/2023	M - Mechanical	1817 N PARK	AIRCO SERIVCE	CHANGE OUT	0	0	\$84.50
20231335	8/3/2023	M - Mechanical	941 N UNION	EMI	CHANGE OUT	0	0	\$84.50
20231309	8/1/2023	M -	136 N CENTER	ADVENT	CHANGE OUT	0	0	\$64.50

		Mechanical	AVE	MECHANICAL				
20231449	8/18/2023	O - Curb Cut, Driveway and Sidewalk	909 JEFFERSON PL	TRIPLE E CONCRETE	CURB CUT	0	0	\$50.00
20231377	8/9/2023	O - Curb Cut, Driveway and Sidewalk	912 E 10TH	OUTLAND OK OFFICE BUILDING LLC	NEW INSTALLATION	0	0	\$50.00
20231512	8/30/2023	O - Demolition and Moving	2232 N BONITA AVE	MIDWEST WRECKING CO	DEMOLITION	0	0	
20231511	8/30/2023	O - Demolition and Moving	430 W MACARTHUR ST	MIDWEST WRECKING CO	DEMOLITION	0	0	
20231505	8/29/2023	O - Demolition and Moving	9 W MAIN	TOTAL DEMOLITION SERVICES, LLC	CITY PROJECT	0	0	
20231504	8/29/2023	O - Demolition and Moving	7 W MAIN	TOTAL DEMOLITION SERVICES, LLC	CITY PROJECT	0	0	
20231503	8/29/2023	O - Demolition and Moving	1 W MAIN	TOTAL DEMOLITION SERVICES	CITY PROJECT	0	0	
20231481	8/24/2023	O - Demolition and Moving	3831 N KICKAPOO AVE	M & M WRECKING, INC	DEMOLITION	0	0	\$50.00
20231454	8/21/2023	O - Demolition and Moving	1510 E 7TH ST	KW SERVICES LLC	DEMOLITION	0	0	\$50.00
20231437	8/18/2023	O - Demolition and Moving	1029 W MIDLAND	MIDWEST WRECKING CO	DEMOLITION	0	0	
20231436	8/18/2023	O - Demolition and Moving	623 W MIDLAND	MIDWEST WRECKING CO	DEMOLITION	0	0	
20231435	8/18/2023	O - Demolition and Moving	2229 N IONE	MIDWEST WRECKING CO	DEMOLITION	0	0	
20231434	8/18/2023	O - Demolition and Moving	1031 W FRANKLIN	MIDWEST WRECKING CO	DEMOLITION	0	0	
20231433	8/18/2023	O - Demolition and Moving	2228 N AYDELOTTE	MIDWEST WRECKING CO	DEMOLITION	0	0	
20231404	8/15/2023	O -	2001 N	GIL CRAFT	DEMOLITION	0	0	\$50.00

		Demolition and Moving	DOROTHY	CONSTRUCTION INC dba BRYAN LEE BUILDS				
20231396	8/14/2023	O - Demolition and Moving	1218 E ADA ST	WADES SERVICES	DEMOLITION	0	0	
20231355	8/8/2023	O - Demolition and Moving	217 W MIDLAND	WADES SERVICES	DEMOLITION	0	0	\$50.00
20231352	8/7/2023	O - Demolition and Moving	3901 N KICKAPOO	MEIER AND SON DEMOLITION, LLC	DEMOLITION - CLUBHOUSE	0	0	
20231351	8/7/2023	O - Demolition and Moving	1302 N PARK	MEIER AND SON DEMOLITION, LLC	DEMOLITION	0	0	
20231350	8/7/2023	O - Demolition and Moving	2005 N BONITA	MEIER AND SON DEMOLITION, LLC	DEMOLITION	0	0	
20231337	8/4/2023	O - Demolition and Moving	310 W 37TH ST	NEAL'S LAWN SERVICE LLC	DEMOLITION	0	0	\$100.00
20231334	8/3/2023	O - Demolition and Moving	11 TAWANA	SEBASTIAN HOME CONSTRUCTION LLC	DEMOLITION	0	0	
20231450	8/18/2023	O - Land Disturbance	4731 N UNION			0	0	
20231405	8/15/2023	O - Land Disturbance	8032 INDUSTRIAL DR	APOLLO BUILDING SYSTEMS, INC	NEW CONSTRUCTION	0	0	
20231527	8/31/2023	O - Paving Cut and Boring	1406 MADISON AVE	TSU 1	NO CHARGE / FOR ONG	0	0	
20231526	8/31/2023	O - Paving Cut and Boring	1404 MADISON AVE	TSU 1	NO CHARGE / FOR ONG	0	0	
20231525	8/31/2023	O - Paving Cut and Boring	1402 MADISON AVE	TSU 1	NO CHARGE / FOR ONG	0	0	
20231466	8/23/2023	O - Paving Cut and Boring		B&H CONSTRUCTION	W DEWEY AVE&N BEARD AVE - FOR ONG	0	0	
20231388	8/11/2023	O - Paving Cut and Boring	101 N UNION	COX COMMUNICATIONS	ROAD BORE	0	0	
20231336	8/3/2023	O - Paving Cut and Boring	116 N BRYAN	OM3 CONSTRUCTION LLC	ROAD BORE	0	0	\$60.00
20231500	8/29/2023	O - Sign	4901 N	METRO SIGN	REPLACE	60.000	570	

			KICKAPOO	CORPORATION	EXISTING			
20231464	8/24/2023	O - Sign	3703 N KICKAPOO AVE	A-MAX SIGNS CO., INC	REPLACE / MOVE	4,000	37	
20231375	8/9/2023	O - Sign	4439 N KICKAPOO AVE Suites	MIDWEST SIGNS	NEW INSTALLATION	80,000	192	
20231345	8/7/2023	O - Sign	410 E MAIN ST	SIGN FACTORY LLC	NEW INSTALLATION	300	33	\$50.00
20231340	8/4/2023	O - Sign	2615 N KICKAPOO	BRAUM'S	FEATHER SIGN	50	0	\$50.00
20231332	8/2/2023	O - Sign	100 E HIGHLAND	J&B GRAPHICS	NEW INSTALLATION	0	0	
20231518	8/31/2023	P - Plumbing	1809 E MAIN	DALE'S PLUMBING	REPAIR / REPLACE	0	0	\$54.50
20231509	8/30/2023	P - Plumbing	1603 N PENNSYLVANIA	STANLEY PLUMBING SERVICES	RESET - ONG	0	0	
20231508	8/30/2023	P - Plumbing	303 W GEORGIA	JIMMY B QUICK	REPIPE	0	0	\$54.50
20231492	8/28/2023	P - Plumbing	2505 WINGED FOOT WAY	COLE PLUMBING	NEW CONSTRUCTION	0	0	\$54.50
20231484	8/25/2023	P - Plumbing	1936 N BEARD AVE	MOORE WATER & AIR TREATMENT	MISCELLANEOUS	0	0	\$54.50
20231476	8/24/2023	P - Plumbing	4014 N AYDELOTTE AVE	DALES PLUMBING	WATER SERVICE	0	0	\$54.50
20231463	8/22/2023	P - Plumbing	1728 N BEARD AVE	MOORE WATER & AIR TREATMENT	MISCELLANEOUS	0	0	\$54.50
20231461	8/22/2023	P - Plumbing	601 N BEARD	FREDDIE'S PLUMBING & HEATING	REMODEL	0	0	\$54.50
20231460	8/22/2023	P - Plumbing	4795 N HARRISON AVE	SISSONS PLUMBING INC	FINISH OUT	0	0	\$54.50
20231459	8/22/2023	P - Plumbing	5 SENECA DR	JEAN'S PLUMBING, HEAT & AIR	SEWER TAP	0	0	\$379.50
20231457	8/21/2023	P - Plumbing	117 MEADOWS	JIMMY'S PLUMBING	GAS LINE	0	0	\$54.50
20231455	8/21/2023	P - Plumbing	1627 N MARKET	HARDIN'S FAMILY PLUMBING LLC	REPAIR / REPLACE	0	0	\$54.50
20231451	8/18/2023	P - Plumbing	323 W 32ND ST.	COMPLETE PLUMBING	GAS PRESSURE TEST/plumbing misc work	0	0	\$54.50
20231431	8/18/2023	P - Plumbing	2301 BENT TREE RD	RED PLAINS PLUMBING	REMODEL	0	0	\$54.50
20231430	8/18/2023	P - Plumbing	2201 E MAIN	VETERAN PLUMINGT	CHANGE OUT	0	0	\$54.50

				SERVICES LLC				
20231429	8/18/2023	P - Plumbing	40607 WOLVERINE RD	VETERAN PLUMINGT SERVICES LLC	CHANGE OUT	0	0	\$54.50
20231418	8/16/2023	P - Plumbing	4401 N CHAPMAN	DALE'S PLUMBING	REPAIR / REPLACE	0	0	\$54.50
20231410	8/16/2023	P - Plumbing	4737 N KICKAPOO	NEXGEN PLUMBING, LLP	GAS LINE EXTENSION	0	0	\$54.50
20231403	8/15/2023	P - Plumbing	2505 OVAL DR	JKB MECHANICAL	WATER TAP	0	0	\$454.50
20231401	8/14/2023	P - Plumbing	720 E SEYMOUR ST	CS PLUMBING	GAS LINE	0	0	\$54.50
20231400	8/14/2023	P - Plumbing	575 DALEY LN	CS PLUMBING	MOVE ON	0	0	\$54.50
20231394	8/14/2023	P - Plumbing	67 GRANADA	STANFIELD PLUMBING LLC	GAS LINE EXTENSION	0	0	\$54.50
20231385	8/10/2023	P - Plumbing	49 TIMBER CREEK DR	MOORE WATER TREATMENT	NEW INSTALLATION	0	0	\$54.50
20231383	8/10/2023	P - Plumbing	27 MOJAVE DR	DALE'S PLUMBING	REPAIR / REPLACE	0	0	\$54.50
20231382	8/10/2023	P - Plumbing	4308 ERIC DR	BRANDONS PLUMBING	GAS METER REHANG	0	0	
20231378	8/9/2023	P - Plumbing	1601 N TUCKER	SCHULER	REPLACE EXISTING	0	0	\$54.50
20231366	8/8/2023	P - Plumbing	218 S PENNSYLVANIA	VETERAN PLUMBING SERVICES LLC	REPLACEMENT	0	0	\$54.50
20231365	8/8/2023	P - Plumbing	1901 E MAIN	DALE'S PLUMBING	GAS LINE	0	0	\$54.50
20231360	8/8/2023	P - Plumbing	1906 N LOUISA AVE	DALE'S PLUMBING	GAS LINE	0	0	\$54.50
20231359	8/8/2023	P - Plumbing	1115 E ALICE	MOORE WATER & AIR TREATMENT		0	0	\$54.50
20231358	8/8/2023	P - Plumbing	2404 WHISPERING PINE BLVD	LIBERTY PLUMBING & GAS	GAS LINE EXTENTION	0	0	\$54.50
20231344	8/7/2023	P - Plumbing	420 S AYDELOTTE AVE	STANFIELD PLUMBING	NEW INSTALLATION	0	0	\$54.50
20231338	8/4/2023	P - Plumbing	1817 N PARK	AIRCO SERIVCE	CHANGE OUT	0	0	\$54.50
20231331	8/2/2023	P - Plumbing	322 S PENNSYLVANIA	COMPLETE PLUMBING	GAS TO GENERATOR	0	0	\$54.50
20231328	8/1/2023	P - Plumbing	1615 N UNION	DALES PLUMBING	WATER SERVICE	0	0	\$54.50
								\$45,436.88

Total Records: 196

9/1/2023

Community
Development
Department



222 N Broadway
Shawnee, OK 74801
405-878-1666
cosinspections@shawneeok.org

Shawnee Twin Lakes Cabin Site Leases Summary Report – For Renewals & Transfers

Date: 9.18.2023	License No.: 6019
Type:	☐ Renewal ☒ Transfer
Commission Meeting Date:	9.18.2023
Property Address	15403 Perry Rd
Lake Site Location	Coffman Tract Lot 3
Lease Dates	9.18.2023 - 9.17.2053
Lease Fee	\$776.00
Inspection Fee	\$75.00 Applicable: ☒ Yes ☐ No
Lessee (Transfer To)	
Name(s)	Sue & Jimmy Sigman
Address	10340 SE 19th St, Midwest City, OK 73130
Email	jim.sigman59@gmail.com
Phone	405.414.0215
Current Lessee (Transfer From)	
Name(s)	Charles Moore & Sue Sigman
Address	15403 Perry Rd, Shawnee, OK 74801
Email	
Phone	
Inspection Information	
Inspection Required	☒ Yes ☐ No
DEQ Report on File	☒ Yes ☐ No
Type of Septic	☐ Conventional ☒ Aerobic
Last Inspected / Pumped	12.29.2021
Miscellaneous Comments	Lease Fee \$776.00 Inspection Fee \$75.00 Transfer Fee \$1000.00
Fees Collected	\$1851.00 / ck 9869



Cabin Site Lease

PLEASE READ CAREFULLY

THIS LEASE IS NOT TRANSFERABLE AND IS SUBJECT TO CANCELLATION BY THE CITY FOR ANY VIOLATIONS OF THE TERMS THEREOF AS MORE SPECIFICALLY SET FORTH IN SECTION 16-326 OF THE SHAWNEE MUNICIPAL CODE:

LEASE # 6019 **TRACT NAME** Coffman **LOT #** 3

STATE OF OKLAHOMA, POTTAWATOMIE COUNTY, SS:

This Lease was made and entered into in duplicate this date of 09/18/2023 by and between the CITY OF SHAWNEE, a municipal Corporation, PARTY OF THE FIRST PART, and

SUE & JIMMY SIGMAN,
10340 SE 19TH ST
MIDWEST CITY, OK 73130

PARTY OF THE SECOND PART.

WITNESSETH: That the first party in consideration of the sum of **\$776.00** dollars for **2023**, does hereby acknowledge receipt of the applicable rental fee, and other good and valuable considerations, does by these presents demise, lease and let unto the second party the following described real estate situated on, and part of the site, owned by the first party as a City Reservoir and known as Shawnee Twin lake No. 1, in the County of Pottawatomie State of Oklahoma, to-wit:

15403 PERRY RD

TO HAVE AND TO HOLD SAME UNTO the second party for a term of thirty (30) years from the date hereof.

IT IS FURTHER mutually understood and agreed by and between the parties hereto as follows:

The said party of the second part shall and will and does hereby agree to pay to the first party annual lease payments as set forth in "Exhibit A", payable yearly in advance. The City shall retain the right to adjust the lease rate schedule at the termination of the original 30-year lease or at such time that a transfer is approved in accordance with Section 16-321 of the Shawnee Municipal Code (hereafter "SMC").

That at the expiration of the primary term hereof, the lessee shall have the right and option to renew said lease for an additional period of thirty (30) years under the terms and conditions set forth in Section 16-321 SMC. There is no limit to the number of times a lease can be renewed.

The premises of all lots leased by the City shall at all times be kept clean and maintained in a sanitary condition by the lessee. There is a 25-foot lakeshore buffer that extends landward of the ordinary high water mark on all leased lots for the purpose of watershed protection. This area shall not be used by the general public, except during an emergency situation. Within this buffer, leaseholders are encouraged to preserve existing native vegetation. Docks and other approved structures may be located within the buffer area. Fertilizers and other chemicals shall not be used within the buffer area. All other applicable City regulations and rules apply.

That in addition to the possession of the property so leased, the lessee shall have the right and privilege of a site for a boat house and boat dock on the land owned by the City adjoining and immediately in front of a lot leased, which said boat house shall be erected and maintained by and at the cost of the lessee on ground not to

an area of thirty (30) feet by thirty (30) feet, which said boat house shall never be used as a place of human habitation, and which said boat house or boat dock shall conform to the provisions of Section 16-325 SMC, and that said boat dock or boat house shall be the private property of the lessee, who shall have the right of ingress and egress to and from the same, subject to the rights of the public as set forth herein. The lessee shall agree to keep said lot and boat house and dock in a clean and sanitary condition, and to maintain the same in a safe condition, and the City as lessor shall in no manner be liable to lessee for any damages suffered by lessee to said lot or boat house or dock, or the improvements thereon on account of the rise and fall of the water line of said lake, or for the enlargement or decrease by the City of the size of said lake, or on account of any rules or regulation that may hereafter be adopted by lessor, governing the regulations of said lake, and lessee agrees to hold the lessor free and harmless from all damages suffered by him or by any other person, on account of personal injuries or loss of property that may incur upon said lot, boat house, or boat dock.

That the lessee agrees to lease the premises **AS IS** from the lessor with the knowledge and understanding that the lessor does not guarantee access to lots. Should the Lessee determine that an access road is necessary to reach his/her lot from a road already in existence, lessee agrees to use his/her own funds to create said access road. Lessee further agrees that upon access road completion it shall not be a private road, but rather, will be available for public use, including, but not limited to, allowing neighbor lots to connect to it to improve access to their lots or to allow joint access to bordering lots upon the one access road. The location of any access road to be constructed by the lessee must be approved by the City Engineer of the City of Shawnee prior to the beginning of construction.

That should the lessee construct any building or other structure, said construction will be in accordance with City of Shawnee development regulations. Lessee agrees that prior to commencing construction on any structure on the leased premises he/she will obtain an approved building permit from the City.

That lessee is solely responsible for determining the flood elevation on the leased premises and is required to satisfy lessor that prior to any construction on the leased premises the determination of the flood elevation has been done correctly and that any structure or building to be constructed on the leased premises be above the flood elevation. **LESSOR EXPRESSLY MAKES NO WARRANTIES OR REPRESENTATIONS AS TO SAFETY FROM FLOODING ON THE LEASED PREMISES AND LESSEE EXPRESSLY RELEASES THE LESSOR FROM ANY LIABILITY DUE TO FLOOD DAMAGE, BOTH PERSONAL AND PROPERTY, OCCURRING ON THE LEASED PREMISES FROM ANY CAUSE OR CONDITION.**

That all sanitary facilities to be constructed on the premises shall be wholly contained on the leased premises. Sanitary facilities, include, but are not limited to, septic tanks and lateral lines.

All septic systems and waste disposal systems on leased lake lots shall be inspected and subject to the standards set forth in Chapter 16 SMC. The leaseholder shall have sixty (60) days to correct any defects found in the system. Corrections not made within the allotted time shall be grounds for the City to cancel the lease of the leaseholder.

That no lease shall be assigned or sublet, but lessee may at any time during the term of his/her lease, sell and transfer to other parties the improvements on the lot leased by him/her.

That in the event of the sale of the improvements by the lessee, the transfer shall not become effective until approved by the Board of Commissioners of the City of Shawnee at a regular or adjourned meeting held for that purpose and the City as lessor reserves the right to reject and disapprove any transfer when in its opinion it would be to the best interests of the City and its inhabitants to do so. If the transfer is approved, a new lease shall be entered into between the purchaser and the City, and a transfer charge is hereby fixed and established in the sum of one-thousand dollars (\$1000.00) to be paid to the City prior to said transfer in accordance with Section 16-322 SMC.

That the lessee shall be the owner of all improvements which may be placed by him or her, said improvements including cabins or other buildings and boat houses constitute personal property and lessee shall have the right to remove same from the lot at the termination of the lease, subject to the following: whenever a lease has been cancelled by the City as provided herein or by ordinance, the lessee or owner of said improvements shall remove the same within sixty (60) days of the date of the said cancellation of the lease and upon failure to do so, said improvements shall revert to and become the property of the City of Shawnee. And it shall have the right, without further notice or demand to take immediate possession of all said improvements and these will belong to the first party or its assigns, as liquidated damages for the non-fulfillment of the lease by the lessee and for the use and rental thereof.

That the said second party does hereby release the City of Shawnee of any claim or claims for damages by reason of the cancellation of the said lease aforesaid.

That the second party shall at all times during the term of this lease be subject to and does hereby agree to abide by and conform to any rules, regulations or ordinances now in force, or that may hereafter be adopted by the City of Shawnee, governing the regulation of said lake and within the described premises, as to fishing, hunting, boating and other recreational activities upon and around said water reservoir, and to conform to and abide by all further rules, regulations and ordinances now in force, or that hereafter may be adopted by the City of Shawnee, Oklahoma, governing the regulations of said premises and lake.

The City Commission may upon a showing of intentional disregard for the terms of the lease and this division of other city ordinance pertaining to the lake, cancel the city lease upon 30 days notice to the lessee by mailing a copy of such notice to the lessee at his/her last known address. If a lease is cancelled either by the city or the lessee of a city-owned lot prior to the expiration of the lease term, the lessee shall pay the city an early termination fee of \$1,000 in exchange for a release of liability from the remaining term.

That this lease shall be binding upon the representatives, heirs, and assigns and successors in interest of the parties hereto.

It is understood by the parties hereto that a failure to comply with the terms of said Cabin Site Lease shall constitute a misdemeanor and any person, firm, or corporation convicted of such violation shall be punished by a fine not exceeding five hundred dollars (\$500.00) plus costs, or imprisonment for a term not exceeding thirty (30) days, or by such fine and imprisonment.

IN WITNESS WHEREOF, party of the first part has caused its name to be affixed hereto by the Mayor of the City of Shawnee, Oklahoma, and attested by the City Clerk, and the party of the second part hereunto affixed his/her name the day and year first above written.

CITY OF SHAWNEE, OKLAHOMA
A Municipal Corporation,

BY:

MAYOR
PARTY OF THE FIRST PART

ATTEST:

CITY CLERK

Joe Sigman
PARTY OF THE SECOND PART

Joe Sigman
PARTY OF THE SECOND PART

Shawnee Twin Lakes Cabin Site Leases Summary Report – For Renewals & Transfers

Date: 9.18.2023	License No.: 6034
Type:	☐ Renewal ☒ Transfer
Commission Meeting Date:	9.18.2023
Property Address	33402 Post Office Neck
Lake Site Location	Belcher Tract Lot 19
Lease Dates	9.18.2023 - 9.17.2053
Lease Fee	\$776.00
Inspection Fee	\$75.00 Applicable: ☒ Yes ☐ No
Lessee (Transfer To)	
Name(s)	The DM Revocable Trust Dated March 3, 2020
Address	1530 N Harrison #225, Shawnee, OK 74804
Email	doyleshort62@gmail.com
Phone	405.973.5105
Current Lessee (Transfer From)	
Name(s)	Carol Kaye Hopkins
Address	33402 Post Office Neck, Shawnee, OK 74801
Email	
Phone	
Inspection Information	
Inspection Required	☒ Yes ☐ No
DEQ Report on File	☒ Yes ☐ No
Type of Septic	☒ Conventional ☐ Aerobic
Last Inspected / Pumped	9.21.2018
Miscellaneous Comments	Transfer Fee - \$500.00 - Kaye Transfer Fee - \$500.00 - Timothy Inspection Fee - \$75.00 - Timothy Lease Fee - \$776.00
Fees Collected	\$1851.00 Rec #2555



Cabin Site Lease

PLEASE READ CAREFULLY

THIS LEASE IS NOT TRANSFERABLE AND IS SUBJECT TO CANCELLATION BY THE CITY FOR ANY VIOLATIONS OF THE TERMS THEREOF AS MORE SPECIFICALLY SET FORTH IN SECTION 16-326 OF THE SHAWNEE MUNICIPAL CODE:

LEASE #6034 **TRACT NAME** Belcher **LOT #** 19

STATE OF OKLAHOMA, POTTAWATOMIE COUNTY, SS:

This Lease was made and entered into in duplicate this date of 09/18/2023 by and between the CITY OF SHAWNEE, a municipal Corporation, PARTY OF THE FIRST PART, and

THE DM REVOCABLE TRUST DATED MARCH 3, 2020,
1530 N HARRISON #225
SHAWNEE, OK 74804

PARTY OF THE SECOND PART.

WITNESSETH: That the first party in consideration of the sum of \$776.00 dollars for 2023, does hereby acknowledge receipt of the applicable rental fee, and other good and valuable considerations, does by these presents demise, lease and let unto the second party the following described real estate situated on, and part of the site, owned by the first party as a City Reservoir and known as Shawnee Twin lake No. 1, in the County of Pottawatomie State of Oklahoma, to-wit:

33402 POST OFFICE NECK

TO HAVE AND TO HOLD SAME UNTO the second party for a term of thirty (30) years from the date hereof.

IT IS FURTHER mutually understood and agreed by and between the parties hereto as follows:

The said party of the second part shall and will and does hereby agree to pay to the first party annual lease payments as set forth in "Exhibit A", payable yearly in advance. The City shall retain the right to adjust the lease rate schedule at the termination of the original 30-year lease or at such time that a transfer is approved in accordance with Section 16-321 of the Shawnee Municipal Code (hereafter "SMC").

That at the expiration of the primary term hereof, the lessee shall have the right and option to renew said lease for an additional period of thirty (30) years under the terms and conditions set forth in Section 16-321 SMC. There is no limit to the number of times a lease can be renewed.

The premises of all lots leased by the City shall at all times be kept clean and maintained in a sanitary condition by the lessee. There is a 25-foot lakeshore buffer that extends landward of the ordinary high water mark on all leased lots for the purpose of watershed protection. This area shall not be used by the general public, except during an emergency situation. Within this buffer, leaseholders are encouraged to preserve existing native vegetation. Docks and other approved structures may be located within the buffer area. Fertilizers and other chemicals shall not be used within the buffer area. All other applicable City regulations and rules apply.

That in addition to the possession of the property so leased, the lessee shall have the right and privilege of a site for a boat house and boat dock on the land owned by the City adjoining and immediately in front of a lot leased, which said boat house shall be erected and maintained by and at the cost of the lessee on ground not to exceed

an area of thirty (30) feet by thirty (30) feet, which said boat house shall never be used as a place of human habitation, and which said boat house or boat dock shall conform to the provisions of Section 16-325 SMC, and that said boat dock or boat house shall be the private property of the lessee, who shall have the right of ingress and egress to and from the same, subject to the rights of the public as set forth herein. The lessee shall agree to keep said lot and boat house and dock in a clean and sanitary condition, and to maintain the same in a safe condition, and the City as lessor shall in no manner be liable to lessee for any damages suffered by lessee to said lot or boat house or dock, or the improvements thereon on account of the rise and fall of the water line of said lake, or for the enlargement or decrease by the City of the size of said lake, or on account of any rules or regulation that may hereafter be adopted by lessor, governing the regulations of said lake, and lessee agrees to hold the lessor free and harmless from all damages suffered by him or by any other person, on account of personal injuries or loss of property that may incur upon said lot, boat house, or boat dock.

That the lessee agrees to lease the premises **AS IS** from the lessor with the knowledge and understanding that the lessor does not guarantee access to lots. Should the Lessee determine that an access road is necessary to reach his/her lot from a road already in existence, lessee agrees to use his/her own funds to create said access road. Lessee further agrees that upon access road completion it shall not be a private road, but rather, will be available for public use, including, but not limited to, allowing neighbor lots to connect to it to improve access to their lots or to allow joint access to bordering lots upon the one access road. The location of any access road to be constructed by the lessee must be approved by the City Engineer of the City of Shawnee prior to the beginning of construction.

That should the lessee construct any building or other structure, said construction will be in accordance with City of Shawnee development regulations. Lessee agrees that prior to commencing construction on any structure on the leased premises he/she will obtain an approved building permit from the City.

That lessee is solely responsible for determining the flood elevation on the leased premises and is required to satisfy lessor that prior to any construction on the leased premises the determination of the flood elevation has been done correctly and that any structure or building to be constructed on the leased premises be above the flood elevation. **LESSOR EXPRESSLY MAKES NO WARRANTIES OR REPRESENTATIONS AS TO SAFETY FROM FLOODING ON THE LEASED PREMISES AND LESSEE EXPRESSLY RELEASES THE LESSOR FROM ANY LIABILITY DUE TO FLOOD DAMAGE, BOTH PERSONAL AND PROPERTY, OCCURRING ON THE LEASED PREMISES FROM ANY CAUSE OR CONDITION.**

That all sanitary facilities to be constructed on the premises shall be wholly contained on the leased premises. Sanitary facilities, include, but are not limited to, septic tanks and lateral lines.

All septic systems and waste disposal systems on leased lake lots shall be inspected and subject to the standards set forth in Chapter 16 SMC. The leaseholder shall have sixty (60) days to correct any defects found in the system. Corrections not made within the allotted time shall be grounds for the City to cancel the lease of the leaseholder.

That no lease shall be assigned or sublet, but lessee may at any time during the term of his/her lease, sell and transfer to other parties the improvements on the lot leased by him/her.

That in the event of the sale of the improvements by the lessee, the transfer shall not become effective until approved by the Board of Commissioners of the City of Shawnee at a regular or adjourned meeting held for that purpose and the City as lessor reserves the right to reject and disapprove any transfer when in its opinion it would be to the best interests of the City and its inhabitants to do so. If the transfer is approved, a new lease shall be entered into between the purchaser and the City, and a transfer charge is hereby fixed and established in the sum of one-thousand dollars (\$1000.00) to be paid to the City prior to said transfer in accordance with Section 16-322 SMC.

That the lessee shall be the owner of all improvements which may be placed by him or her, said improvements including cabins or other buildings and boat houses constitute personal property and lessee shall have the right to remove same from the lot at the termination of the lease, subject to the following: whenever a lease has been cancelled by the City as provided herein or by ordinance, the lessee or owner of said improvements shall remove the same within sixty (60) days of the date of the said cancellation of the lease and upon failure to do so, said improvements shall revert to and become the property of the City of Shawnee. And it shall have the right, without further notice or demand to take immediate possession of all said improvements and these will belong to the first party or its assigns, as liquidated damages for the non-fulfillment of the lease by the lessee and for the use and rental thereof.

That the said second party does hereby release the City of Shawnee of any claim or claims for damages by reason of the cancellation of the said lease aforesaid.

That the second party shall at all times during the term of this lease be subject to and does hereby agree to abide by and conform to any rules, regulations or ordinances now in force, or that may hereafter be adopted by the City of Shawnee, governing the regulation of said lake and within the described premises, as to fishing, hunting, boating and other recreational activities upon and around said water reservoir, and to conform to and abide by all further rules, regulations and ordinances now in force, or that hereafter may be adopted by the City of Shawnee, Oklahoma, governing the regulations of said premises and lake.

The City Commission may upon a showing of intentional disregard for the terms of the lease and this division of other city ordinance pertaining to the lake, cancel the city lease upon 30 days notice to the lessee by mailing a copy of such notice to the lessee at his/her last known address. If a lease is cancelled either by the city or the lessee of a city-owned lot prior to the expiration of the lease term, the lessee shall pay the city an early termination fee of \$1,000 in exchange for a release of liability from the remaining term.

That this lease shall be binding upon the representatives, heirs, and assigns and successors in interest of the parties hereto.

It is understood by the parties hereto that a failure to comply with the terms of said Cabin Site Lease shall constitute a misdemeanor and any person, firm, or corporation convicted of such violation shall be punished by a fine not exceeding five hundred dollars (\$500.00) plus costs, or imprisonment for a term not exceeding thirty (30) days, or by such fine and imprisonment.

IN WITNESS WHEREOF, party of the first part has caused its name to be affixed hereto by the Mayor of the City of Shawnee, Oklahoma, and attested by the City Clerk, and the party of the second part hereunto affixed his/her name the day and year first above written.

CITY OF SHAWNEE, OKLAHOMA
A Municipal Corporation,

BY:

MAYOR
PARTY OF THE FIRST PART

ATTEST:

CITY CLERK



PARTY OF THE SECOND PART



PARTY OF THE SECOND PART

From: [Kacie Eck](#)
To: [Kacie Eck](#)
Subject: FW: [EXTERNAL EMAIL]Resignation
Date: Thursday, September 7, 2023 11:20:25 AM

From: Cody Smithson
Sent: Monday, August 21, 2023 9:48 AM
To: Bonnie Wilson
Subject: [EXTERNAL EMAIL]Resignation

"CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe."

Bonnie I wanted to email you to formally inform you of my decision to step down from the board. Thank you for the opportunity, and hope wish you all the best of luck in the future.

Very Respectfully,

Cody Smithson
President
Patriot Environmental LLC
(405)808-5900



APPLICATION TO SERVE
Boards, Committees and Commissions

- ☐ Appointment
☐ Reappointment – Partial/First/Second Term

Name: <u>Keith R Layne</u>	Application Date: <u>30 June 2023</u>
Address: <u>14127 SE 108th</u>	Date of Birth: <u>12 June 1966</u>
Mailing Address: <u>OKC, OK 73165</u>	
Daytime Phone: <u>405.627.9279</u> Fax: <u>n/a</u>	Email: <u>krlayne66@gmail.com</u>
Profession: <u>physician</u>	
Business Name: <u>n/a</u>	
Business Address: <u>n/a</u>	
Business Phone: <u>405.515.0330</u> Fax: <u>405.307.5662</u>	Email: <u>klayne@nrh-ok.com</u>

Do you live within the City Limits of the City of Shawnee? Yes ☐ No ☒

Do you currently serve on a City board, committee, or commission? Yes ☐ No ☒

If so, please list the board/committee: n/a

How many years have you lived in Shawnee? n/a

Select the Board/Committee/Commission you are interested in serving on: (please check)

☒ Airport Advisory Board	☐ Library Board
☐ Arts and Culture Commission	☐ Oklahoma Baptist University Trust Authority
☐ Beautification, Parks, and Recreation Committee	☐ Planning Commission
☐ Board of Adjustment (Zoning)	☐ Senior Citizens of Shawnee Board
☐ Civic and Cultural Development Authority	☐ Shawnee Hospital Authority
☐ Community Service Contract Review Committee	☐ Shawnee Urban Renewal Authority
☐ Housing Authority	☐ Other _____

Why are you interested in serving on the Board/Committee/Commission selected above?

As an active part of the airport community, I'd like to be more involved in helping it grow and prosper as it recovers from the tornado and evolves into its next iteration.

What will make you a good board member and what skills or knowledge do you have that would be relevant to this board/committee/commission?

I have a lifelong long of and involvement in aviation, from private to military to aeromedical. That combined with my experience in designing and building business facilities and recovering from tornado losses in the past give me a skill set that could help the team grow.

What civic or volunteer activities (if any) are you currently involved in?

I'm a member of the OK Air National Guard, where I serve in various leadership positions

List education, including degree(s) earned:

Bachelor of Science, Natural Suystems

Doctor of Osteopathic Medicine, working in Family Practice, Emergency Medicine, Military Medicine, Aviation Medical Examiner

Have you ever served on a City-appointed board/committee/commission before? If so, which ones and for how long did you serve?

n/a

Have you ever been charged and/or convicted of a felony? no

If so, please explain the circumstances and the current status of the charge(s) and/or conviction(s):

n/a

Have you ever declared personal or business bankruptcy? no

If so, please explain:

n/a

Please include up to three personal or professional references:

Name	Relationship	Telephone Number
Dr Tim Cathey	colleague	405.312.4321
Brian Herb	professional	405.408.6484
Tany Keck-Smith	professional	405.482.9665

PLEASE READ CAREFULLY:

Appointment by the Commission is for one term and individuals may not serve more than two consecutive full terms. Appointment to a second term remains at the discretion of the City Commission.

My signature affirms that all information contained herein is true to the best of my knowledge, and that I understand that any misstatement of fact or misrepresentation of credentials may result in disqualification from further consideration.

Signature 

Date 30 Jun 2023

Applications are retained on file for one (1) year. Applicants are encouraged to include a letter of interest with this application. Thank you for your interest in serving Shawnee.

Send completed application to:

Shawnee City Clerk
PO Box 1448
Shawnee OK 74802
Phone 405-878-1605
Fax 405-878-1581
CityClerk@shawneeok.org

AVEDIS FOUNDATION

August 22nd, 2023

City of Shawnee City Clerk
PO Box 1448
Shawnee, OK 74802

To whom it may concern,

My current Shawnee Hospital Authority term is set to expire on September 30th, 2023.
This letter shall act as my formal request to be reappointed and continue serving on the
Shawnee Hospital Authority Board.

Thank you,



Angi Mohr

We're here for
good.



APPLICATION TO SERVE
Boards, Committees and Commissions

☒ Appointment
☐ Reappointment – Partial/First/Second Term

Name: ANGI MOHR Application Date: 2/22/2022
 Address: 17702 Bethel Rd Date of Birth: 1-9-70
Shawnee OK 74801
 Mailing Address: _____
 Daytime Phone: 4054123240 Fax: _____ Email: angiomohr@ssmhealth.com
 Profession: Hospital President
 Business Name: SSM Health St Anthony Hospital - Shawnee
 Business Address: 1102 W Mac Arthur Shawnee 74801
 Business Phone: 4058188110 Fax: _____ Email: above

Do you live within the City Limits of the City of Shawnee? Yes ☐ No ☒

Do you currently serve on a City board, committee, or commission? Yes ☐ No ☒

If so, please list the board/committee: Pott Co

How many years have you lived in Shawnee? 30+ years

I've lived in Pott Co for 30+ years. To be qualified for SHA, must live within the hospital service area.

Select the Board/Committee/Commission you are interested in serving on: (please check)

☐ Airport Advisory Board	☐ Oklahoma Baptist University Trust Authority
☐ Arts and Culture Commission	☐ Parks and Recreation Committee
☐ Beautification Committee	☐ Planning Commission
☐ Board of Adjustment (Zoning)	☐ Senior Citizens of Shawnee Board
☐ Civic and Cultural Development Authority	☒ Shawnee Hospital Authority (SHA)
☐ Community Service Contract Review Committee	☐ Shawnee Urban Renewal Authority
☐ Housing Authority	☐ Traffic Commission
☐ Library Board	☐ Other _____

Revised March 2, 2021

Why are you interested in serving on the Board/Committee/Commission selected above?

as the hospital president I have a great interest
to serve on the Shawnee Hosp Authority.

What will make you a good board member and what skills or knowledge do you have that would be relevant to this board/committee/commission?

invested in this community, will be a priority
for me.

What civic or volunteer activities (if any) are you currently involved in?

List education, including degree(s) earned:

Bachelor's Science in Nursing, Masters in Management

Have you ever served on a City-appointed board/committee/commission before? If so, which ones and for how long did you serve?

NO

Have you ever been charged and/or convicted of a felony? NO

If so, please explain the circumstances and the current status of the charge(s) and/or conviction(s):

Have you ever declared personal or business bankruptcy? NO

If so, please explain:

Please include up to three personal or professional references:

Name	Relationship	Telephone Number
<u>Ruthy Lasters</u>	<u>CEO, Avedis</u>	<u>405 570-7264</u>
<u>Jill Spencer</u>	<u>President, Tecumseh FUB</u>	<u>405 432-9611</u>
<u>Josh Trimble</u>	<u>Friend, colleague</u>	<u>405 416-3431</u>

PLEASE READ CAREFULLY:

Appointment by the Commission is for one term and individuals may not serve more than two consecutive full terms. Appointment to a second term remains at the discretion of the City Commission.

My signature affirms that all information contained herein is true to the best of my knowledge, and that I understand that any misstatement of fact or misrepresentation of credentials may result in disqualification from further consideration.

Signature [Signature]

Date 2/22/2022

Revised March 2, 2021

Applications are retained on file for one (1) year. Applicants are encouraged to include a letter of interest with this application. Thank you for your interest in serving Shawnee.

Send completed application to:

Shawnee City Clerk
PO Box 1448
Shawnee OK 74802
Phone 405-878-1605
Fax 405-878-1581
CityClerk@shawneeok.org

Revised March 2, 2021

AVEDIS FOUNDATION

August 22nd, 2023

City of Shawnee City Clerk
PO Box 1448
Shawnee, OK 74802

To whom it may concern,

My current Shawnee Hospital Authority term is set to expire on September 30th, 2023.
This letter shall act as my formal request to be reappointed and continue serving on the
Shawnee Hospital Authority Board.

Thank you,



Tina Hanna

*We're here for
good.*



APPLICATION TO SERVE
Boards, Committees and Commissions

- ☐ Appointment
☐ Reappointment – Partial/First/Second Term

Name: <u>Tina Khanna</u>	Application Date: <u>2/22/22</u>
Address: <u>2205 Copper Creek Lane</u>	Date of Birth: <u>06/23/1970</u>
Mailing Address: <u>Shawnee, OK 74804</u>	
Daytime Phone: <u>405-820-0752</u> Fax: _____	Email: <u>+Khanna555@yahoo.ca</u>
Profession: <u>Ex-Director</u>	
Business Name: <u>South Central Industries, Inc.</u>	
Business Address: <u>P.O. Box 3866, Shawnee, OK 74802</u>	
Business Phone: <u>405-275-3851</u> Fax: <u>405-275-7001</u>	Email: <u>tina@southcentralind.com</u>

Do you live within the City Limits of the City of Shawnee? Yes ☒ No ☐

Do you currently serve on a City board, committee, or commission? Yes ☐ No ☒

If so, please list the board/committee: _____

How many years have you lived in Shawnee? 34 years

Select the Board/Committee/Commission you are interested in serving on: (please check)

☐ Airport Advisory Board ☐ Arts and Culture Commission ☐ Beautification Committee ☐ Board of Adjustment (Zoning) ☐ Civic and Cultural Development Authority ☐ Community Service Contract Review Committee ☐ Housing Authority ☐ Library Board	☐ Oklahoma Baptist University Trust Authority ☐ Parks and Recreation Committee ☐ Planning Commission ☐ Senior Citizens of Shawnee Board ☒ Shawnee Hospital Authority ☐ Shawnee Urban Renewal Authority ☐ Traffic Commission ☐ Other _____
--	---

Revised March 2, 2021

Why are you interested in serving on the Board/Committee/Commission selected above?

To assist with compliance

What will make you a good board member and what skills or knowledge do you have that would be relevant to this board/committee/commission?

Info from Avedis Foundation

What civic or volunteer activities (if any) are you currently involved in?

Shawnee Forward Board, OK Community Providers, Business Referral Network

List education, including degree(s) earned:

OBU, BA
UCO, MBA

Have you ever served on a City-appointed board/committee/commission before? If so, which ones and for how long did you serve?

No

Have you ever been charged and/or convicted of a felony? No

If so, please explain the circumstances and the current status of the charge(s) and/or conviction(s):

Have you ever declared personal or business bankruptcy? No

If so, please explain:

Please include up to three personal or professional references:

Name	Relationship	Telephone Number
Casey Bell	friend	
Paul Bass	friend	
Angi Mohr	friend	

PLEASE READ CAREFULLY:

Appointment by the Commission is for one term and individuals may not serve more than two consecutive full terms. Appointment to a second term remains at the discretion of the City Commission.

My signature affirms that all information contained herein is true to the best of my knowledge, and that I understand that any misstatement of fact or misrepresentation of credentials may result in disqualification from further consideration.

Signature Juanita

Date 2/22/22

Revised March 2, 2021

Applications are retained on file for one (1) year. Applicants are encouraged to include a letter of interest with this application. Thank you for your interest in serving Shawnee.

Send completed application to:

Shawnee City Clerk
PO Box 1448
Shawnee OK 74802
Phone 405-878-1605
Fax 405-878-1581
CityClerk@shawneeok.org

Revised March 2, 2021



APPLICATION TO SERVE
Boards, Committees and Commissions

- ☐ Appointment
☐ Reappointment – Partial/First/Second Term

Name: <u>Sydnie Davidson</u>	Application Date: <u>8/25/2023</u>
Address: <u>131 East Elizabeth Street</u>	Date of Birth: <u>9/23/1982</u>
Mailing Address: <u>131 E. Elizabeth St Shawnee, OK 74804</u>	
Daytime Phone: <u>405-206-4815</u> Fax: _____	Email: <u>sydnie.davidson@okbu.edu</u>
Profession: <u>Executive Assistant to the President</u>	
Business Name: <u>Oklahoma Baptist University</u>	
Business Address: <u>500 W. University Shawnee, OK 74804</u>	
Business Phone: <u>405-585-5801</u> Fax: _____	Email: <u>sydnie.davidson@okbu.edu</u>

Do you live within the City Limits of the City of Shawnee? Yes ☒ No ☐

Do you currently serve on a City board, committee, or commission? Yes ☐ No ☒

If so, please list the board/committee: _____

How many years have you lived in Shawnee? 5

Select the Board/Committee/Commission you are interested in serving on: (please check)

☐ Airport Advisory Board	☐ Library Board
☐ Arts and Culture Commission	☐ Oklahoma Baptist University Trust Authority
☐ Beautification, Parks, and Recreation Committee	☐ Planning Commission
☐ Board of Adjustment (Zoning)	☐ Senior Citizens of Shawnee Board
☐ Civic and Cultural Development Authority	☐ Shawnee Hospital Authority
☐ Community Service Contract Review Committee	☒ Shawnee Urban Renewal Authority
☐ Housing Authority	☐ Other _____

Revised April 25, 2022

Why are you interested in serving on the Board/Committee/Commission selected above?

I want to serve Shawnee where I am needed. I love Shawnee and want to make it a better place.

What will make you a good board member and what skills or knowledge do you have that would be relevant to this board/committee/commission?

I have a masters degree in oil and gas law and worked for the Corporation Commission for 10 years. I am familiar with ordinances and laws and know how to read legal documents

What civic or volunteer activities (if any) are you currently involved in?

I am on the Shawnee Middle School Health and Safety Committee - recently appointed.

I serve at Frontline Church and volunteer for extra activities at OBU.

List education, including degree(s) earned:

Bachelor of Science - University of Central Oklahoma, 2005

Master of Legal Studies in Oil, Gas, and Energy Law - University of Oklahoma School of Law, 2019

Have you ever served on a City-appointed board/committee/commission before? If so, which ones and for how long did you serve?

No.

Have you ever been charged and/or convicted of a felony? No.

If so, please explain the circumstances and the current status of the charge(s) and/or conviction(s):

Have you ever declared personal or business bankruptcy? No.

If so, please explain:

Please include up to three personal or professional references:

Name	Relationship	Telephone Number
Dr.HeathThomas	Boss	919-830-9890
Katelyn Miears	Friend	316-558-1331
Erica Bass	Friend	303-918-1720

PLEASE READ CAREFULLY:

Appointment by the Commission is for one term and individuals may not serve more than two consecutive full terms. Appointment to a second term remains at the discretion of the City Commission.

My signature affirms that all information contained herein is true to the best of my knowledge, and that I understand that any misstatement of fact or misrepresentation of credentials may result in disqualification from further consideration.

Signature

Sydney Davidson

Date

8/25/23

Revised April 25, 2022



City Manager Department
16 W. 9th St.
Shawnee, OK 74801
ShawneeOK.org

Date: September 18, 2023
To: Board of City Commissioners
From: Andrea Weckmueller-Behringer, City Manager
Subject: Presentation of Governor's Approval of the City of Shawnee Charter Amendments.

Background: On June 13, 2023, residents of Shawnee had the opportunity to vote on important propositions affecting the City's Charter. The topics addressed by the propositions included:

- Ward-specific voting for City Commissioners
- Streamlining the competitive bidding process
- Clarifying the start date for a newly elected Mayor or Commissioner
- Aligning requirements for City employees
- Updating conflict-of-interest policies
- Aligning the recreational use policy for Shawnee Twin Lakes
- Updating the policy for the Cemetery Perpetual Care Fund

All seven Charter amendments were passed by the voters at the June election. Since then, City staff has been in coordination with gubernatorial staff. City staff was most recently notified that Governor Stitt has approved the proposed City of Shawnee Charter amendments.

As required, the gubernatorial approval and necessary Charter documents have also been filed with the Oklahoma Secretary of State, providing for an effective date of September 5, 2023.

Financial Impact: None

Attachments: 23-09-05 Approved Charter Amendments

Staff Recommendation: For information only

09/05/2023 12:57 PM

OKLAHOMA SECRETARY OF STATE



SOS



61634210001



J. Kevin Stitt
Office of the Governor
State of Oklahoma

APPROVAL OF AMENDED MUNICIPAL CHARTER

I, J. Kevin Stitt, Governor of the State of Oklahoma, pursuant to the powers vested in me by Article 18 of the Constitution of the State of Oklahoma and the provisions of 11 O.S. § 13-111, proclaim the following:

1. On March 20, 2023, the Mayor and the City Council of the City of Shawnee, County of Pottawatomie, State of Oklahoma, by Resolution Number 6691 and pursuant to an Initiative Petition filed with the City of Shawnee, directed a proposition be included on the ballot of an election for the purpose of submitting to the qualified voters to amend the Charter of the City of Shawnee.
2. On June 13, 2023, the amendments of the Charter of the City of Shawnee, were submitted to the voters.
3. The Certificate of Authentication certifies that the proposition amending the City of Shawnee's Charter was approved by a majority of those electors voting in the election on June 13, 2023.
4. On July 28, 2023, the City of Shawnee, County of Pottawatomie, State of Oklahoma, directed that said amendment be submitted to the Governor for approval.
5. A Certified and Authenticated copy of the Amended Charter is attached.

THEREFORE, I find that the amendments are not in conflict with the Constitution or laws of the State of Oklahoma and hereby approve the adopted amendments to be in full force and effect as provided by law. A copy of this Approval of Governor shall be forwarded to the Mayor of the City of Shawnee, Oklahoma.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Great Seal of the State of Oklahoma to be affixed at Oklahoma City, this 5th day of September, 2023.

BY THE GOVERNOR OF THE STATE OF OKLAHOMA

J. KEVIN STITT

ATTEST:



Brian Bingman, SECRETARY OF STATE

RECEIVED
SEP 05 2023
OKLAHOMA SECRETARY
OF STATE

PROPOSED CHARTER AMENDMENT LANGUAGE PER JUNE 13, 2023 ELECTION
RESULTS

Article III, Section 2 of the Charter shall be amended to read as follows:

The Board of Commissioners shall constitute the governing body of the City. It shall consist of a Mayor, who shall be elected from the City at large; and of six (6) additional Commissioners, each of whom shall file for office from the ward in which the candidate resides and, shall be voted on by the qualified voters in the candidate's specific ward.

Article III, Section 4 of the Charter shall be amended to read as follows:

Upon election the Mayor and Commissioners shall serve a four (4) year term or until a successor is elected and qualified for a specific seat on the Board of Commissioners. The terms of office of Mayor and Commissioners shall begin with the first regularly scheduled meeting of the Board of Commissioners following the certification of the results of the general election, or runoff election as applicable. The terms of office of those Commissioners or the Mayor elected to fill vacancies at a special election, as provided in Article VIII hereof, shall begin with the first regularly scheduled meeting of the Board of Commissioners following the official results of the special election.

(Ord. No. 2465NS, § 1, 12-5-2011; Ord. No. 2626NS, § 1, 3-4-2018)

Article III, Section 6 of the Charter shall be amended to read as follows:

The Board of Commissioners shall appoint one (1) of its members Vice-Mayor for a term of one (1) year at the first regularly scheduled meeting of the Board of Commissioners in the month following the general election or runoff election, if applicable that particular year, or on the first regularly scheduled meeting of the Board of Commissioners in July in years without an election. The Vice-Mayor shall act as Mayor during the absence of the Mayor. If the office of Mayor becomes vacant, then the Vice-Mayor shall serve as Mayor until the next general or special municipal election, and until a new Mayor is elected and qualified. Provided, where the office of Mayor becomes vacant and the Vice-Mayor serves as Mayor until the next general or special election, the Commissioner's seat held by the Vice-Mayor shall not be deemed vacant. The Vice-Mayor shall have no authority to make appointments or remove officers appointed by the Mayor, except where a vacancy exists in the office of Mayor and the Vice-Mayor is serving as Mayor until the election of a successor.

(Ord. No. 2465NS, § 2, 12-5-2011; Ord. No. 2626NS, § 2, 3-4-2018)

Article V, Section 8 of the Charter shall be repealed in its entirety and read as follows:

Repealed and reserved.

Article IX, Section 1 of the Charter shall be repealed in its entirety and read as follows:

Repealed and reserved.

Article XII, Section 6(b) of the Charter shall be amended to read as follows:

- (b) The City of Shawnee shall abide by all Oklahoma statutes and regulations regarding cemetery perpetual care fund requirements as they relate to municipalities.

...

State law reference(s)—Perpetual care funds, 36 O.S. § 7101 et seq.; annual audit of books and accounts, 11 O.S. § 17-105 et seq.; funds generally, 11 O.S. § 17-212; trusts for perpetual care, 11 O.S. § 26-201 et seq.

Article XIV, Section 3 of the Charter shall be amended to read as follows:

In the general election where three (3) or more candidates have filed for the same office, the two (2) candidates receiving the greatest number of votes for that office shall be nominated to stand in the general runoff election. If one (1) candidate receives a majority of all votes cast at the general election for that office that candidate is *ipso facto* elected thereto. The candidate shall be issued a certificate of election and the candidate's name shall not appear upon the general runoff election ballot. In case of a tie at the general runoff election, the elected candidate shall be determined by the flip of a coin. If one (1) of the two (2) candidates nominated for the general runoff election dies, removes from the city or from the ward, or withdraws before the general runoff election, the remaining candidate is elected *ipso facto*. The candidate shall be issued a certificate of election and the candidate's name shall not appear upon the general runoff election ballot.
(Ord. No. 1899NS, § 2, 10-5-1998)

Article XIV, Section 5 of the Charter shall be amended to read as follows:

In either the general or general runoff election provided for hereunder, only such persons shall be qualified to vote as electors therein as are qualified and registered under the general statutes of Oklahoma providing for qualification and registration of electors, and only such electors as are residents of the City of Shawnee. All such qualified and registered electors residing in the City of Shawnee may vote for the position of Mayor in the general or general runoff election. All such qualified and registered electors residing in a specific ward may vote for the position of Commissioner running for election in that specific ward.

(Ord. No. 1899NS, § 4, 10-5-1998)

State law reference(s)—Voter registration, 26 O.S. § 4-101 et seq.

Article XV, Section 2 of the Charter shall be amended to read as follows:

The City of Shawnee shall abide by all Oklahoma statutes and regulations regarding competitive bidding requirements as they relate to municipalities.

State law reference(s)—Public competitive bidding act of 1974, 61 O.S. § 101 et seq.

Article XVI, Section 1 of the Charter shall be amended to read as follows:

The City of Shawnee shall abide by all Oklahoma statutes and regulations regarding conflict of interest policies for Commissioners, City employees, and City officers.

State law reference(s) – 11 O.S. § 8-106 and 8-113.

That the remaining portions of the Articles and Sections referred to herein shall remain unchanged.

That the amendments of the City Charter proposed herein shall be effective as provided by Law.

Authenticated on this 27th day of July, 2023.

ATTEST:

(SEAL)



Lisa Laszone
LISA LASYONE, CMC, CITY CLERK

Ed Bolt
ED BOLT, MAYOR

PART I CHARTER¹

ARTICLE I. ORGANIZATION AND POWERS

Section 1. Name of city; succession to rights, powers and obligations; powers and duties generally.

The inhabitants of the City of Shawnee, within the boundaries as now established or as hereafter established in the manner provided by law, shall continue to be a body politic and corporate by name the City of Shawnee, and under that name and style shall have perpetual succession; and as such, they and their successors shall succeed to, own, and possess all the property, whether real, personal or mixed, and all the rights, privileges, franchises, powers, and immunities now belonging to, possessed, or enjoyed by the present corporation known as the City of Shawnee; that said municipal corporation shall be subject to and liable for all debts, judgments, bonds, notes, and other legal obligations for which the present corporation is now legally bound; that the said municipal corporation and its successors, in said corporate name of the City of Shawnee, shall have power to sue and be sued, plead and be impleaded, complain, intervene, and defend in all courts; that it shall have the power to make contracts, to take and acquire property, by purchase or otherwise, and to hold, sell, lease, convey, or otherwise dispose of, any real or personal property within or without the limits of said city; that it shall also have, exercise, and enjoy such other and additional powers, rights, privileges, franchises, and immunities as are granted and conferred by any other part of this Charter; that it may make and use a corporate seal and alter the same at the pleasure of its board of commissioners.

The city shall have the power to engage directly or indirectly in advocacy calculated to influence legislative and administrative matters at all levels of government.

State law reference(s)—Corporate powers of municipalities, 11 O.S. § 22-101.

¹Charter reference(s)—The Charter of the city was first enacted in 1908 and was subsequently accepted by the voters on March 18, 1930, and approved by the governor on April 18, 1930, as the amended Charter of the city. The Charter was revised in its entirety and approved again at the election held on April 1, 1986. Except for the use of a uniform system of capitalization and the addition or revision of catchlines where necessary, the amended Charter has been set out herein as enacted and amended. Amendments subsequent to April 1, 1986 will be indicated by history notes appearing at the end of the affected section. Additions for clarity are indicated by brackets.

State constitution reference(s)—Municipal Charters, OK Const. Art. 18, § 3(a) et seq.; initiative and referendum, OK Const. Art. 18, § 4(a) et seq.

State law reference(s)—Municipal Charters, 11 O.S. § 13-101 et seq.; when Charter controls over conflicting laws, 11 O.S. § 13-109; initiative and referendum, 11 O.S. § 15-101 et seq.

Section 2. Enumeration of powers not exclusive.

The enumeration of particular powers by this Charter shall not be held or deemed to be exclusive but, in addition to the powers enumerated therein, implied thereby, or appropriate to the exercise thereof, it is intended that the City of Shawnee shall have, and may exercise, all powers which are now or may hereafter be conferred under the constitution and general law of the State of Oklahoma. All powers of the city, whether expressed or implied, shall be exercised in the manner prescribed by this Charter, or, if not prescribed therein, then in the manner provided by ordinance or resolution of the commission. Provisions of state law relating to matters which may be regulated by cities operating under charters shall be in effect only insofar as they are applicable and not superseded by this Charter or by ordinance.

Section 3. Intergovernmental relations.

The city may exercise any of its powers or perform any of its functions and may participate in the financing thereof, jointly or in cooperation, by contract or otherwise, with any one or more states, civil divisions or agencies thereof, or the United States or any agency thereof.

ARTICLE II. WARDS AND BOUNDARIES

Section 1. Boundaries.

The boundaries of said City of Shawnee, shall, until altered as provided by law or ordinance, be the same as at the time of the adoption of this amended Charter.

Section 2. Wards.

The city is hereby divided into six (6) wards, being the same number now existing in the present corporation, with boundaries to each as heretofore established; but the board of commissioners shall have power by ordinance to change the boundaries of the present wards, and in doing so each ward shall contain as nearly the same number of inhabitants as in the judgment of said board can reasonably be done.

State law reference(s)—Changing wards, 11 O.S. § 20-101 et seq.

ARTICLE III. OFFICERS OF MUNICIPALITY²

Section 1. Designation of board of commissioners.

Whenever in the Constitution of the State of Oklahoma, or the laws thereof, or in the present ordinances of the City of Shawnee, hereby continued in force, reference is made to the "mayor," or to the "chief executive officer," of the city, such reference shall be deemed made to the mayor under the form of government under this Charter; and whenever in the said Constitution, laws, or ordinances reference is made to the "city council," "mayor and council," "mayor and councilman," or to the "legislative body" of the city, such reference shall be deemed made to the board of commissioners of the city.

²State law reference(s)—Municipal officers generally, 11 O.S. § 8-101 et seq.

Section 2. Composition of board of commissioners; nomination and election of commissioners.

The Board of Commissioners shall constitute the governing body of the City. It shall consist of a Mayor, who shall be elected from the City at large; and of six (6) additional Commissioners, each of whom shall file for office from the ward in which the candidate resides and, shall be voted on by the qualified voters in the candidate's specific ward.

(Ord. No. 2781NS, § 1, 3-20-2023)

Section 3. Qualification of mayor and commissioners.

All members of the board of commissioners, including the mayor, shall have attained the age of twenty-five (25) years and each shall be a duly qualified elector within the city, and shall be a resident of the city; and, except the mayor, shall be a resident of the ward from which he files for office.

State law reference(s)—Qualifications for elected office, 11 O.S. § 8-101.

Section 4. Terms of office of mayor and commissioners.

Upon election the Mayor and Commissioners shall serve a four (4) year term or until a successor is elected and qualified for a specific seat on the Board of Commissioners. The terms of office of Mayor and Commissioners shall begin with the first regularly scheduled meeting of the Board of Commissioners following the certification of the results of the general election, or runoff election as applicable. The terms of office of those Commissioners or the Mayor elected to fill vacancies at a special election, as provided in Article VIII hereof, shall begin with the first regularly scheduled meeting of the Board of Commissioners following the official results of the special election.

(Ord. No. 2465NS, § 1, 12-5-2011; Ord. No. 2626NS, § 1, 3-4-2018; Ord. No. 2781NS, § 2, 3-20-2023)

Section 5. Compensation of mayor and commissioners.

The mayor and commissioners shall serve without compensation, but shall be paid their necessary expenses incurred in the performance of their duties. The board of commissioners shall have authority to employ and provide for the expenses and compensation of accountants, engineers, attorneys, and other consultants for the purpose of investigating the affairs of the city in any and all particulars and such persons, when so directed by the board of commissioners, shall not be under the supervision or direction of the city manager, and the reports made by such person shall be made direct to the board of commissioners.

Section 6. Vice-mayor.

The Board of Commissioners shall appoint one (1) of its members Vice-Mayor for a term of one (1) year at the first regularly scheduled meeting of the Board of Commissioners in the month following the general election or runoff election, if applicable that particular year, or on the first regularly scheduled meeting of the Board of Commissioners in July in years without an election. The Vice-Mayor shall act as Mayor during the absence of the Mayor. If the office of Mayor becomes vacant, then the Vice-Mayor shall serve as Mayor until the next general or special municipal election, and until a new Mayor is elected and qualified. Provided, where the office of Mayor becomes vacant and the Vice-Mayor serves as Mayor until the next general or special election, the Commissioner's seat held by the Vice-Mayor shall not be deemed vacant. The Vice-Mayor shall have no authority to make appointments or remove officers appointed by the Mayor, except where a vacancy exists in the office of Mayor and the Vice-Mayor is serving as Mayor until the election of a successor.

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(Supp. No. 7, Update 1)

(Ord. No. 2465NS, § 2, 12-5-2011; Ord. No. 2626NS, § 2, 3-4-2018; Ord. No. 2781NS, § 3, 3-20-2023)

Section 7. Vacancies in board of commissioners [or mayor].

If after their election as commissioners or mayor and prior or subsequent to the qualification for office as herein provided, any of said commissioners ceases to be a resident of his ward, or if any of said commissioners or mayor dies or resigns, or otherwise becomes incapable of performing the duties of the office to which he has been elected, the other members of the board of commissioners shall nevertheless qualify for office and convene, as such board of commissioners, and fill the vacancy caused by such death, resignation, removal, or incapacity as provided in article III, section 8 hereof. The board of commissioners shall be the exclusive judges of the existence of any vacancies.

Section 8. Filling of vacancies; mayor and board of commissioners.

When a vacancy occurs in the office of commissioner, the board of commissioners, by a majority vote of the remaining commissioners, shall appoint a person meeting the qualifications for the vacant commissioner's seat to serve until the next general or special municipal election and until a successor is elected and qualified. Any such vacancy shall then be filled at the next general or special municipal election to complete the balance of any unexpired term. If a vacancy occurs in the office of mayor then the vice-mayor shall serve as mayor, as provided in section 6 of this article, until his successor is qualified after election at the next general or special municipal election. The vacancy in the office of mayor shall then be filled at the next general or special municipal election to complete the balance of the mayor's unexpired term. Nothing herein shall require the board of commissioners to call a special municipal election to fill vacancies in the office of commissioner or mayor.

State law reference(s)—Vacancies in office generally, 11 O.S. § 8-109.

Section 9. City treasurer and city attorney.

The city treasurer and the city attorney shall be appointed by the board of commissioners. The city treasurer shall execute to the City of Shawnee a bond with one (1) or more surety companies authorized to transact business in the State of Oklahoma, in such sum as may be fixed by the board of commissioners, but not less than fifty thousand dollars (\$50,000.00). The city attorney shall execute such bond as may be required by the board of commissioners. The premium on all bonds required by this Charter shall be paid by the City of Shawnee. The city treasurer and city attorney shall be appointed and/or removed only by a majority vote of all members of the board of commissioners, not including vacant positions.

Section 10. Duty of city attorney.

It shall be the duty of the city attorney to represent the City of Shawnee in legal matters and proceedings, and he shall advise the heads of the various departments, upon request, upon all questions of law, provided this section shall not prohibit the hiring of outside counsel on specific legal problems.

ARTICLE IV. POWERS, DUTIES, AND MEETINGS OF BOARD OF COMMISSIONERS

Section 1. Power of board to make ordinances; operative date of ordinances; emergency measures.

All legislative authority is hereby vested in the board of commissioners. The mayor and commissioners shall each have one (1) vote, and the mayor shall have no veto power, but shall forthwith, without discretion, approve

all ordinances and resolutions adopted by the board of commissioners. The adoption of ordinances shall require an affirmative vote of a majority of all members of the board of commissioners, not including vacant positions. All ordinances and resolutions shall be entered in the minutes and no ordinances other than those related to zoning matters, shall become operative until thirty (30) days after final passage and approval, except in the case of emergency measures. Emergency measures so adopted and approved shall take effect and be in force from and after their passage and approval. No emergency measures shall become immediately operative unless it shall state in a separate section the reason why it is necessary that it should become immediately operative, and the question of emergency shall be voted upon separately and shall require the affirmative vote of three-fourths of all commissioners present, but never less than four (4) votes. All ordinances relating to zoning decisions shall become operative immediately after their passage and approval without the necessity of an emergency measure. Except as may be required by this Charter for the publication of ordinances relating to particular matters, every ordinance shall be published one (1) time, by title, in a newspaper of general circulation in the city.

(Ord. No. 1959NS, § 1, 2-7-2000)

State law reference(s)—Ordinances, 11 O.S. § 14-101 et seq.; effective date of ordinances, 11 O.S. § 14-103; publication of ordinances, 11 O.S. § 14-106.

Section 2. Scope of power of board of commissioners.

The legislative power of said board of commissioners shall extend to all rightful subjects of municipal legislation, subject only to the constitution and general laws of the state. The board of commissioners shall have, in addition to other powers herein granted, power to enact and provide such ordinances as are necessary to protect life, health, and property, to declare, prevent, abate, and remove nuisances, preserve and enforce good order, good government, and general welfare and security of the city and the inhabitants thereof; to promote the public health, public peace, public morals, public safety, trade and commerce, and general welfare of the inhabitants of the said city.

The said board shall have authority to pass ordinances, to impose fines and imprisonment, and to commit [to confinement] until such fine and costs are paid.

Section 3. Ordinances and resolutions to be complete in final form; approval of franchises by vote of people.

Every ordinance or resolution appropriating money or ordering any street or sewer improvement, or making or authorizing any contract, or granting any franchise or right to use the streets, bridges, or public places in the city, shall be complete in the form in which it is finally passed. No franchise or right to occupy or use the streets, bridges, or public places in said city shall be granted, renewed, or extended except in the manner provided by ordinances, and every grant or franchise for street, railway, gas, or waterworks, electric lights or pole franchise, telegraph, telephone system, or other public service utilities within said city, must be authorized or approved by a majority of the electors, voting thereon at a general or special election called for that purpose as provided by law.

Section 4. Meeting of board of commissioners; quorum; minutes; executive sessions.

The board of commissioners shall hold at least one (1) regular meeting each month at City Hall at a date and hour to be designated by resolution. The board of commissioners may hold such special and/or emergency meetings as may be called and as are authorized by the Oklahoma Open Meeting Law. Special and emergency meetings of the board of commissioners may be called by the mayor, any two (2) of the commissioners, or by the city manager by filing a written call of the meeting with the city clerk. The call shall state the business to be transacted at said meeting. Upon receipt of the call of a special or emergency meeting the city clerk shall give notice thereof by posting the call of special or emergency meeting at City Hall, and shall make a good-faith attempt

to serve the mayor, each commissioner, and the city manager personally or by leaving the call at their usual place of residence. Failure of the mayor, city commissioner, or city manager to receive a copy of the call shall not invalidate an otherwise legal meeting of the board of commissioners.

All meetings of the board of commissioners of the City of Shawnee shall be public except the commission may hold executive sessions for the purpose of: (a) discussing the employment, hiring, firing, appointment, promotion, demotion, disciplining, or resignation of an individual salaried officer or employee; (b) discussion with legal counsel of contemplated, threatened, or pending investigation, litigation, claims, or proceedings; (c) for such other purposes as are now or may hereafter be permitted under the Oklahoma Open Meeting Law. Any vote or action on an item discussed in executive session shall be publicly cast and recorded. A journal of all proceedings of the board of commissioners shall be kept by the city clerk, and any citizen may examine the minutes of the meetings during normal working hours. Provided, no minutes shall be kept of discussions held in executive sessions as permitted herein. The city manager shall attend the meetings of the board of commissioners, and may take part in the discussions but shall have no vote. A majority of the board of commissioners, not including vacant positions, shall constitute a quorum. The mayor shall preside at the meetings of the board of commissioners provided, however, if the mayor is absent then the vice-mayor shall preside as provided in article III, section 6.

State law reference(s)—Notice of meetings, 25 O.S. § 311; absence from meetings, 11 O.S. § 8-108.

Section 5. Appointment of city manager.

The board of commissioners, by a majority vote of all its members not including vacant positions, shall appoint a city manager who shall be the administrative head of the municipal government, and shall be appointed without regard to his political beliefs and may or may not be a resident of the City of Shawnee when appointed, but shall reside in the city during his term of office. The city manager shall be appointed and shall hold office at the discretion of the board of commissioners, and shall be subject to removal at any time by a majority vote of all the members of the board of commissioners, not including vacant positions.

ARTICLE V. POWERS AND DUTIES OF CITY MANAGER

Section 1. Powers and duties of city manager.

The powers and duties of the city manager shall be:

- (a) To see that the laws and ordinances are enforced.
- (b) To appoint and remove all subordinate officers and employees of the city, all appointments to be upon merit and fitness alone, and to exercise control over all such subordinate officers and employees except as otherwise herein specifically provided.
- (c) To attend the meetings of the board of commissioners, with the right to take part in the discussions, but having no vote.
- (d) To recommend to the board of commissioners such measures as he may deem necessary or expedient, and which require action by ordinance or resolution of the board of commissioners.
- (e) To keep the board of commissioners fully advised as to the financial condition and needs of the city, and to make and file such written statement thereof as the board of commissioners may require.
- (f) To perform such other duties as may be prescribed by this Charter or be required by [of] him by ordinance or resolution of the board of commissioners.

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- (g) He shall have power at any time to investigate the affairs of any department. He, or any person appointed by him for the purpose, shall have power to compel the attendance of witnesses, and the production of books, papers, and other evidence.
 - (h) He shall devote his entire time to the affairs of the city.

Section 2. Recommendations for appointments.

Neither the mayor nor any commissioner shall recommend any appointment to be made by the manager except upon request of the manager; provided, however, that the appointments of all heads of departments shall not become effective, until they have been approved by the board of commissioners.

Section 3. Salary of city manager.

The city manager shall receive such salary as may be agreed upon and fixed by the board of commissioners, and the same thereupon to be fixed and recited by ordinance or resolution.

Section 4. Bond of city manager and other appointive officers and employees.

The city manager shall, before entering upon the discharge of his duties, enter into an undertaking with the city, secured by some reliable surety company, in the penal sum of twenty-five thousand dollars (\$25,000.00), and in such additional sum and undertaking as the board of commissioners may, from time to time, in their discretion, require. Said undertaking or undertakings to be approved by the board of commissioners, and conditioned upon the faithful performance of the duties of his office and for faithfully accounting for and paying over to said City of Shawnee all city funds received or collected by him. The said city manager shall require any appointive officer or employee of the city, whose duties involve the handling of city money, to give bond to the city, secured by some reliable surety company, and approved by the board of commissioners, in such amount as it may deem necessary, for the faithful performance of all duties of, and the accounting for and payment by, such appointive officer or employee of all city funds received by him. The premium for all bonds required and authorized under this section shall be paid out of the funds of the city.

Section 5. City manager to make monthly reports.

The city manager shall make a monthly report in writing to the board of commissioners covering the receipts and disbursements and proceedings in the affairs of the city and condensed quarterly reports each three (3) months, which quarterly report shall be preserved among the records of said city and recorded in a book kept for that purpose, and said reports shall be published from time to time as may be provided by ordinance or resolution.

Section 6. Consolidation of services under city manager.

All affairs of the City of Shawnee, except those now under the supervision of the library board, and except as otherwise herein provided are hereby consolidated and placed under the control of the city manager, who shall employ, appoint, and discharge all subordinate officers and employees of the city necessary for its service and the conduct of its affairs, except as otherwise provided in this Charter.

Section 7. City clerk, fire chief, chief of police, and other necessary officers and employees to be employed by the city manager; nepotism prohibited.

The city manager shall appoint and fix the compensation of a city clerk, fire chief, chief of police, a city physician, and all other necessary employees who shall perform under the direction and control of the city

manager, and subject to removal by him, all the services and duties customary and incident to such office and employment and required by the city manager. The amount of compensation of all employees except day laborers shall be submitted to and approved by the board of commissioners before same shall become effective. No person shall hold an appointive position or employment in the pay of the city who is related by blood or marriage within the third degree to either the commissioners, mayor, city manager, or head of the department where employed.

Section 8. Qualifications for city employees.

Repealed and reserved.

(Ord. No. 2781NS, § 4, 3-20-2023)

ARTICLE VI. MUNICIPAL COURT³

Section 1. Powers; jurisdiction; municipal judge, appointment and removal.

In the event that the municipal court now exercising jurisdiction for the punishment of offenders against ordinances of the City of Shawnee, shall at any time be abolished by law or declared not to possess jurisdiction to try and determine such offenses or shall be held unconstitutional; the board of commissioners shall, forthwith by proper ordinances, establish a municipal court in the City of Shawnee, and the board of commissioners shall appoint a municipal judge to preside over the same. The methods of procedure and practice before said court shall be fixed by ordinances of the City of Shawnee and appeals therefrom shall be in the manner and form provided by law. The municipal judge shall be appointed and/or removed only by a majority vote of all the members of the board of commissioners, not including any vacant positions.

ARTICLE VII. LIBRARY DEPARTMENT⁴

Section 1. Composition; qualifications; appointment and terms of office of members.

The board of commissioners shall appoint a library board of six (6) members. The terms of the members shall be three (3) years. Appointments shall be made on the basis of ability, an understanding of the responsibilities and objectives of public libraries, and an active interest in the attainment of these goals. Appointed members shall be qualified electors and bona fide residents of the city.

State law reference(s)—Library board, 11 O.S. § 31-102 et seq.

Section 2. Organization; powers and duties; appointment of librarian.

The board shall choose from among its membership a president and such other officers as it deems necessary. It shall adopt bylaws, rules, and regulations for its own proceedings and for the government of the libraries in the system as are expedient and consistent with this Charter. The board shall be in charge of all property belonging to such libraries acquired by purchase, loan, gift, devise, or otherwise. The board shall have

³State law reference(s)—Municipal courts, 11 O.S. § 27-101 et seq.

⁴State law reference(s)—Municipal libraries, 11 O.S. § 31-101 et seq.

supervision, care, and custody of the grounds, rooms or buildings constructed, leased, or set apart for library purposes. The library board may recommend for appointment as librarian any person whom it deems qualified. In the exercise of its powers the board shall carry out the spirit and intent of this Charter to provide an efficient and outstanding library system for the city. Provided, this section shall not prohibit the City of Shawnee from entering into intergovernmental agreements, upon approval of the library board.

State law reference(s)—Organization of library board, 11 O.S. § 31-103.

Section 3. Rules and regulations for use of libraries.

Every library held or established under this Charter shall always be subject to such reasonable rules and regulations as the library board may adopt in order to render the use of such libraries of the greatest benefit to the greatest number, and said board may exclude from the use of said libraries any and all persons who shall willfully violate such rules.

Section 4. Library board to file statement of affairs and estimate of expenses.

The said library board shall annually on or before the first day of April present to the board of commissioners a complete report and statement of its proceedings for the past fiscal year, containing an itemized account of all moneys received and expenses for library purposes, together with an estimate of the amount required to be raised by taxation for the maintenance of the library during the ensuing year. Said board shall also report all property received by said board for the library or libraries and the general condition of same.

State law reference(s)—Annual report of board, 11 O.S. § 31-108; financial statement and estimate, 11 O.S. § 31-101.

Section 5. Maintenance and operation of library.

The board of commissioners shall, in the annual budget of the city, make such provisions as shall be necessary within the limitations prescribed by law for the maintenance and operation of the library.

Section 6. Donations, endowments, etc.

Any person desiring to make donations of any money, personal property, or real estate for the benefit of the library shall have the right to tender the title or ownership of the property so donated to be held, invested, appropriated, and disbursed by the City of Shawnee as directed by the library board, if accepted, according to the terms of the deed, gift, devise, or bequest of such property.

State law reference(s)—Donations, 11 O.S. § 31-107.

ARTICLE VIII. LEASE OF PUBLIC UTILITIES OR OTHER REAL OR PERSONAL PROPERTY TO REGULARLY CONSTITUTED AUTHORITIES OF THE CITY OF SHAWNEE

Section 1. Authority of city.

Any other provision of this Charter to the contrary notwithstanding, the city may lease public utilities or other real or personal property to regularly constituted authorities of the city, and may operate and maintain the

same and collect revenues thereof on behalf of said authorities and deposit such revenues to the account of said authorities for disposition in accordance with indentures securing indebtedness issued by such authorities.

ARTICLE IX. TWIN LAKES REGULATIONS

Section 1. Swimming, water skiing and surfboard riding in and on the Shawnee Twin Lakes.

Repealed and reserved.

(Ord. No. 2781NS, § 5, 3-20-2023)

ARTICLE X. PLANNING AND ZONING⁵

Section 1. Grant of authority.

- (a) The City of Shawnee shall have full power to promote the public health, safety, morals, and general welfare by regulating the use of property and by controlling and directing the development of the city, through the complete exercise of the powers of planning and zoning and of all powers necessary and proper to carry these powers into full effect and to maintain them within the city limits to the fullest extent permissible under the constitution of the United States and the constitution of this state. The exercise of the powers of planning and zoning within the city always shall be in pursuance of this grant of authority and not under authority of state statutes or law, except with respect to such matters of general state concern as to which state law controls under the state constitution. The city also may exercise powers of planning and zoning granted by the State in respect to matters of general state concern, as aforesaid, and also in respect to property situated outside the city limits.
- (b) The scope of the planning function shall include, but shall not be limited to, the development and administration of a comprehensive land-use plan which will provide for the careful and thoughtful integration of residential, commercial, industrial, public and other elements to achieve and preserve social purposes, economic values, and aesthetic quality of the neighborhoods and of other areas that compose the city.
- (c) The City of Shawnee shall have full authority to regulate and restrict the location of mobile homes and manufactured housing within the City of Shawnee to the extent allowed a home rule city under the Oklahoma and the United States Constitutions.
- (d) The City of Shawnee shall have full authority to regulate and restrict the location of oil, gas, and disposal wells and related appurtenances within the city, and to adopt regulations concerning oil, gas, and disposal wells and related appurtenances within the city for the general safety and welfare of the inhabitants of the City of Shawnee insofar as is consistent with the Oklahoma and United States Constitutions.

⁵State law reference(s)—Buildings and zoning, 11 O.S. § 43-101 et seq.; city-county planning and zoning, 19 O.S. § 866.1 et seq.

-
- (e) The City of Shawnee shall have the power to regulate, restrict, and/or prohibit the operation of disposal sites for hazardous and deleterious wastes within the City of Shawnee to the fullest extent possible under the Oklahoma and United States Constitutions.

Section 2. Continuation of existing legislation.

All ordinances and regulations of this city in respect to planning and zoning which are in operation at the effective date of this Charter hereby are adopted and continued in force, under and by virtue of the authority conferred by the preceding section of this Charter, until altered or repealed by the board of commissioners.

ARTICLE XI. PARK DEPARTMENT

Section 1. Parks under control of city manager.

All land belonging to or under the control of the city and used for park purposes, or which may be acquired for park purposes, within or without said city, shall be under the management and control of the city manager.

Section 2. Power to purchase parks.

The board of commissioners shall have power to acquire in the name of the city, land and other property for park purposes, and to maintain, improve, and beautify the public parks of the city.

Section 3. Donations for cemetery or park.

The mayor and commissioners provided for herein are authorized to accept on behalf of the city any donations, bequests, or gifts made by any person, firm, or corporation for cemetery or park purposes, by resolution or otherwise to make same effectual, and to carry same into execution in accordance with any condition imposed by the donor, if in their judgment such acceptance will result to the benefit of the City of Shawnee.

Section 4. How donations invested and expended.

Any money so received for parks or cemetery, the disposition of which is not provided for by the donor, shall be placed in a special fund or funds and invested as is provided for the funds of the city, and the funds and interest derived therefrom shall be expended on the cemetery or parks, as the case may be.

Section 5. Maintenance of parks.

The board of commissioners in the annual budget and estimate of the city shall make such provisions as shall be necessary and feasible within the limitation prescribed by law, to maintain and improve its parks.

ARTICLE XII. REVENUE⁶

⁶State law reference(s)—Municipal budget act, 11 O.S. § 17-201 et seq.; application of act, 11 O.S. § 17-203; municipal finances generally, 11 O.S. § 17-101 et seq.

Section 1. Authority.

The City of Shawnee shall have the authority to raise revenue, make appropriations, issue bonds, regulate bond elections, the issuance of bonds, sinking funds, the refunding of indebtedness, and all other fiscal affairs of the city subject to the provisions of this Charter, the Oklahoma Constitution, and State law applicable to cities operating under a charter.

Section 2. Taxes certified by clerk.

All taxes and special assessments provided for in this Charter or by law to be collected by the county treasurer, except license taxes shall be certified by the city clerk to the county treasurer of Pottawatomie County to be by said county treasurer placed on the county tax rolls for collection, subject to the same penalty, and collected by the county treasurer as other taxes are collected by the county treasurer, as is provided by law for the collection of taxes, and paid by the county treasurer to the city treasurer of the City of Shawnee, and such payment shall include all penalties collected on such city taxes.

State law reference(s)—Municipal taxation, 68 O.S. § 2701 et seq.

Section 3. County treasurer to pay all taxes and penalties to city treasurer.

It shall be the duty of the city treasurer of the City of Shawnee to call upon the county treasurer of the County of Pottawatomie at least once each month for all money due the City of Shawnee; and the city treasurer shall carefully check all the books and records of the county treasurer and ascertain and see to it that all funds due the city collected by the county treasurer from all sources have been paid to the city. It shall be the further duty of the city treasurer upon receiving any funds from the county treasurer to execute and deliver to the county treasurer therefor duplicate receipts for same, one of which said receipts shall be filed with the city clerk of the City of Shawnee and the city clerk shall enter in the proper books kept for that purpose and under the proper head, all amounts of such funds so received and for which such receipts are given.

Section 4. Investment of funds.

The city treasurer, with the approval of the board of commissioners, may invest the funds of the city in United States bonds or other obligations of the United States, in the bonds and warrants of the State of Oklahoma, or of any County of Oklahoma, or in any bonds of a city of Oklahoma with a population of at least ten thousand (10,000) according to the last preceding federal census, or of a school district of Oklahoma with a population of at least five thousand (5,000) according to the last preceding federal census, in the legally issued warrants of the City of Shawnee or in judgments against the city, or in any other securities, not above enumerated, authorized by the statutes of Oklahoma for the investment of public funds. No securities shall be purchased for more than par and accrued interest. With the approval of the board of commissioners, the city treasurer also may buy and cancel outstanding bonds of the city with sinking fund moneys, whenever such bonds may be purchased for less than par and accrued interest. The board of commissioners may, by general resolution, authorize the investment of funds in investments complying with this section without necessity for a specific resolution for each investment.

State constitution reference(s)—Sinking fund, OK Const. Art. 10, § 28.

State law reference(s)—Certain bonds as legal investments, 11 O.S. § 24-111; authorized investments generally, 62 O.S. § 348.1; investment of sinking funds, 62 O.S. §§ 541, 562.

Section 5. Designation of city depositories.

All moneys collected or received by any officer or employee of the city, for fines, costs, taxes, assessments, water, or other public utility service, licenses, permits, and from all other sources shall be accounted for and paid daily to the city treasurer, who shall immediately deposit the same in the depository of the city and disburse same only upon warrants drawn by the city clerk and approved by the city manager. City depositories shall be all financial institutions qualified under the laws of the State of Oklahoma to be depositories for public funds. In making and changing deposits [depositories], the treasurer, with the approval of the board of commissioners, shall choose from among the qualified depositories those which grant to the city the most advantageous terms.

Section 6. Audits; maintenance of funds; limitations on use of certain funds.

- (a) The board of commissioners shall cause an annual, or at their discretion, a monthly audit to be made of the books and accounts, records, and transactions of the administrative departments of the city's affairs kept by the city manager and the officers and employees of the city employed by him. Such audit during each fiscal year shall be made by one or more certified public or municipal accountants, who hold a certificate issued under authority of the State of Oklahoma, or of some other state in the union. Such statements and audits shall include a general balance sheet exhibiting the assets and liabilities of the city supported by schedules and including schedules for each utility publicly owned or operated, summaries of income and expenditures supported by detailed schedule and also comparisons in proper classification with the last previous year.
- (b) The City of Shawnee shall abide by all Oklahoma statutes and regulations regarding cemetery perpetual care fund requirements as they relate to municipalities.
- (c) All earnings of the water department of the city shall be segregated from all other city funds and used for the service of the water system. Suitable provisions shall be made for the upkeep of the water department with necessary improvements and extensions. The net balance after provision is made for the operation of said department shall be credited to the general revenue fund.
- (d) All other necessary funds as it may be lawful to establish shall be established and maintained, in the discretion of the board of commissioners upon the recommendation of the city manager.

(Ord. No. 2781NS, § 6, 3-20-2023)

State law reference(s)—Perpetual care funds, 36 O.S. § 7101 et seq; annual audit of books and accounts, 11 O.S. § 17-105 et seq.; funds generally, 11 O.S. § 17-212; trusts for perpetual care, 11 O.S. § 26-201 et seq.

Section 7. Accurate books of account to be kept.

It shall be the duty of the city manager to cause accurate books of accounts and records of all the transactions of all departments of the city and all officers and employees appointed by him, to be kept so that the same shall present a complete and itemized statement of all the business and financial affairs of the city.

Section 8. Claims against the city.

All claims against the city must be filed with the city clerk in writing with a full account of all items thereof, and must be subscribed by the claimant, his agent, or attorney who on oath shall declare that the same is correct, just, due, and unpaid; and no claim or demand shall be allowed or suit filed thereon unless so prepared and filed. Nothing herein shall prevent the City of Shawnee from operating under the Oklahoma purchase order law.

Section 9. No property exempt from assessments for local improvements.

No property of any kind, church, school, or otherwise shall be exempt from any of the special assessments authorized by this Charter or by state law for local improvements.

Section 10. Manufacturing enterprises and public utilities exempt from municipal taxation.

The board of commissioners by a majority vote of the electors of said city voting thereon are hereby authorized and empowered to exempt from municipal taxation for a period of not to exceed five (5) years, manufacturing establishments and public utilities as an inducement to their location in said city. Provided, however, that the provisions of this section shall not apply to manufacturing establishments and public utilities located in said city on the date of the approval of this Charter by the governor of the state.

Section 11. Public service corporation not to be relieved from taxes.

No Charter, ordinance, nor franchise hereafter granted, amended or modified granting to any public service corporations, corporation dealing in or handling public utilities authorized to do business within the city, shall ever contain or provide an express waiver or otherwise exempt such corporation or corporations from the provisions of any license tax, special, or franchise tax.

Section 12. Signing and attesting of warrants and bonds of city.

All bonds of the city shall be signed by the mayor and attested by the city clerk. All warrants of the city shall be signed by the city manager and attested by the city clerk.

State law reference(s)—Payment of invoice or account, petty cash accounts, 11 O.S. § 17-102.

ARTICLE XIII. FRANCHISES AND PUBLIC UTILITIES⁷

Section 1. No franchise granted without approval of a majority of electors.

The city shall never grant, extend, or renew a franchise, without the approval of a majority of the qualified electors residing within its corporate limits, who shall vote thereon at a general or special election, and the board of commissioners may submit any such matter for approval or disapproval to such electors at any general municipal election, or call a special election for such purpose at any time upon thirty (30) days' notice; and no franchise shall be granted, extended, or renewed for a longer term than twenty-five (25) years.

Section 2. Franchise election to be called by mayor.

Whenever a petition signed by a number of qualified electors of said city equal to twenty-five (25) percent of the total number of votes cast at the next preceding general municipal election, demanding that a franchise be granted or renewed, shall be filed with the mayor of said city, the mayor shall within ten (10) days thereafter call a special election, at which he shall submit the question whether or not such franchise shall be granted, extended, or renewed. If at such election a majority of the said electors voting thereon shall vote for the grant, extension, or renewal of such franchise the same shall be granted by the proper authorities at the next succeeding regular meeting of the board of commissioners. Provided, that the mayor shall not call any special election until the party

⁷State constitution reference(s)—Franchises, OK Const. Art. 18, § 5 et seq.

or parties demanding such franchise shall deposit with the clerk of said city a sufficient amount of money to pay the expenses of such special election, which amount shall be used in paying the expenses of such election.

Section 3. City may engage in public utility business, power of eminent domain; issuance of bond.

The City of Shawnee shall have the right to engage in any business or enterprise which may be engaged in by a person, firm, or corporation by virtue of a franchise by said corporation; and shall have the right and power to acquire, own, and maintain within or without the corporate limits of such city, but not to exceed one hundred fifty (150) miles therefrom, all real estate for municipal purposes for sites and rights-of-way for public utility and park purposes, and for the location, erection, and maintenance thereon of waterworks, electric light, gas plant, aviation airport, hospitals, quarantine stations, telephone lines and telephone exchanges, garbage reduction plants, pipelines for the transportation and transmission of gas, water, and sewerage, and public markets, and for any plant for the manufacture of any material for public improvement purposes, public buildings, or other public utilities, works or ways local in use, and for all such purposes shall have the power to exercise the right of eminent domain, either within or without the corporate limits of the city, and to establish, lay, and operate any such plant or pipeline upon any land or right-of-way taken thereunder; the City of Shawnee shall have and exercise the right to manufacture any material for street paving or other public improvement purposes and public buildings, and to barter or exchange the same for other material to be used in public improvement in such city, or to sell the same to other cities for like purposes, and for any and all such purposes in order to raise means to carry out the same, shall have power to issue and sell bonds under and by virtue of the constitution of this state, and issued in manner and form provided by the laws of the State of Oklahoma; provided, that whenever it shall be found impracticable to issue bonds as above provided, for any improvement deemed by such city necessary for the public welfare, without increasing the total indebtedness of such city beyond the constitutional limit, it shall be lawful for such city to lease at a stipulated rental any public improvement or utility from any person, firm, or corporation which will contract to furnish the same; provided, further, that any such rental contract shall reserve to such city the option to purchase such improvement or utility in the future, on terms to be named in such rental contract.

State law reference(s)—Issue and sale of bonds, 62 O.S. § 351 et seq.

Section 4. Sale or lease of public utilities.

The sale or lease of public utilities, the value of which is more than ten thousand dollars (\$10,000.00), shall be made only by authority of a special ordinance other than an emergency ordinance. Such ordinance shall be published in full in a newspaper of general circulation within the city within ten (10) days after its passage and shall include a section reading substantially as follows: "Section _____. This ordinance shall be referred to a vote of the electors of the city if a proper referendum petition is properly filed within thirty (30) days after its passage; otherwise, it shall go into effect thirty (30) days after its passage."

ARTICLE XIV. ELECTIONS⁸

Section 1. Conduct of elections generally.

All elections for municipal officers and on municipal questions in the City of Shawnee shall be conducted as herein provided.

⁸State law reference(s)—Municipal elections, 26 O.S. § 13-101 et seq.

Section 2. Time for holding general election.

During every even-numbered year there shall be held a general election in each of the voting precincts of the city at which time candidates for such offices as are to be elected shall stand for election. The general election shall be held on the same date as set for the statewide primary election held the same year.

If, on the date of closing for mayor only one (1) candidate has filed for mayor, such candidate shall be chosen mayor and no election for that office shall be held. If, on the date of closing for filing for candidacy for any office other than mayor, only one (1) candidate has filed for commissioner from any ward or wards, said candidate or candidates shall be chosen to their respective offices and no election shall be held.

On the date of the closing of the filing for mayor and/or commissioner from the wards, all candidates who have filed for each said office shall have their names placed on the ballot at the general election.

If three (3) or more persons file for the same office and no one candidate receives a majority of votes at the general election, the two (2) candidates receiving the largest number of votes shall be voted upon at the ensuing general runoff election, and the person receiving the largest number of votes shall be elected.

(Ord. No. 1899NS, § 1, 10-5-1998; Ord. No. 2171NS, § 1, 8-2-2004)

Section 3. Nominees.

In the general election where three (3) or more candidates have filed for the same office, the two (2) candidates receiving the greatest number of votes for that office shall be nominated to stand in the general runoff election. If one (1) candidate receives a majority of all votes cast at the general election for that office that candidate is *ipso facto* elected thereto. The candidate shall be issued a certificate of election and the candidate's name shall not appear upon the general runoff election ballot. In case of a tie at the general runoff election, the elected candidate shall be determined by the flip of a coin. If one (1) of the two (2) candidates nominated for the general runoff election dies, removes from the city or from the ward, or withdraws before the general runoff election, the remaining candidate is elected *ipso facto*. The candidate shall be issued a certificate of election and the candidate's name shall not appear upon the general runoff election ballot.

(Ord. No. 1899NS, § 2, 10-5-1998; Ord. No. 2781NS § 7, 3-20-2023)

Section 4. Time for holding general runoff elections.

In every even-numbered year there shall be held a general runoff election conducted at the regular voting places within the city for the election of municipal officers, except where no general runoff election is required by reason of the results of the general election. This election shall be held on the same date as the statewide runoff primary election held that same year.

(Ord. No. 1899NS, § 3, 10-5-1998; Ord. No. 2171NS, § 2, 8-2-2004)

Section 5. Qualification of voters.

In either the general or general runoff election provided for hereunder, only such persons shall be qualified to vote as electors therein as are qualified and registered under the general statutes of Oklahoma providing for qualification and registration of electors, and only such electors as are residents of the City of Shawnee. All such qualified and registered electors residing in the City of Shawnee may vote for the position of Mayor in the general or general runoff election. All such qualified and registered electors residing in a specific ward may vote for the position of Commissioner running for election in that specific ward.

(Ord. No. 1899NS, § 4, 10-5-1998; Ord. No. 2781NS § 8, 3-20-2023)

State law reference(s)—Voter registration, 26 O.S. § 4-101 et seq.

Section 6. Voting places.

All elections within the City of Shawnee shall be held at the polling places designated by the board of commissioners; and, in the absence of such designation, at the polling places designated under the general election law.

State law reference(s)—Polling places, 26 O.S. §§ 3-120, 3-123.

Section 7. Conduct of election period.

The Board of Commissioners of the City of Shawnee shall, by resolution, order the holding of all elections, except as otherwise provided in the Charter. All municipal elections in the City of Shawnee shall be conducted by the County Election Board of Pottawatomie County. The election shall be held at the same place and in the same manner as provided for conduct of state and county elections. Polling places shall be open from seven o'clock a.m. to seven o'clock p.m. The precinct election board shall be the same as for state and county elections, provided substitutions, if necessary, may be made by the Pottawatomie County Election Board. Except as otherwise provided by this chapter (Charter), the laws governing state and county runoff and general elections shall be applicable to municipal elections in the City of Shawnee.

(Ord. No. 1899NS, § 5, 10-5-1998; Ord. No. 2627NS, § 1, 3-4-2018)

Section 8. Filing of candidates.

Any elector, qualified as provided by article III, section 3, of this Charter may become a candidate for any office in any general election by filing with the secretary of the county election board written notice setting forth his/her name, the ward from which he/she is a candidate and the street number of his/her address and shall give the name of the office for which he/she is a candidate and the date of the general election, provided that he/she can be a candidate for only one (1) office. The period of filing for city offices shall be identical to the filing period for the statewide elections to be held that same year.

(Ord. No. 1899NS, § 6, 10-5-1998; Ord. No. 2171NS, § 3, 8-2-2004)

State law reference(s)—Filing, 26 O.S. § 5-101 et seq.

Section 9. Preparation and distribution of general election ballots.

The county election board shall arrange the name of candidates for each elective office without regard to the alphabet or the time of filing; but the same names shall be so arranged that each name shall appear at the head of the list of candidates for said office on the total number of ballots printed an equal number of times with each other name, and likewise second, third, fourth and so on, to the end that the name of each candidate shall appear on said ballot in such position as will insure said candidate an equal opportunity with each other candidate. Such ballots shall contain no emblem, device, mark, or sign of any kind indicating to which political party a candidate may belong but shall be strictly a non-partisan ballot. The county election board shall cause the ballots to be printed, arranged as provided herein, and shall cause the ballots so arranged and printed to be distributed among the various precincts of the city.

(Ord. No. 1899NS, § 7, 10-5-1998)

State law reference(s)—Ballots, 26 O.S. § 6-101 et seq.

Section 10. Ballots for general runoff election; names of candidates; waiver of general runoff election; compliance with state election laws; election of mayor.

The county election board shall prepare the ballots for the general runoff election which shall be in the same form as described for the general election ballots, except that they shall include only those offices to which no one has been elected as a result of the general election or of events subsequent thereto. Except as otherwise in this Charter specifically provided, the general and runoff election laws of this state applicable to municipal elections are adopted and put into effect hereby, and the results of elections shall be canvassed, published and declared as provided by law. Whenever one (1) or more measures or questions are to be voted upon at the same time that any general or general runoff election for city office is held, such measures or questions shall be submitted upon a ballot separate from that bearing the names of candidates for office. The candidate for each office receiving the highest number of votes shall be elected and shall receive a certificate of election. In the event of a tie vote, the successful candidate shall be determined by the flip of a coin. All declarations of candidacy, petitions and election ballots shall be non-partisan in form and shall bear no party designation of any kind and no sign, mark, symbol, or device of partisan character.

(Ord. No. 1899NS, § 8, 10-5-1998)

Section 11. Violation of election laws.

All acts made offenses or crimes under the election laws of this state shall be, and are hereby made, offenses if committed in any election held hereunder, and for such offenses the offender shall be punished in the manner and form as provided by the statutes of Oklahoma, and as may be hereafter provided by ordinance.

State law reference(s)—Penalties, 26 O.S. § 16-101 et seq.

Section 12. When state election laws in full operation.

In the event that the foregoing provisions or any of them should be for any reason held void, or for any reason shall become inoperative then the election laws of the state shall govern all elections within the City of Shawnee, insofar as the special provisions fail.

Section 13. Special election.

The board of commissioners shall have power to call special elections which shall be ordered held and conducted and the results thereof made known and declared in the same manner as herein provided for other elections.

State law reference(s)—Notice of special election, 26 O.S. § 13-102.

Section 14. Constitution applied.

Article Eighteen of the Constitution of the State of Oklahoma, under the title "Municipal Corporations," and every section thereof, including the initiative and referendum, and all other provisions and sections of said article XVIII, are hereby adopted and made in full force and effect for the government of the City of Shawnee.

Section 15. The recall.

The holder of an elective office may be removed at any time by the electors qualified to vote for this successor. The procedure shall be: A petition signed by electors entitled to vote for a successor to the person sought to be removed, equal in number to at least sixty (60) percent of the entire vote cast at the last city general election and containing a general statement of the specific grounds upon which the removal is sought, which shall be based upon issues of policy or law as distinguished from personalities, shall be filed with the city clerk. The signatures need not all be appended to one (1) paper, but each signer shall add to his signature the place of his residence, specifying street and number. One (1) signer of each paper [page] shall state, under oath or affirmation before an officer authorized to administer oaths, that the statements therein are true as he believes, and that each signature to the paper [page] is the genuine signature of the person by whom it is purported to have been signed. Within ten (10) days from date of filing the city clerk shall examine the petition and shall determine, from the register of voters, whether said petition is signed by the required number of qualified electors, and shall attach to the petition his certificate, showing the result of said examination. The board of commissioners shall provide him any funds necessary to employ extra help for the examination. If the clerk's certificate shows the petition to have insufficient signatures, others may be added within ten (10) days after the date of certification. The clerk, within ten (10) days after such amendment, shall examine the amended petition. If he certifies that it still is insufficient, it shall be returned to the person who filed it, without prejudice to the filing of a new petition for the same purpose. If the petition is found sufficient as to signature and as to grounds, the clerk shall submit it without delay to the board of commissioners who shall order the election fixing the date for the same not less than thirty (30) days nor more than forty (40) days from the date of the clerk's certificate of sufficiency. Procedure to review a finding of insufficiency shall be the same as for petitions for the initiative or referendum under the laws of the state.

The commissioners shall publish notice of the election and cause to be made all arrangements necessary for holding and conducting the election. The election shall be conducted, returned, and the result declared in the same way as other special city elections. The successor of an officer recalled shall hold office for the unexpired term of his predecessor. The person sought to be removed may be a candidate to succeed himself, and his name shall be placed upon the official ballot unless he requests otherwise in writing. In a recall election the candidate receiving the highest number of votes shall be elected. If the successful candidate is the incumbent, he retains his office; if he is other than the incumbent, the latter is removed from office upon qualification by his successor. If the successor fails to qualify within ten (10) days after he is notified of his election, the office becomes vacant. Removal by recall shall be cumulative and additional to other methods provided by law.

No recall petition shall be filed against any officer prior to the expiration of six (6) months after his qualification, and no new recall petition shall be filed against a successful incumbent until the expiration of six (6) months from the prior recall election.

Editor's note(s)—The reference to primary election has been changed to general election at the request of the city.

Section 16. Initiative and referendum—Reserved.

The powers of the initiative and referendum reserved by the constitution of the state to the people thereof, and the respective counties and districts therein, are hereby reserved to the people of this city and the same shall be held to apply to all legislative authority which the said board may exercise, and to amendments to this Charter.

State constitution reference(s)—Initiative and referendum, OK Const. Art. 5, § 1 et seq.; municipal initiative and referendum, OK Const. Art. 18, § 4(a) et seq.

State law reference(s)—Municipal initiative and referendum, 11 O.S. § 15-101 et seq.; initiative and referendum generally, 34 O.S. § 1 et seq.

Section 17. Same—Petition.

Every petition for the initiative or referendum shall be signed by a number of qualified electors residing within the limits of said city equal to twenty-five (25) percent of the total number of votes cast at the last city general election, and every such petition shall be filed with the mayor of the City of Shawnee. When such petition demands the enactment of an ordinance or other legal act other than a grant, renewal, or extension of a franchise, the mayor shall present the same to the board of commissioners at its next meeting. Unless the said petition shall be granted, the board of commissioners shall submit the said ordinance or act so petitioned for to the qualified voters at the next election at which city officers are to be elected; and if a majority of said electors voting thereof shall vote for same, it shall thereupon become in full force and effect.

Editor's note(s)—The reference to primary election has been changed to general election at the request of the city.

Section 18. Same—Election.

When such petition demands a referendum vote upon an ordinance or any other legal act other than the grant, extension, or renewal of a franchise, the mayor shall submit said ordinance or act to the qualified electors of said city at the next municipal election at which any municipal officers are to be elected; and if at said election a majority of the electors voting thereon shall not vote for the same, it shall thereupon stand repealed.

Section 19. Same—Charter amendments.

When such petition demands an amendment to this Charter the mayor shall submit such amendment to the qualified electors of said city at the next municipal election at which any municipal officers are to be elected; and if at said election a majority of said electors voting thereon shall vote for such amendment, the same shall thereupon become an amendment to and a part of this Charter when approved by the governor and filed in the same manner and form as an original Charter is required by the provisions of the constitution of the state, to be approved and filed.

State constitution reference(s)—Municipal charters, OK Const. Art. 18, § 3(a) et seq.

ARTICLE XV. CONTRACTS AND IMPROVEMENTS

Section 1. Contract procedure generally.

The city manager, subject to any regulations which the commission may prescribe, shall contract for and purchase, or issue purchase orders for, all supplies, materials, and equipment for the offices, departments, and agencies of the city government. Every such contract or purchase exceeding an amount to be established by ordinance shall require the prior approval of the commission. The city manager also may transfer to or between offices, departments, and agencies, or sell surplus or obsolete supplies, materials, and equipment subject to such regulations as the commission may prescribe. Before the purchase of or contract for any supplies, materials, or equipment, or the sale of any surplus or obsolete supplies, materials, or equipment, ample opportunity for competitive bidding under such regulations and with such exceptions as the commission may prescribe shall be given; but the commission shall not except a particular contract, purchase, or sale from the requirement of competitive bidding.

State law reference(s)—Public competitive bidding act of 1974, 61 O.S. § 101 et seq.

Section 2. Bidding requirements.

The City of Shawnee shall abide by all Oklahoma statutes and regulations regarding competitive bidding requirements as they relate to municipalities.

(Ord. No. 2781NS, § 9, 3-20-2023)

State law reference(s)—Public competitive bidding act of 1974, 61 O.S. § 101 et seq.

Section 3. Public improvements.

Public improvements may be made by the city government itself or by contract. The commission shall award all contracts for such improvements; provided, that the commission may authorize the city manager to award such contracts not exceeding an amount to be determined by the commission, and subject to such regulations as the commission may prescribe. Every contract for public improvements of such amount as the commission may determine by ordinance, shall be awarded to the lowest and best responsible bidder after such notice and opportunity for competitive bidding as the commission may prescribe, or as is required by law. All bids may be rejected and further notice and opportunity for competitive bidding may be given. Such contracts may be altered by mutual consent of the parties. Public improvements means any beneficial or valuable change or addition, betterment, enhancement, or amelioration of or upon any real property, or interest therein, belonging to the city intended to enhance its value, beauty, or utility, or to adapt it to new or future purposes. The term does not include the direct purchase of materials, equipment, or supplies by the City of Shawnee. Nothing herein shall prevent the city from constructing public improvements by the force account method.

Section 4. Signing of contracts.

All contracts of the city shall be signed by the city manager and attested by the city clerk.

ARTICLE XVI. CONFLICT OF INTEREST AND OTHER PROHIBITED ACTS OF PUBLIC OFFICERS AND EMPLOYEES

Section 1. Commissioners not to hold public employment; city officer and employees not to be interested in city contracts.

The City of Shawnee shall abide by all Oklahoma statutes and regulations regarding conflict-of-interest policies for Commissioners, City employees, and City officers.

(Ord. No. 2781NS, § 10, 3-20-2023)

State law reference(s) – 11 O.S. § 8-106 and 8-113.

Section 2. Graft prohibited.

The receiving directly or indirectly by any officer of said city for his own use and benefit or any other use or purpose other than is authorized and provided in this Charter and the laws of the state, of any interest, profits, or perquisites arising from the use or loan of public funds in his hands, or to be raised through his agency for city

purposes, shall be deemed sufficient cause to forfeit his office, and the person so receiving shall then and there forfeit his office and be disqualified to hold office.

Section 3. Offering compensation for election or appointment to office prohibited.

No officer or employee of said city shall give or promise to give to any other person any portion of his compensation or any money or valuable thing, or promise employment to any person in consideration of having been, or of being nominated, appointed, voted for, or elected to any office or employment; and if any such promise or gift be made, the person making or accepting such gift or promise shall forfeit his office or employment and be debarred and disqualified from being elected, appointed, or employed in the services of said city.

Section 4. City officers not to receive gratuity from subordinate officer or candidate.

Any officer of said city who shall, while in office, accept any donation or gratuity in money or other valuable thing, either directly or indirectly, from any subordinate or employee, or from any candidate or applicant for any position as employee or subordinate under him, shall forfeit his office and be forever disqualified from holding any position in the services of said city.

Section 5. Officers and bond liable for approving and paying unauthorized claims.

Every officer who shall approve, allow, or pay any demand on the treasury not authorized by law, ordinance, or this Charter shall be liable to said city individually and on his official bond for the payment of the demand so illegally approved, allowed, or paid.

State law reference(s)—Liability for voting unlawful claims generally, 11 O.S. § 17-104.

Section 6. Duty of officers to report violations concerning city contracts.

It shall be the official duty of every officer or person in the employment or service of said city, when it shall come to his knowledge that any contract or agreement with said city or with any officer has been or is about to be violated by the other contracting party forthwith to report to the mayor and board of commissioners all facts and information within his possession concerning such matter, and upon a willful failure to do so the board of commissioners shall remove the officer and/or employee.

ARTICLE XVII. MISCELLANEOUS

Section 1. Oaths to be administered by certain city officers.

The mayor, vice-mayor, city clerk, judge of the municipal court, and a notary public shall be, and they are hereby, authorized to administer oaths in all municipal affairs and government of said city.

State constitution reference(s)—Oath of office, OK Const. Art. 15, § 1.

Section 2. Elective and appointive officers to take oath; office vacated when officer ceases to possess qualifications.

Every person elected or appointed to any office in said city shall, before he enters upon his duties, take the official oath prescribed by the Constitution of the State of Oklahoma, and such additional oaths as the board of commissioners may prescribe to secure a faithful performance of duty, and file same in the office of the city clerk.

Any officer ceasing to possess any of the qualifications required of him at the time of his election shall instantly thereby forfeit his office and same shall be filled as herein provided.

Section 3. City books and records open for inspection; exceptions.

All records of the city and its departments which are required by law to be public records shall be open to public inspection at proper times and in proper manner during all regular business hours of each week; provided, however, that this shall not apply to any records required by law to be kept secret, nor shall it apply to records that if disclosed would defeat the purpose for which same are kept, including but not limited to criminal investigative records and personnel records, records prepared in anticipation or preparation of litigation, communications, memos, and opinions of the city attorney protected under the client-attorney privilege.

Section 4. No change in salaries of elective officers.

No salary of any elective officer of said city shall be increased or decreased during the term for which said officer was elected.

Section 5. Appointive officers; successor of officer holding under mayor and board of commissioners.

The mayor and board of commissioners elected under the provisions of this amended Charter and their successors in office shall be deemed in law and in fact the successors of the present mayor and board of commissioners, and all officers appointed by the board of commissioners, or otherwise as provided in this Charter, shall be deemed in law and in fact the successors of the present officers, whether elected or appointed.

Section 6. Ordinances and resolutions not in conflict with Charter continued.

All resolutions and ordinances not in conflict with or inapplicable under the provisions of this amended Charter which are in force and effect in said city, at the time of the approval and taking effect of this amended Charter, shall be and remain in full force and effect until the same shall expire by limitation, be repealed or amended; provided further, that all prosecutions of violations of ordinances of the city, whether begun, pending, or otherwise, shall be prosecuted to determination and effect as though this amended Charter had not been passed and approved.

Section 7. Abstaining votes.

If a member of the board of commissioners or a member of any board or agency of the city abstains from voting on an issue, said abstention shall not be recorded as a negative vote, but rather shall be reflected as an abstention and not counted in determining whether the item passed or failed.

Section 8. Repealer; construction of provisions.

All provisions of this Charter of the City of Shawnee as the same exists prior to the adoption of these amendments, which are inconsistent or contrary to the provisions hereof, shall be and the same are hereby repealed.

Section 9. Severability.

If any part, article, section, or subsection of this amended Charter shall be held invalid or unconstitutional for any reason, such holding shall not be construed to impair or invalidate the remainder of this amended Charter, notwithstanding such holding.

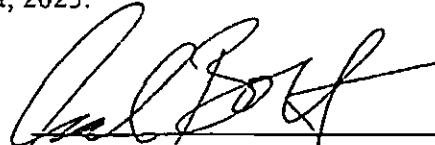
That the amendments of the City Charter proposed herein shall be effective as provided by Law.

Authenticated on this 23rd day of August, 2023.

ATTEST:

(SEAL)




ED BOLT, MAYOR


LISA LASYONE, CMC, CITY CLERK

RESOLUTION NO. 6691

A RESOLUTION AUTHORIZING THE CALLING AND HOLDING OF A SPECIAL ELECTION IN THE CITY OF SHAWNEE, OKLAHOMA ON TUESDAY THE 13TH DAY OF JUNE, 2023, FOR THE PURPOSE OF SUBMITTING TO THE REGISTERED QUALIFIED VOTERS OF SAID CITY THE QUESTION OF WHETHER ORDINANCE NO. 2781 NS, WHICH AMENDS ARTICLE III, SECTION 2 AND ARTICLE XIV, SECTIONS 3 AND 5 OF THE CHARTER OF THE CITY OF SHAWNEE BY LIMITING THE ELECTORATE FOR COMMISSIONERS TO THE QUALIFIED VOTERS RESIDING IN EACH COMMISSIONER'S SPECIFIC WARD; WHICH AMENDS ARTICLE XV, SECTION 2 OF THE CHARTER OF THE CITY OF SHAWNEE BY STATING THE CITY OF SHAWNEE SHALL FOLLOW ALL APPICABLE STATE LAWS REGARDING COMPETITIVE BIDDING REQUIREMENTS; WHICH AMENDS ARTICLE III, SECTIONS 4 AND 6 OF THE CHARTER OF THE CITY OF SHAWNEE TO STATE WHEN THE TERM SHALL BEGIN FOR NEWLY ELECTED MAYOR AND COMMISSIONERS; WHICH AMENDS ARTICLE V, SECTION 8 OF THE CHARTER OF THE CITY OF SHAWNEE WHICH RELATES TO RESIDENCY AND QUALIFICATIONS REQUIREMENTS OF CITY EMPLOYEES; WHICH REPEALS AND REPLACES ARTICLE XVI, SECTION 1 OF THE CHARTER OF THE CITY OF SHAWNEE RELATED TO CONFLICT OF INTEREST POLICIES FOR COMMISSIONERS, CITY EMPLOYEES AND CITY OFFICERS; WHICH REPEALS ARTICLE IX, SECTION 1 OF THE CHARTER OF THE CITY OF SHAWNEE TO REMOVE PROVISIONS REGULATING RECREATIONAL USE OF THE SHAWNEE TWIN LAKES; WHICH REPEALS AND REPLACES ARTICLE XII, SECTION 6(b) OF THE CHARTER OF THE CITY OF SHAWNEE TO FOLLOW STATE LAW REGARDING THE CEMETERY PERPETUAL CARE FUND; AND PROVIDING FOR SAID ELECTION TO BE CONDUCTED BY THE POTTAWATOMIE COUNTY ELECTION BOARD; PROVIDING THAT POLLS SHALL BE OPEN CONTINUOUSLY FROM 7:00 A.M. TO 7:00 P.M.; PROVIDING FOR SEVERABILITY.

WHEREAS, the Mayor and Board of Commissioners of the City of Shawnee, Oklahoma, have passed Ordinance No. 2781 NS, which amends the Charter of the City of Shawnee Article II; and

WHEREAS, according to the provisions of Title 26, Oklahoma Statutes, Section 13-102, the City shall submit a Resolution to the Pottawatomie County Election Board, not fewer than sixty (60) days from the date of the election, notifying said Election Board that said election will be held.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND BOARD OF COMMISSIONERS OF THE CITY OF SHAWNEE, OKLAHOMA:

That there shall be held on the 13th day of June, 2023, a special election on the following propositions:

Proposition 1

Shall Article III, Section 2 and Article XIV, Sections 3 and 5 of the Charter of the City of Shawnee be amended to limit the electorate for Commissioners to the qualified voters residing in each Commissioner's specific ward, as more particularly described in Ordinance 2781 NS adopted on the 20th day of March, 2023?

The ballot setting for the above proposition shall also contain in connection with each of said proposition the following words:

For

☐

Against

☐

If the voter desires to vote for the above proposition, the voter shall mark the box to the right of the word "For."

If the voter desires to vote against the above proposition, the voter shall mark the box to the right of the word "Against."

Proposition 2

Shall Article XV, Section 2 of the Charter of the City of Shawnee be repealed and replaced with language that states that the City of Shawnee shall follow all applicable State law regarding competitive bidding requirements, as more particularly described in Ordinance 2781 NS adopted on the 20th day of March, 2023?

The ballot setting for the above proposition shall also contain in connection with each of said proposition the following words:

For

☐

Against

☐

If the voter desires to vote for the above proposition, the voter shall mark the box to the right of the word "For."

If the voter desires to vote against the above proposition, the voter shall mark the box to the right of the word "Against."

Proposition 3

Shall Article III, Sections 4 and 6 of the Charter of the City of Shawnee be amended to state that the term of the newly elected Mayor and Commissioners shall begin on the date of the first regularly scheduled meeting of the Board of Commissioners following the certification of the results of the general or runoff election, as applicable, as more particularly described in Ordinance 2781 NS adopted on the 20th day of March, 2023?

The ballot setting for the above proposition shall also contain in connection with each of said proposition the following words:

For

☐

Against

☐

If the voter desires to vote for the above proposition, the voter shall mark the box to the right of the word "For."

If the voter desires to vote against the above proposition, the voter shall mark the box to the right of the word "Against."

Proposition 4

Shall Article V, Section 8 of the Charter of the City of Shawnee, which relates to potentially conflicting residency and citizenship qualification requirements for City employees, be repealed in its entirety, as more particularly described in Ordinance 2781 NS adopted on the 20th day of March, 2023?

The ballot setting for the above proposition shall also contain in connection with each of said proposition the following words:

For

☐

Against

☐

If the voter desires to vote for the above proposition, the voter shall mark the box to the right of the word "For."

If the voter desires to vote against the above proposition, the voter shall mark the box to the right of the word "Against."

Proposition 5

Shall Article XVI, Section 1 of the Charter of the City of Shawnee be repealed and replaced with language that states that the City of Shawnee shall follow all applicable State law regarding conflict-of-interest policies for Commissioners, City employees, and City officers, as more particularly described in Ordinance 2781 NS adopted on the 20th day of March, 2023?

The ballot setting for the above proposition shall also contain in connection with each of said proposition the following words:

For

☐

Against

☐

If the voter desires to vote for the above proposition, the voter shall mark the box to the right of the word "For."

If the voter desires to vote against the above proposition, the voter shall mark the box to the right of the word "Against."

Proposition 6

Shall Article IX, Section 1 of the Charter of the City of Shawnee be repealed to remove provisions regulating the recreational use of the Shawnee Twin Lakes, as more particularly described in Ordinance 2781 NS adopted on the 20th day of March, 2023?

The ballot setting for the above proposition shall also contain in connection with each of said proposition the following words:

For

☐

Against

☐

If the voter desires to vote for the above proposition, the voter shall mark the box to the right of the word "For."

If the voter desires to vote against the above proposition, the voter shall mark the box to the right of the word "Against."

Proposition 7

Shall Article XII, Section 6(b) of the Charter of the City of Shawnee be repealed and replaced with language that states that the City of Shawnee shall follow all applicable State law regarding cemetery perpetual care funds, as more particularly described in Ordinance 2781 NS adopted on the 20th day of March, 2023?

The ballot setting for the above proposition shall also contain in connection with each of said proposition the following words:

For

☐

Against

☐

If the voter desires to vote for the above proposition, the voter shall mark the box to the right of the word "For."

If the voter desires to vote against the above proposition, the voter shall mark the box to the right of the word "Against."

ELIGIBILITY OF VOTERS:

To be eligible to vote, a voter must be registered with the Pottawatomie County Election Board at an address within the geographical boundaries of the district.

BE IT FURTHER RESOLVED:

That said special election shall be conducted by the Pottawatomie County Election Board in accordance with the provisions of the Charter of the City of Shawnee and the general election

laws of the State of Oklahoma where applicable and that the polls shall remain open on Election Day continuously from 7:00 a.m. to 7:00 p.m.

BE IT FURTHER RESOLVED:

That if any section, sub-section, sentence, clause, phrase, or portion of this Ordinance is, for any reason, held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate, distinct, and independent provision and such holding shall not affect the validity of the remaining portions of this Ordinance.

BE IT FURTHER RESOLVED:

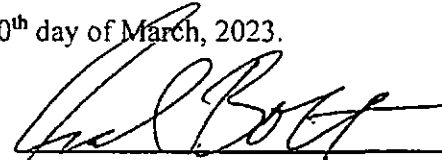
That for the preservation of the public peace, health and safety, an emergency is hereby declared to exist, by reason whereof, this Resolution shall be in full force and effect immediately upon its adoption.

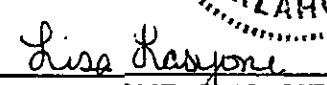
PASSED AND APPROVED this 20th day of March, 2023.

ATTEST:

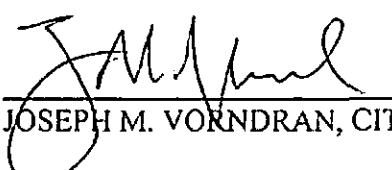
(SEAL)




ED BOLT, MAYOR


LISA LASZYONE, CMC, CITY CLERK

Approved as to form and legality this 20th day of March, 2023.


JOSEPH M. VORNDRAN, CITY ATTORNEY

AFFIDAVIT OF PUBLICATION

County of Pottawatomie, State of Oklahoma

Shawnee News-Star

P.O. Box 1688

Shawnee, OK 74801

979080- - SHW COS Legal

I, the publisher/agent of the Shawnee News-Star of Pottawatomie County, in the State of Oklahoma, States that this newspaper is a qualified newspaper, published and of general circulation in said county, was published in regular edition of said paper, and that the notice of which the annexed is a copy was published on the following dates:

PUBLICATION DATES

May 6, May 13 and May 20, 2023


Lisa Drafall, Regional Vice President of Sales

Signed and sworn to before me on
this

14 07 2023
Day Month Year



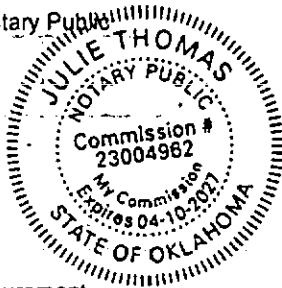
Signature above, Julie Thomas, Notary Public

My commission expires:

04-10-2027

Commission# 23004962

Seal



Publication Fee \$ 1,315.80

Calculation Measurement

Words	Tab lines	Columns	Insertions

CherryRoad Media

RESOLUTION NO. 0001

There were said to be held on the 13th day of June 2021, a special election on the following propositions:

Nothing in this Act shall be construed to limit the authority of the State Board of Health to enforce the provisions of the Act.

Oklahoma Certification Report

OFFICIAL CERTIFICATE OF VOTES
POTTAWATOMIE COUNTY, OKLAHOMA
JUNE 13, 2023

CITY OF SHAWNEE
PROPOSITION NO. 1 CITY OF SHAWNEE

Precinct	FOR THE PROPOSITION - YES	AGAINST THE PROPOSITION - NO
POTTAWATOMIE COUNTY PCT 830002	40	11
POTTAWATOMIE COUNTY PCT 830003	154	19
POTTAWATOMIE COUNTY PCT 830004	4	0
POTTAWATOMIE COUNTY PCT 830008	81	9
POTTAWATOMIE COUNTY PCT 830007	83	25
POTTAWATOMIE COUNTY PCT 830009	83	4
POTTAWATOMIE COUNTY PCT 830011	123	18
POTTAWATOMIE COUNTY PCT 830012	84	21
POTTAWATOMIE COUNTY PCT 830013	189	40
POTTAWATOMIE COUNTY PCT 830015	88	28
POTTAWATOMIE COUNTY PCT 830018	102	18
POTTAWATOMIE COUNTY PCT 830022	40	3
POTTAWATOMIE COUNTY PCT 830024	2	1
POTTAWATOMIE COUNTY PCT 830025	40	5
POTTAWATOMIE COUNTY PCT 830028	4	4
Total:	1,057	208

Oklahoma Certification Report

OFFICIAL CERTIFICATE OF VOTES
POTTAWATOMIE COUNTY, OKLAHOMA
JUNE 13, 2023

CITY OF SHAWNEE
PROPOSITION NO. 2 CITY OF SHAWNEE

Precinct	FOR THE PROPOSITION - YES	AGAINST THE PROPOSITION - NO
POTTAWATOMIE COUNTY PCT 630002	41	10
POTTAWATOMIE COUNTY PCT 630003	151	22
POTTAWATOMIE COUNTY PCT 630004	3	1
POTTAWATOMIE COUNTY PCT 630006	54	18
POTTAWATOMIE COUNTY PCT 630007	89	19
POTTAWATOMIE COUNTY PCT 630009	58	11
POTTAWATOMIE COUNTY PCT 630011	121	18
POTTAWATOMIE COUNTY PCT 630012	77	8
POTTAWATOMIE COUNTY PCT 630013	209	19
POTTAWATOMIE COUNTY PCT 630015	89	28
POTTAWATOMIE COUNTY PCT 630018	103	17
POTTAWATOMIE COUNTY PCT 630022	32	11
POTTAWATOMIE COUNTY PCT 630024	3	0
POTTAWATOMIE COUNTY PCT 630025	29	14
POTTAWATOMIE COUNTY PCT 630026	4	4
Total:	1,061	197

Oklahoma Certification Report

OFFICIAL CERTIFICATE OF VOTES
POTTAWATOMIE COUNTY, OKLAHOMA
JUNE 13, 2023

CITY OF SHAWNEE
PROPOSITION NO. 3 CITY OF SHAWNEE

Precinct	FOR THE PROPOSITION - YES	AGAINST THE PROPOSITION - NO
POTTAWATOMIE COUNTY PCT 830002	37	14
POTTAWATOMIE COUNTY PCT 830003	144	28
POTTAWATOMIE COUNTY PCT 830004	2	2
POTTAWATOMIE COUNTY PCT 830008	55	15
POTTAWATOMIE COUNTY PCT 830007	85	23
POTTAWATOMIE COUNTY PCT 830009	55	12
POTTAWATOMIE COUNTY PCT 830011	126	15
POTTAWATOMIE COUNTY PCT 830012	72	13
POTTAWATOMIE COUNTY PCT 830013	197	31
POTTAWATOMIE COUNTY PCT 830015	84	31
POTTAWATOMIE COUNTY PCT 830018	98	22
POTTAWATOMIE COUNTY PCT 830022	39	4
POTTAWATOMIE COUNTY PCT 830024	3	0
POTTAWATOMIE COUNTY PCT 830025	28	14
POTTAWATOMIE COUNTY PCT 830028	5	3
Total:	1,030	227

Oklahoma Certification Report

OFFICIAL CERTIFICATE OF VOTES
 POTTAWATOMIE COUNTY, OKLAHOMA
 JUNE 13, 2023

CITY OF SHAWNEE
 PROPOSITION NO. 4 CITY OF SHAWNEE

Precinct	FOR THE PROPOSITION - YES	AGAINST THE PROPOSITION - NO
POTTAWATOMIE COUNTY PCT 630002	32	19
POTTAWATOMIE COUNTY PCT 630003	102	70
POTTAWATOMIE COUNTY PCT 630004	2	2
POTTAWATOMIE COUNTY PCT 630008	39	31
POTTAWATOMIE COUNTY PCT 630007	73	34
POTTAWATOMIE COUNTY PCT 630009	43	23
POTTAWATOMIE COUNTY PCT 630011	99	41
POTTAWATOMIE COUNTY PCT 630012	84	21
POTTAWATOMIE COUNTY PCT 630013	168	59
POTTAWATOMIE COUNTY PCT 630015	58	56
POTTAWATOMIE COUNTY PCT 630018	75	45
POTTAWATOMIE COUNTY PCT 630022	29	12
POTTAWATOMIE COUNTY PCT 630024	3	0
POTTAWATOMIE COUNTY PCT 630025	22	20
POTTAWATOMIE COUNTY PCT 630026	1	6
Total:	806	439

Oklahoma Certification Report

OFFICIAL CERTIFICATE OF VOTES
 POTTAWATOMIE COUNTY, OKLAHOMA
 JUNE 13, 2023

CITY OF SHAWNEE
 PROPOSITION NO. 5 CITY OF SHAWNEE

Precinct	FOR THE PROPOSITION - YES	AGAINST THE PROPOSITION - NO
POTTAWATOMIE COUNTY PCT 630002	37	13
POTTAWATOMIE COUNTY PCT 630003	132	41
POTTAWATOMIE COUNTY PCT 630004	3	1
POTTAWATOMIE COUNTY PCT 630006	46	24
POTTAWATOMIE COUNTY PCT 630007	81	27
POTTAWATOMIE COUNTY PCT 630009	48	20
POTTAWATOMIE COUNTY PCT 630011	110	30
POTTAWATOMIE COUNTY PCT 630012	71	14
POTTAWATOMIE COUNTY PCT 630013	184	42
POTTAWATOMIE COUNTY PCT 630015	71	43
POTTAWATOMIE COUNTY PCT 630018	89	30
POTTAWATOMIE COUNTY PCT 630022	38	5
POTTAWATOMIE COUNTY PCT 630024	2	1
POTTAWATOMIE COUNTY PCT 630025	25	18
POTTAWATOMIE COUNTY PCT 630028	4	4
Total:	939	313

Oklahoma Certification Report

OFFICIAL CERTIFICATE OF VOTES
 POTTAWATOMIE COUNTY, OKLAHOMA
 JUNE 13, 2023

CITY OF SHAWNEE
 PROPOSITION NO. 6 CITY OF SHAWNEE

Precinct	FOR THE PROPOSITION - YES	AGAINST THE PROPOSITION - NO
POTTAWATOMIE COUNTY PCT 630002	26	24
POTTAWATOMIE COUNTY PCT 630003	94	79
POTTAWATOMIE COUNTY PCT 630004	0	4
POTTAWATOMIE COUNTY PCT 630006	33	37
POTTAWATOMIE COUNTY PCT 630007	59	48
POTTAWATOMIE COUNTY PCT 630009	31	33
POTTAWATOMIE COUNTY PCT 630011	85	54
POTTAWATOMIE COUNTY PCT 630012	62	23
POTTAWATOMIE COUNTY PCT 630013	149	75
POTTAWATOMIE COUNTY PCT 630015	46	65
POTTAWATOMIE COUNTY PCT 630018	69	51
POTTAWATOMIE COUNTY PCT 630022	12	29
POTTAWATOMIE COUNTY PCT 630024	3	0
POTTAWATOMIE COUNTY PCT 630025	10	35
POTTAWATOMIE COUNTY PCT 630026	1	7
Total:	680	564

Oklahoma Certification Report

OFFICIAL CERTIFICATE OF VOTES
POTTAWATOMIE COUNTY, OKLAHOMA
JUNE 13, 2023

CITY OF SHAWNEE
PROPOSITION NO. 7 CITY OF SHAWNEE

Precinct	FOR THE PROPOSITION - YES	AGAINST THE PROPOSITION - NO
POTTAWATOMIE COUNTY PCT 630002	44	7
POTTAWATOMIE COUNTY PCT 630003	139	33
POTTAWATOMIE COUNTY PCT 630004	4	0
POTTAWATOMIE COUNTY PCT 630006	58	12
POTTAWATOMIE COUNTY PCT 630007	85	23
POTTAWATOMIE COUNTY PCT 630009	54	12
POTTAWATOMIE COUNTY PCT 630011	113	26
POTTAWATOMIE COUNTY PCT 630012	76	9
POTTAWATOMIE COUNTY PCT 630013	169	28
POTTAWATOMIE COUNTY PCT 630015	81	32
POTTAWATOMIE COUNTY PCT 630018	102	18
POTTAWATOMIE COUNTY PCT 630022	32	10
POTTAWATOMIE COUNTY PCT 630024	3	0
POTTAWATOMIE COUNTY PCT 630025	26	15
POTTAWATOMIE COUNTY PCT 630026	4	4
Total:	1,020	229

WE, THE DULY APPOINTED MEMBERS OF THE POTTAWATOMIE COUNTY ELECTION BOARD, STATE OF OKLAHOMA, DO HEREBY CERTIFY THAT THE ABOVE AND FOREGOING IS A TRUE AND CORRECT NUMBER OF VOTES CAST IN THE ELECTION HELD ON 6/13/2023. RESULTS OF SAID ELECTION ARE SHOWN ABOVE. DATED AT SHAWNEE, OKLAHOMA, THIS 16th DAY OF JUNE, 2023.

Nick Dier

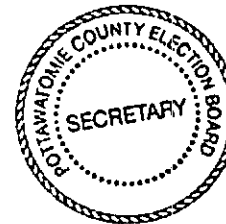
CHAIRMAN

Deris Norton

VICE-CHAIRMAN

Justin Carter

SECRETARY





City Manager Department
16 W. 9th St.
Shawnee, OK 74801
ShawneeOK.org

Date: September 18, 2023
To: Board of City Commissioners
From: Andrea Weckmueller-Behringer, City Manager
Subject: Presentation of the Shawnee Fire Department - Agency Evaluation and Cultural Assessment by Emergency Services Consulting International (ESCI).

Background: On November 21, 2022, the City of Shawnee issued a request for proposals (RFP) for an operational review of the Shawnee Fire Department (SFD). The purpose of the proposal was to solicit qualified consultants to conduct a third-party, unbiased review and evaluation of present policies and practices of the SFD and then produce meaningful and implementable recommendations.

The RFP's requested scope of services included several focus areas specifically related to response capabilities, apparatus inventory and equipment, current service levels and performance, potential performance improvement recommendations, evaluation of current policies and standard operating procedures, evaluation of current and future station locations, as well as a cultural assessment of the Department.

Five responses to the RFP were received by the December 19, 2022, deadline. Members of an internal review committee evaluated and independently scored each proposal. The committee consisted of the City Manager, Assistant City Manager, Chief of Fire, Chief of Police, Human Resources Director, and Finance Director. On January 17, 2023, the City Commission approved the execution of an agreement with Emergency Services Consulting International (ESCI), Inc. for a cost of \$38,550. Over the course of the last seven months, ESCI completed the Shawnee "Fire Department Evaluation & Cultural Assessment."

At the September 18, 2023, City Commission meeting, Jeff Grote, ESCI's Project Manager, will provide a presentation that offers an overview of the major findings and recommendations.

Financial Impact: No additional impact

Attachments: Shawnee Agency Evaluation_Presentation, Shawnee Agency Evaluation_Report 2023

Staff Recommendation: For information only



Shawnee Fire Department



Agency Evaluation & Cultural Assessment

Jeffrey Grote

Project Manager



Emergency Services Consulting International

Purpose of Study

Emergency Services Consulting International (ESCI) was contracted by the City of Shawnee in 2023 to produce an Agency Evaluation and Cultural Assessment for the Shawnee Fire Department. The purpose of this study was to provide the following information:

1. Evaluate where the organization is today.
2. Identify future service delivery needs.
3. Conduct a cultural assessment.

March Site Visit Observations – Positive Findings

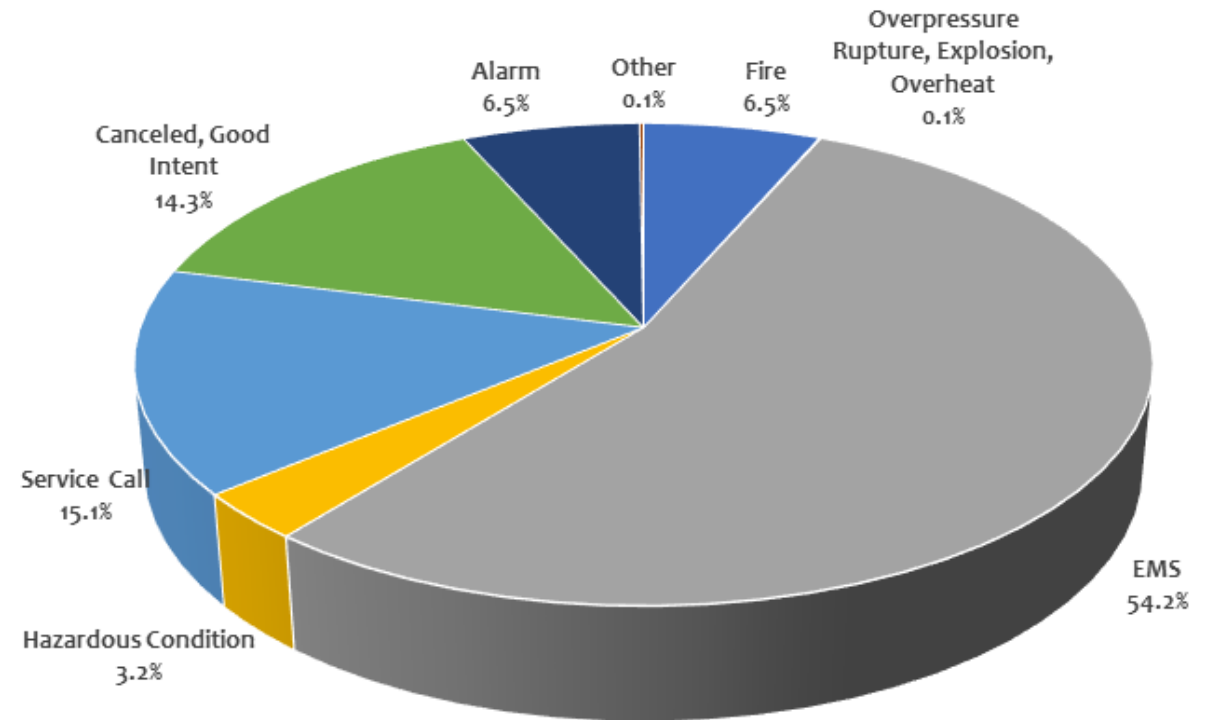
- The community pride is positive within Shawnee. This transfers to pride within the local government and the Shawnee Fire Department. This was shown as ESCI viewed the April tornado response from a national perspective.
- The Shawnee Fire Department is respected within the community.
- Firefighters within the Department are committed to organizational success.
- Many of the firefighters commented on the grit that was developed throughout their career in Shawnee. They are determined to get the job done, even if they do not have all the needed resources. They have a drive and determination to provide top-notch service to the community.
- Members of the Fire Department take immense pride in their department and want to see it be successful.
- The SFD maintains a positive working relationship with the Police Department and the local EMS provider.

March Site Visit Observations – Improvement Areas

- Fire headquarters is not adequate for quality administrative functions. This facility is co-located with the city's administrative building. There is not enough space to perform all the necessary administrative functions.
- SFD does not have a proper training space.
- No station within the city has turnout gear storage separation. Stations either store gear in or adjacent to the apparatus bay or in the personnel locker rooms.
- Recent personnel issues have drastically shaped the cultural environment of the organization, leaving room for distrust and separation. There is a division that appears to exist between shifts that keep the organization from being truly unified in its movement toward a clearly defined vision.
- There is an overall lack of vehicle security around Fire Station 1. A fencing project was identified after items were stolen from an employee's vehicle; however, progress has not been made toward the project's completion.

Service Demand

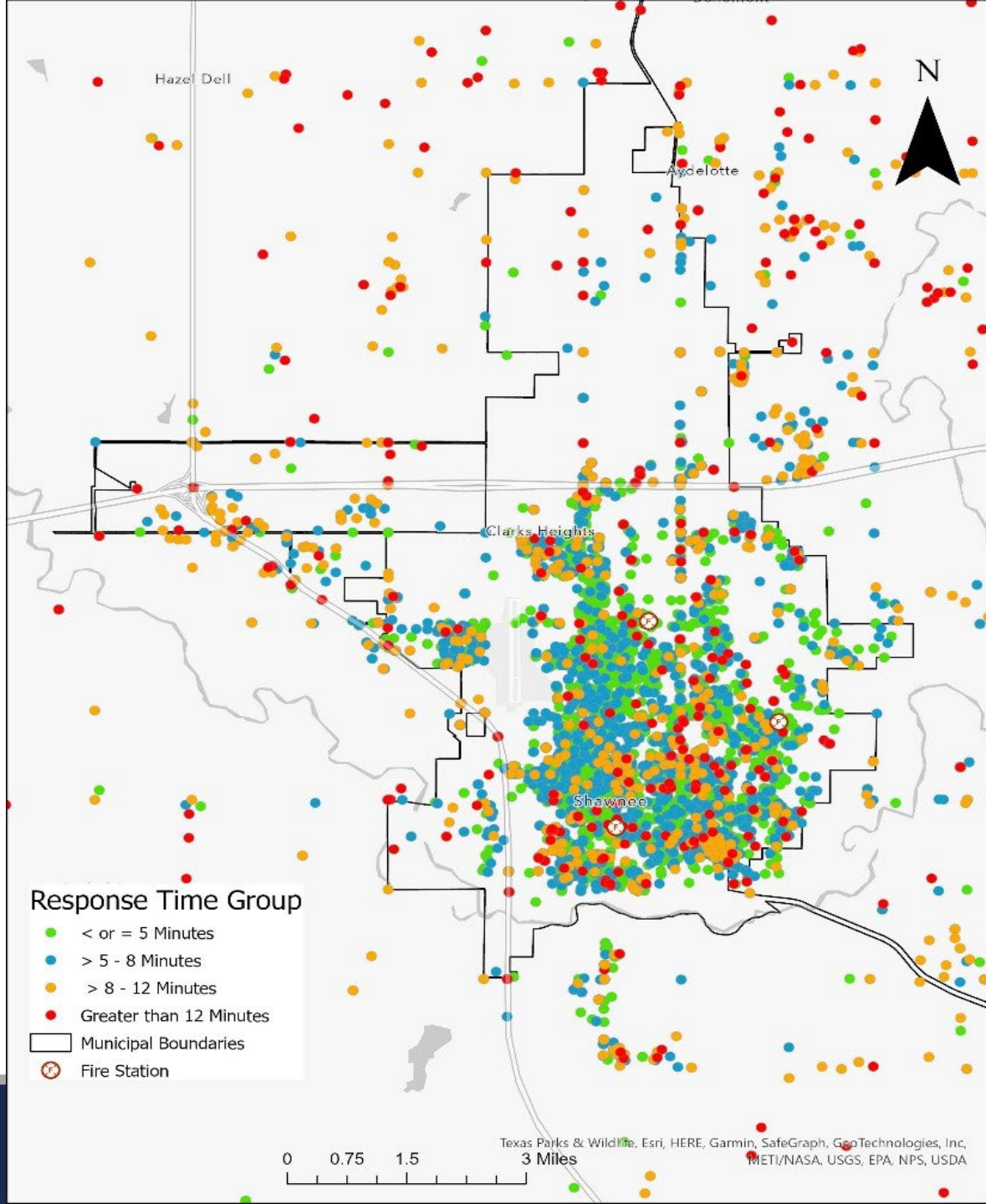
- 2021 Call Volume = 5,865 Incidents
- 2022 Call Volume = 6,247 Incidents
- ISO Class 3/9
- Response Time 09:23



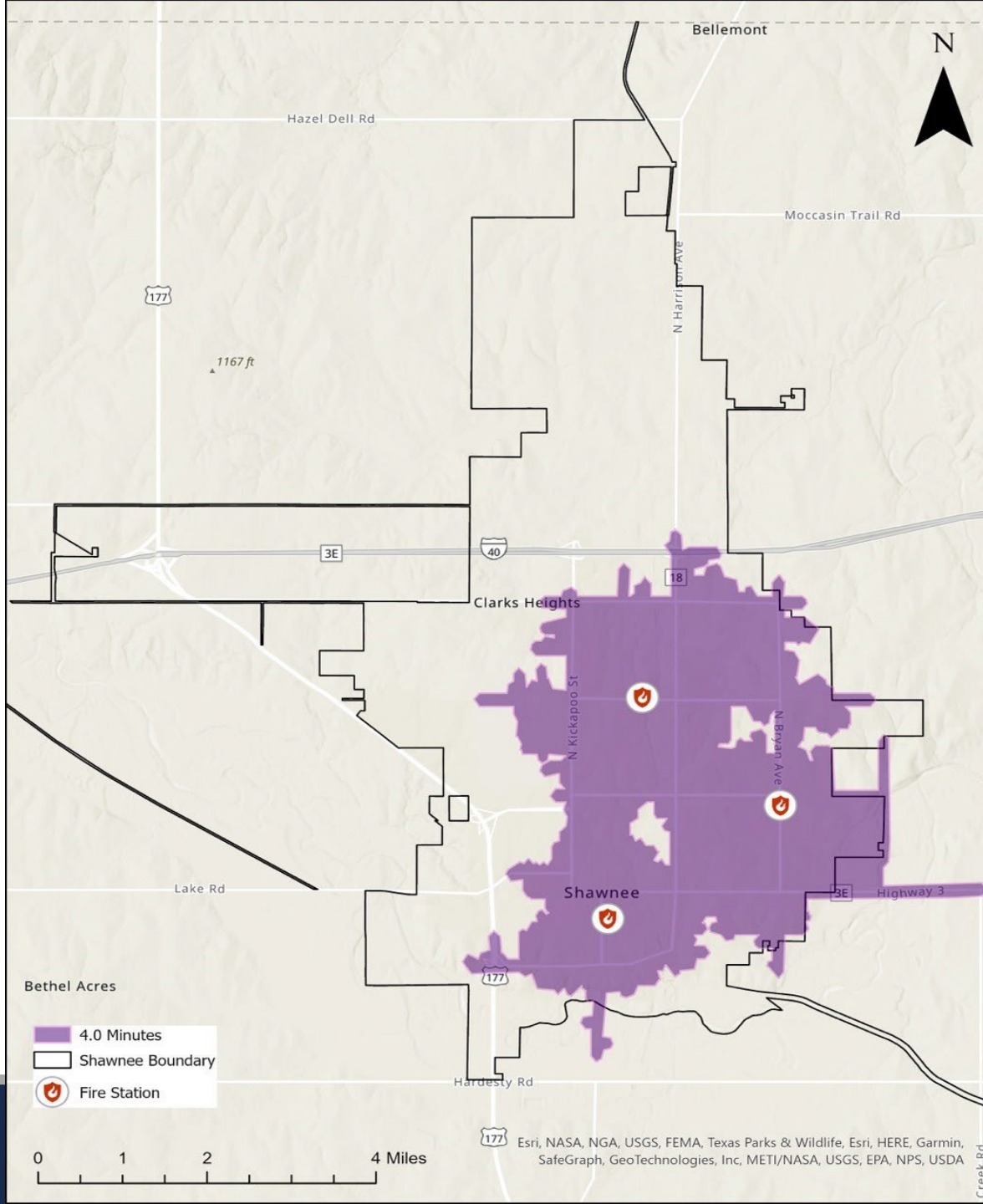
Staffing

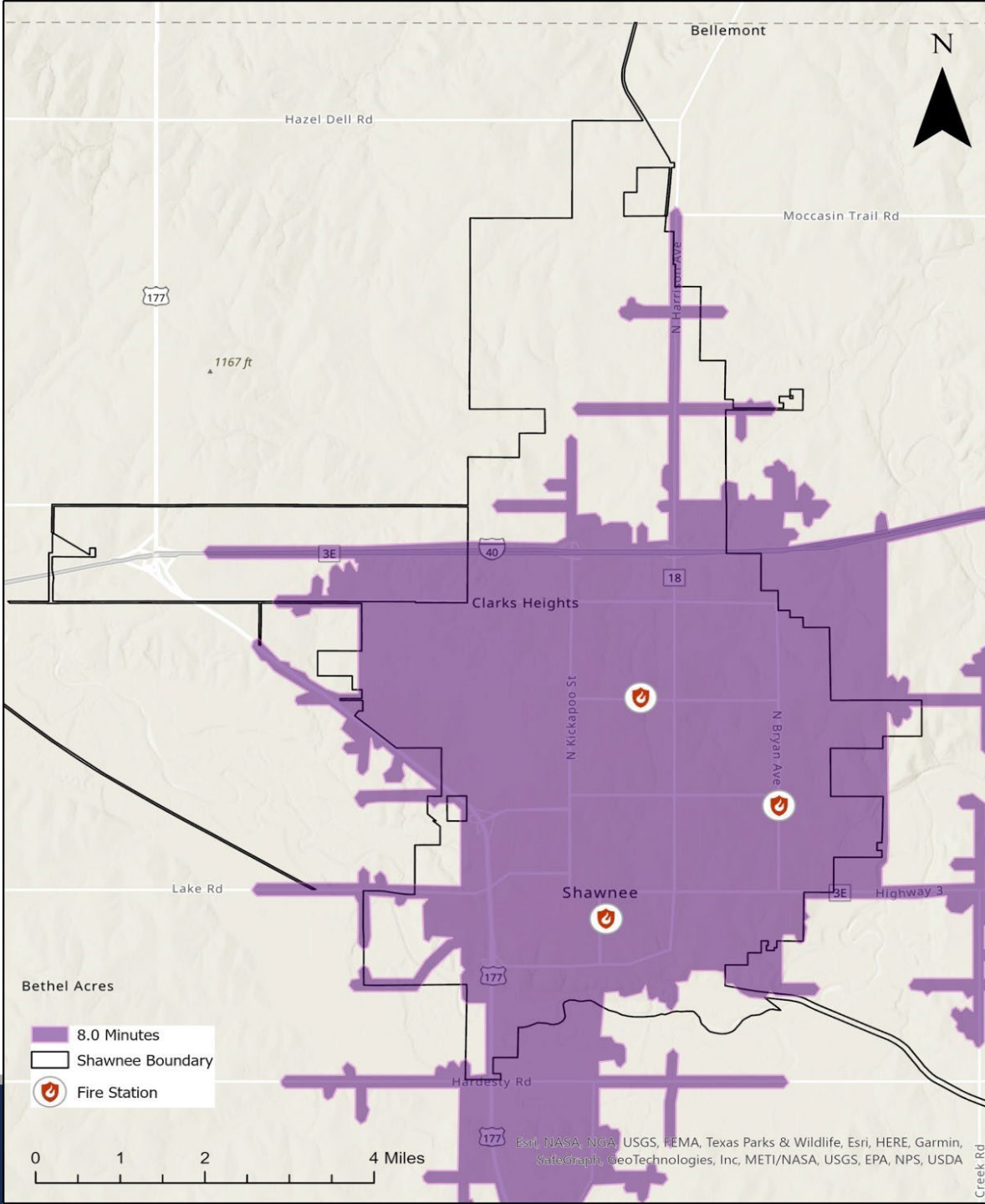
- Currently, 57 assigned members to the Shawnee Fire Department
- 51 are assigned to Operations
 - This reflects 17 firefighters assigned to each shift. Minimum staffing is 12 firefighters.
 - These firefighters operate from 3 fire stations that house six front-line apparatus.
 - A goal of staffing the first response apparatus with a minimum of 3 firefighters should be established.
 - With a growing community, there is a present need for an additional fire station in the northern portion of the City.
 - This new facility will require an additional 15 firefighters to staff.

Current Response Time



4-minute Response Time (NFPA 1710)





8-minute Response Time (NFPA 1710)

Overall Response Performance

	All Incidents	Fire Incidents	EMS Incidents
Turnout Performance	02:17	1.38	2:31
Travel Performance	08:27	07:44	07:42
Response Time Performance	09:23	07:59	08:41
Within City Limits	84.9%	70.1%	86.7%
Outside City Limits	15.1%	29.9%	13.3%

Cultural Assessment – Positive Findings

- Firefighters take great pride in being associated with the Shawnee Fire Department
- Family atmosphere
- Connected with the success of the community
- Confident in position capabilities within the rank structure
- Firefighters report commitment to the Department's Mission Statement

Cultural Assessment – Improvement Areas

- Increased cohesion among different shifts
- Better communication
- Trust in all HR processes
- Investment in employee health & safety
- Relationship building between Commissioners/City Management/
Fire Department

Recommendations

- 1 & 2: Planning – Master Plan – Strategic Plan and Standard of Coverage – Capital Improvement Planning – Succession Planning
- 3: Construct and staff a 4th Fire Station in the northern section of the City
- 4: Rebuild relationships
- 5: Implement a Unified Executive Team Concept – ***Initiated***
- 6: Consider implementing 3-person minimum staffing

Recommendations

- 7: Increase communication within the department
- 8: Research new strategies to address a training facility
- 9: Revise the promotion exam process
- 10: Develop employee recognition program – ***In Development***
- 11: Develop an annual training plan
- 12: Research alternative approaches to apparatus maintenance



Agency Evaluation & Cultural Assessment

QUESTIONS and CLARIFICATIONS



Emergency Services Consulting International



2023 AGENCY EVALUATION & CULTURAL ASSESSMENT

Shawnee Fire Department

Shawnee, Oklahoma

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Emergency Services Consulting International

Providing Expertise and Guidance that Enhances Community Safety

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ACKNOWLEDGEMENTS

Emergency Services Consulting International (ESCI) would like to acknowledge that this project could not have been successfully completed without the assistance and support of the staff and the city officials of the Shawnee Fire Department (SFD).

The ESCI project team began collecting information regarding the optimization of fire stations and Fire Department operations in early 2023. ESCI sincerely hopes that the information in this report is used to its fullest extent and that the emergency services provided to the citizens served by the Shawnee Fire Department will be improved as a result. Additionally, ESCI hopes SFD will use the report as a reference when making future decisions. The ESCI team members recognize that this report contains a lot of information.

ESCI would like to thank the SFD for their hospitality and tireless efforts in bringing this project to fruition. ESCI would also like to thank the citizens, various external organizations, and other stakeholders for their input, opinions, and candid conversations throughout this process.

City of Shawnee and Shawnee Fire Department

Ed Bolt

Mayor

Andrea Weckmueller-Behringer

City Manager

Tony Wittmann

Fire Chief

Tom Larman

Deputy Fire Chief

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EXECUTIVE SUMMARY

The City of Shawnee and its Fire Department retained Emergency Services Consulting International (ESCI) to conduct a Fire Department Operations Review and Fire Station Location Study.

ESCI is an international firm providing specialized, high-quality, and professional fire, emergency medical services (EMS), police, and communications consulting services to organizations throughout the United States, Mexico, and Canada. ESCI, the International Association of Fire Chiefs' (IAFC) consulting arm, has also met emergency service providers' needs since 1976. Consistently, ESCI offers innovative and sustainable recommendations readily understood by the public and valuable to elected officials for setting sound public safety policies. Utilizing over thirty consultants nationwide, who are leaders in their respective fields, ESCI provides consulting services to municipalities, districts, non-profit organizations, and the industrial and commercial community.

The following documents describe the Shawnee Fire Department's (SFD) response resources, deployment strategies, service levels, and include a focused cultural assessment. These documents identify and work with the response data platform provided to examine response time objectives and standards for measuring the effectiveness of fire department services and the deployment of its resources. Additionally, recommendations are made to meet current demand and increased services for the future, based on known and anticipated growth in population and needed services.

The ESCI team was initially impressed with the community spirit exhibited in Shawnee, Oklahoma. The majority of interactions within the government and the community interviewees were indicative of their pride in Shawnee, and they feel ownership of the success of the community.

There were three general findings that this report will explore in detail.

- The first area of concern is the age and condition of two of the fire stations, and the need to construct a 4th fire station north of Interstate 40. An examination into the City of Shawnee's previous budgeting for SFD has highlighted a lack of dedicated tax dollars for maintenance and capital expenditures. Funding also impacts staffing levels that are currently stressed, resulting in random fire apparatus/station closures.
- The second general area of concern focuses on leadership. Within the cultural assessment, there is an immediate need for team building, re-assignments, and planning. Leadership within any organization is responsible for its strategic planning. However, SFD does not currently have a Strategic Plan or Standard of Coverage. These two guiding documents are the foundation of a professional fire service organization.
- The third concern for the ESCI team centered on the lack of space at Station 1. Having the top executive less than 10ft from the firefighter quarters does not breed positive relationships within an organization. If the City of Shawnee funds and constructs a training facility or new fire station, it is highly recommended that administrative offices be moved, much like the new Shawnee Police Department HQ.

This report will explore these concerns in greater detail.

AGENCY ASSESSMENT STUDY METHODOLOGY

ESCI's Agency Evaluation took a "snapshot in time" of the City of Shawnee Fire Department, reviewed its structure, programs, and processes, service delivery, and response performance in detail, and compared the current service to national standards, best practices, and the experience of ESCI's consultants. It was a gap analysis, which can be used as the basis for a follow-on strategic planning process. The first phase involved a site visit, interviews with key elected and appointed officials, career fire personnel, and evaluation of fire stations and apparatus, with findings summarized and key recommendations offered. ESCI then evaluated SFD in more depth, reviewing and comparing financial information and analyzing other administrative, staffing, deployment aspects of the fire department against current industry standards. These standards were based on those provided by the National Fire Protection Association (NFPA), Insurance Services Office (ISO), Center for Public Safety Excellence (CPSE), and other pertinent standards.

The cultural assessment was an evaluation of the beliefs, values, and behaviors of the Shawnee Fire Department. It involved the collection of data through a variety of methodologies, analyzing the data, and gaining an understanding of the working environment of SFD. This research included both qualitative and quantitative methodologies and assisted ESCI in gaining meaningful insights and making culturally appropriate recommendations. The data was collected and interpreted following the American Psychological Association's (APA) Ethical Principles of Psychologists and Code of Conduct, in accordance with the Society of Industrial and Organizational Psychology (SIOP).

ORGANIZATIONAL DESIGN

The organizational design of an emergency services agency is vitally important to the agency's ability to deliver services efficiently and promptly while providing the necessary level of safety and security to the organization's members. ESCI finds that the structure and function of the SFD require attention as the organization moves forward. It is understood that many recommendations in this evaluation require dedicated budgeting; however, it is not the intent of ESCI to displace the budgetary priorities of the City of Shawnee. Recommendations for future considerations are included.

In January 2023, the Shawnee Fire Department (SFD) retained Emergency Services Consulting International (ESCI) to conduct an Agency Evaluation. This report provides the SFD with a detailed cultural assessment and analysis of current resource deployment as it applies to fixed facilities, including apparatus and personnel assigned to a fire station.

Three fire stations currently serve the community's fire and rescue service demands. The study will provide information and recommendations to determine if an additional fire station is needed to serve the community best, and if so, the study also renders a recommendation for the general location thereof. Further, the study will consider any potential impacts on the ISO PPC rating, response times, and the required square foot per facility for the fire department's current deployment.

This report is designed to assist Shawnee City leaders with quantifying current service delivery, evaluating service delivery and response performance, and developing strategies to make decisions related to facility locations. Also, the cultural assessment will provide valuable insight into leadership within the organization and techniques and approaches to enhance trust and communication within the fire department.

PROJECT INITIATION & DEVELOPMENT OF THE WORK PLAN

The beginning phase for initiating the Shawnee Fire Department Operations Review and Fire Station Location Study was for Emergency Services Consulting International (ESCI) to develop a project work plan based on the approved scope of work. As part of this process, ESCI conversed with the SFD project team to understand the organization's background, goals, and expectations for this project.

Acquisition & Review of Background Information

During this project phase, ESCI requested pertinent information and data from the SFD. The requested data included information about the fire department's service area, National Fire Incident Reporting System (NFIRS) data, automatic and mutual aid agreements, geographic planning zones and station/apparatus locations, staffing plans, other relevant, comprehensive plans, land use studies, climate action plans, and the hazard mitigation plan. ESCI used the collected data to analyze and develop the Shawnee Fire Department Operations Review and Fire Station Location Study.

Key Concepts & National Trends

This report includes best practices based on nationally recognized guidelines and criteria, including concepts from the National Fire Protection Association (NFPA), the Insurance Services Office (ISO), the Center for Public Safety Excellence (CPSE), laws and regulations of the Commonwealth of Virginia, and other generally accepted practices for emergency services. Where applicable, the report is written and organized in a style that is consistent with the following:

- Community Risk Assessment: 10th Edition – Quality Improvement for Fire & Emergency Services, Center for Public Safety Excellence, Chantilly, VA 2021.
- NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments.
- NFPA 1581, Standard on Fire Department Infection Control Program.
- NFPA 1402, Guide to Building Fire Service Training Centers
- NFPA 1851, Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting
- NFPA 1901, Standard for Automotive Apparatus
- NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles
- NFPA 1912, Standard for Fire Apparatus Refurbishing
- NFPA 1221, Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems
- NFPA 1500, Standard on Fire Department Occupational Safety, Health, and Wellness Programs
- NFPA 1851, Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting

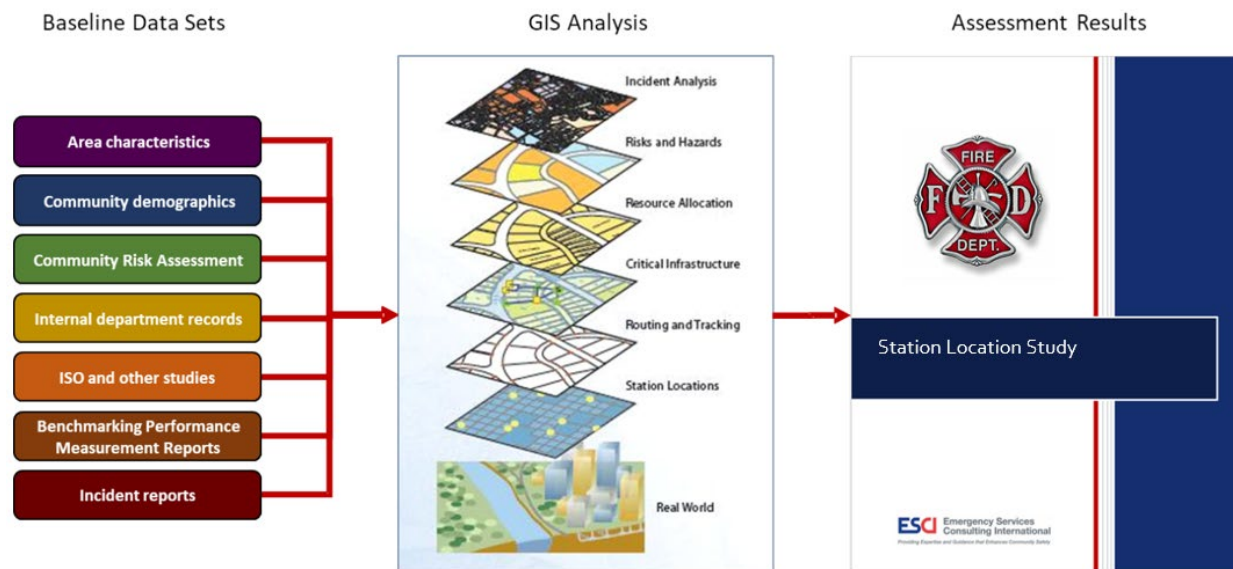
Baseline Assessment & GIS Technology

From the information provided by the Shawnee Fire Department and the City of Shawnee, ESCI established a baseline assessment of current community risks and service delivery needs centered around the specialized and technical services provided by the organization. This assessment aimed to identify risks, hazards, vulnerabilities, and threats compared to industry standards and best practices to determine current and future fire station location needs.

The ESCI team also collected information, reviewed population and other community growth patterns, and analyzed trends and expectations. This was done to provide a glimpse into future community conditions, land use, and fire protection risks to interpret their potential impact on emergency service planning and delivery.

ESCI then used Geographic Information Systems (GIS) technology and analysis tools to visualize the data and provide additional information for the fire department. The following figure illustrates the conceptual GIS methodology as applied to this assessment.

Figure 1: GIS Methodology



Analysis & Development of Recommended Strategies

From the time the first fire station is built, there is an expectation that the facility can, and will, provide a timely response to calls for service. The fire station provides that response to a given area, within a reasonable time, in a pattern that essentially is an overlay on the streets and highways that radiate outward from the location. Even before any incidents occur in a community, the geographic road network and topographical attributes of a community create a dynamic segmentation that results in the ability of fire professionals to predict what areas can be reasonably accessed and which will not be adequately covered.

Over time the area of coverage changes and evolves based on community growth. The concept of using actual travel time today is based upon a more accurate representation of the level of service for an all-risk approach. It is more performance-based. Today, most fire agencies set a time standard, including alarm processing time, turnout time, and travel time. The actual road travel time has often been used to set the community's performance expectations.

Using this approach, fire stations are usually located sparingly. This concept is based on the time intervals identified in the Standards of Response Coverage section of the Self-Assessment Model published by the Commission on Fire Accreditation International. This process leads to developing a standard of response cover or a time and level of staffing designed to control an emergency at a minimum loss level. The process is, however, a policy choice based on risk and local conditions.

The basic performance standards for time goals are rooted in the rapid speed of fire growth and the consequences of emergency medical situations over a brief time frame. It has been determined that both fires and medical emergencies can gain a foothold that results in excessive losses when these times are excessive.

Based on this concept, SFD performance was evaluated, and recommendations for improvement will be offered.

SITE VISIT OBSERVATIONS

ESCI conducted a site visit in which the consultant team met with stakeholders associated with SFD. Meetings were conducted with the City Manager, Mayor, Fire Chief, Police Chief, Commissioners, administrative staff, Firefighters, Police Dispatch, Human Resources, and City Finance. The site visit's purpose was to elaborate on the information in the ESCI data documents. It also allowed ESCI consultants to discuss strengths and challenges facing the organization from various perspectives. The major themes and goals ESCI noted during the site visit were:

- The community pride is positive within Shawnee. This transfers to pride within the local government and the Shawnee Fire Department.
- The Shawnee Fire Department is respected within the community.
- Firefighters within the Department are committed to organizational success.
 - Many of the firefighters commented on the grit that was developed throughout their career in Shawnee. They are determined to get the job done, even if they do not have all the needed resources. They have a drive and determination to provide top-notch service to the community.
 - Members of the Fire Department take immense pride in their department and want to see it be successful.
- Fire headquarters is not adequate for quality administrative functions. This facility is co-located with the city's administrative building. There is not enough space to perform all the necessary administrative functions.
- SFD does not have a proper training space.
- No station within the city has turnout gear storage separation. Stations either store gear in or adjacent to the apparatus bay or in the personnel locker rooms.
- Recent personnel issues have drastically shaped the cultural environment of the organization, leaving room for distrust and separation. There is a division that appears to exist between shifts that keeps the organization from being truly unified in its movement toward a clearly defined vision.
- There is an overall lack of vehicle security around Fire Station 1. A fencing project was identified after items were stolen from an employee's vehicle; however, progress has not been made toward the project's completion.
- The SFD maintains a positive working relationship with the Police Department and the local EMS provider.

COMMUNITY & ORGANIZATIONAL OVERVIEW

An assessment of the Shawnee Fire Department's existing composition and service delivery was conducted by ESCI. ESCI based this evaluation on data provided by the agency and collected during the consultant team's fieldwork. Where applicable, the information was compared to a combination of applicable state laws and regulations, National Fire Protection Association (NFPA) standards, Commission on Fire Accreditation International (CFAI) self-assessment criteria, the Center for Public Safety Excellence (CPSE) health and safety requirements, federal and state mandates relative to emergency services, and generally accepted best practices within the emergency services community, as well as the experience of ESCI's consultants.

The following section provides a general overview of the Shawnee Fire Department and the community they serve.

Shawnee Community Description

The City of Shawnee is centrally located within the State of Oklahoma just east of the Oklahoma City metropolitan area. According to the U.S. Census Bureau, the 2020 population was 31,279, an increase of 4.8% over the 2010 population of 29,857. The city has 43.62 square miles of land and is the county seat of Pottawatomie County.

Shawnee is an eastern neighbor of Oklahoma City, Oklahoma, the largest city in the state and the state capital. Geographically located within the Midwest, Shawnee is generally composed of rolling hills. The city is located in the meteorological "tornado alley," the area of the country with the highest prevalence of tornadoes.

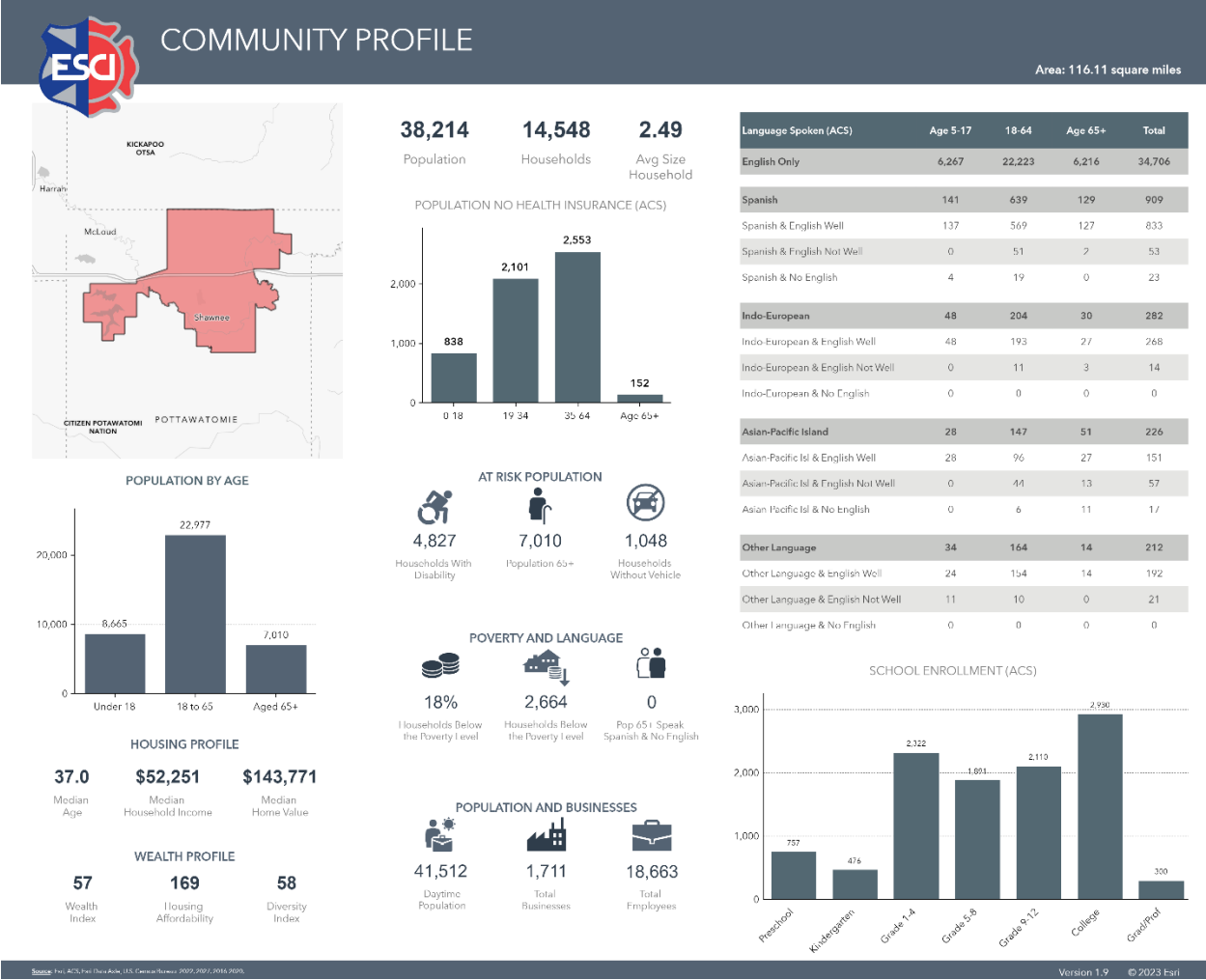
According to the 2020 Census, there were 11,992 households in Shawnee with an average of 2.48 persons per household. Of these households, 90.9 percent were listed as a household with a computer and 86.2 percent as having a broadband internet subscription. Persons without health insurance under the age of 65 were listed at 17.2% compared to 9.8% nationally.

The city has a diverse population. In 2020, the racial makeup was 71.4 percent White alone; 4.5 percent Black or African American alone; 15.2 percent American Indian and Alaska Native alone; 0.7 percent Asian alone; 0.2 percent Native Hawaiian or Other Pacific Islander alone; 7.5 percent two or more races; 7.4 percent Hispanic or Latino; and 67.1 percent White alone, not Hispanic or Latino.

In Shawnee, the 2020 population of 31,279 encompassed 7.2 percent under the age of 5 years, 23.1 percent under the age of 18 years, and 16.3 percent over the age of 65 years, with a median age of 36.4 years. Females accounted for 52.4 percent of the population. The median household income in 2021 dollars was \$47,649 compared to \$ \$69,021 nationally, with 18.5 percent of the population listed as "living in poverty" compared to 11.6 percent nationwide. The education level listed 88.9 percent of the people with at least a high school diploma or equivalent and 24.2 percent with a bachelor's degree or higher.

The Shawnee Fire Department serves not just the City of Shawnee but also the surrounding areas. The demographic composition of the much larger fire district is shown in the following graphic.

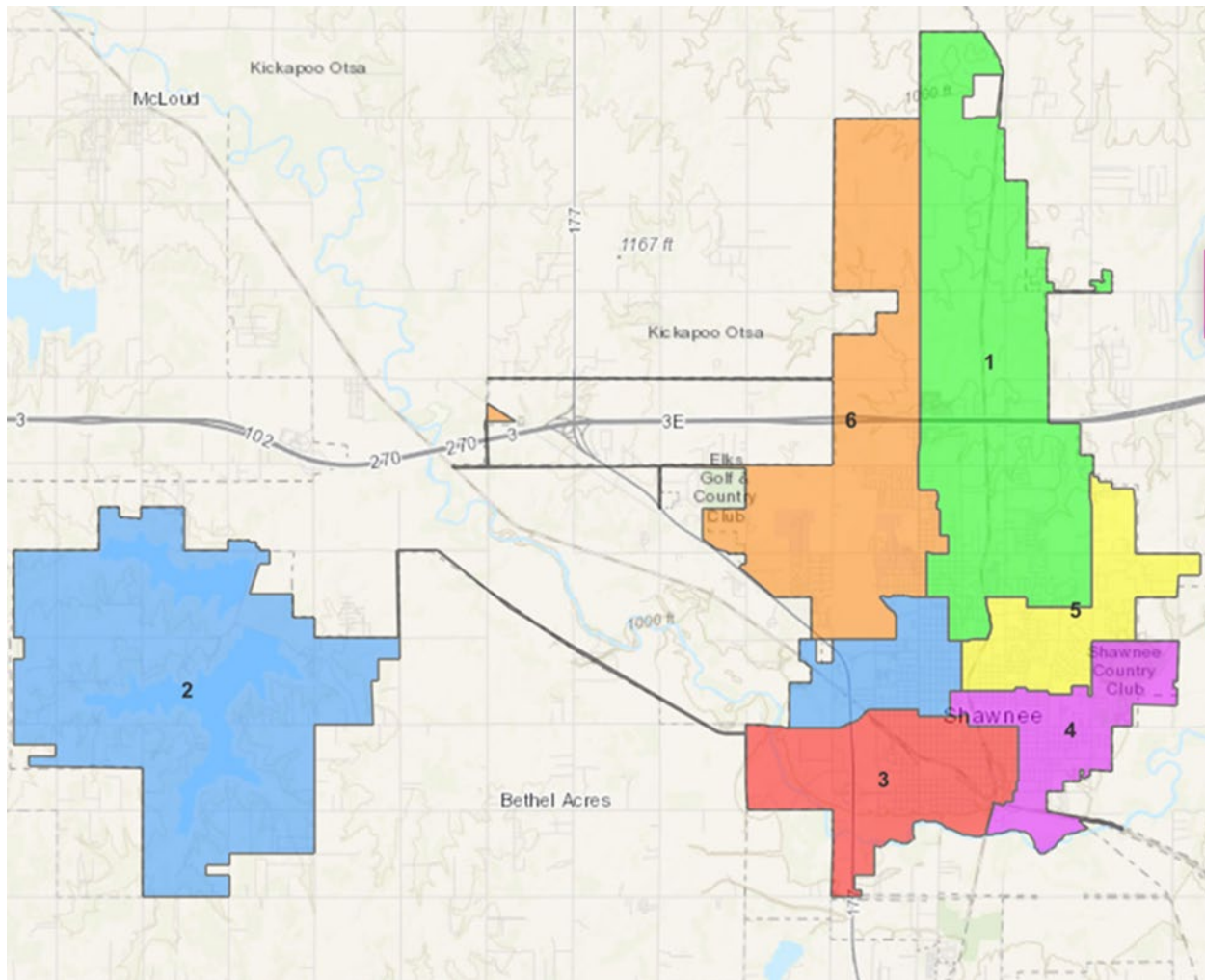
Figure 2: Fire District Demographics



The Shawnee Fire Department is a department within the city government, accountable to the City Manager, who is hired by the City Commission. The City Commission is made up of six (6) elected Commission members and one (1) Mayor, and collectively they represent the over 31,000 city residents, all with various perspectives. Department leaders approach stakeholders with immediacy, believing that when citizens have easy access to information, they can lead healthier, safer lives.

The following figure shows the map of the City of Shawnee’s six wards.

Figure 3: Ward Map



The City Commission is the primary legislative and policy-making body for the City of Shawnee. The six commissioners each represent one of the six city wards in which they reside. They are elected to serve four-year terms.

The City Manager's position is the top administrative post in the City of Shawnee government. The City Manager is responsible for implementing city policies and directives, leading the preparation of the city budget, and overseeing daily operations of all city departments and offices. Furthermore, the City Manager, through the department heads, manages all city-provided services and public facilities and their maintenance and safety.

Shawnee Fire Department

The Shawnee Fire Department is led by the Fire Chief, who makes decisions related to the strategic direction of the department and policy decisions that affect daily operations. The Fire Chief reports to the City Manager of Shawnee. Reporting directly to the Fire Chief is a Deputy Fire Chief. Battalion Chiefs, the Training Chief, and the Fire Marshal report to the Deputy Chief. The SFD is divided into three divisions: Fire Prevention, Training, and Fire Suppression/Emergency Operations. A brief description of the overview is provided below:

Fire Prevention - 2 FTEs (Fulltime Employees)

- The Fire Marshal and the Deputy Fire Marshal fulfill the fire prevention needs for the organization.

Training - 1 FTE (Fulltime Employee)

- One Training Chief provides for the training needs of the department.
- There were previous plans and dedicated funds but there is no longer sufficient funding for a dedicated training site for the department.

Fire Suppression/Emergency Operations - 51 FTEs (Fulltime Employees)

- Apportioned into three battalions, these firefighters are responsible for the daily operation of all fire stations.
- They respond to fire, medical, and other emergencies and complete associated activity and response reports.
- They maintain the department's equipment and facilities.
- The firefighters also participate in prevention activities, including fire and life safety education.

Figure 4: SFD Organizational Chart



These professionals have the skills and equipment to respond to structure, brush, and vehicle fires; medical emergencies involving cardiac arrest, respiratory distress, and trauma; vehicle accidents requiring extrication; hazardous materials incidents; technical rescue; natural disasters; and many other emergencies.

Shawnee has 3 fire stations, all located within the city limits of Shawnee. Each battalion is staffed with a Captain to serve as the supervisor and an apparatus operator. The daily minimum staffing is 12 firefighters and officers, and that is also the most common daily staffing level.

SFD does not have any formalized automatic aid agreements in place with neighboring jurisdictions. However, mutual aid agreements are in place for several neighboring local governments. Fire Station 1 includes the administrative offices and houses the fire prevention division.

Public Protection Classification: Insurance Services Office–Rating Bureau

As of June 1, 2012, SFD has a Public Protection Classification (PPC) rating of Class 3/9 from the Insurance Services Office (ISO). This rating is what many insurance companies base their insurance premiums on for privately insured properties. The higher the PPC class, the greater the likelihood that individual property insurance premiums will increase, especially for commercial properties. The PPC also provides fire departments with a valuable benchmark and is used by many departments as a tool when planning, budgeting, and justifying protection improvements.

The ISO rates four major areas: Emergency Communications — 10 percent/points (emergency reporting, telecommunications, dispatch circuits); Fire Department — 50 percent/points (engine companies, reserve pumpers, pumper capacity, ladder service, reserve ladder and service trucks, deployment analysis, company personnel, training, and operational considerations); Water Supply — 40 percent/points (supply system, hydrants, inspection, and flow testing); and up to 5.50 additional points for Community Risk Reduction program activities.

There are opportunities to improve in areas of the PPC that can increase the likelihood of SFD receiving a better classification in its next evaluation.

Financial Overview

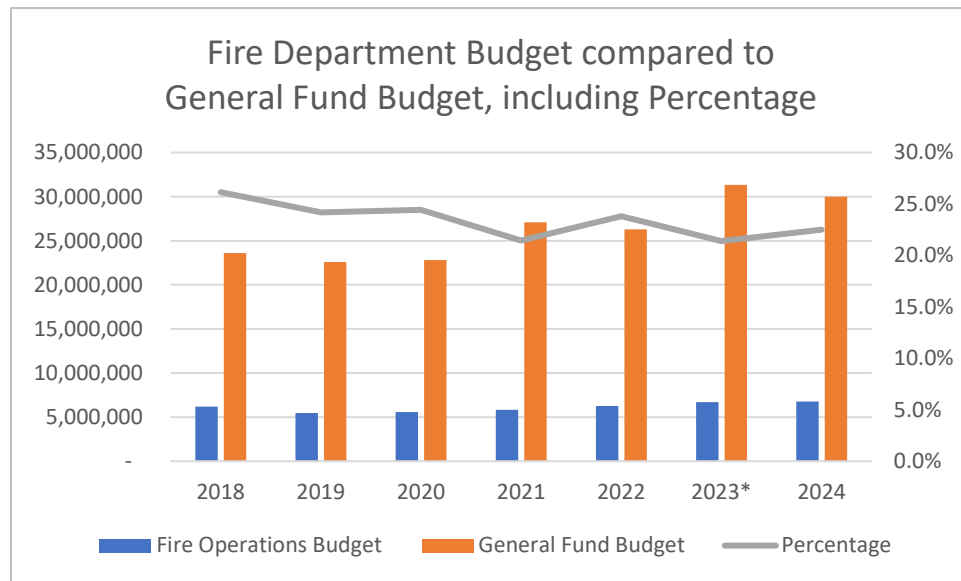
The overall 2023 General Fund budget for the City of Shawnee was \$31,339,946 (which did not include the budgets for either the Shawnee Airport Authority or the Shawnee Municipal Authority, as neither may fund public safety operations and related capital expenditures). Following a devastating tornado event in April 2023, the recently adopted 2024 General Fund budget was approved at \$30,007,510.

Since 2018, the Shawnee Fire Department has on average accounted for 23% of the overall General Fund operating budget, and the current year includes \$6,757,402 for Fire Department operations. The Fire Department's proportion of capital purchases varies from one year to the next; across the next five years, \$1.2 million annually has been earmarked for expenditures on fleet replacement, Station 3 renovation, and protective equipment renewal.

As various areas of the community continue to grow, fire protection needs build as well. Several regions highlighted in this report require funding. A General Obligation Bond could fund a new fire station, and the additional firefighters required to staff the new facility could be supported by the State of Oklahoma's new Public Safety District taxing legislation. Additionally, a General Obligation Bond could be utilized to fund a new training facility.

The below illustration identifies the operations funding for the Shawnee Fire Department over the last seven years:

Figure 5: Budget compared to General Fund

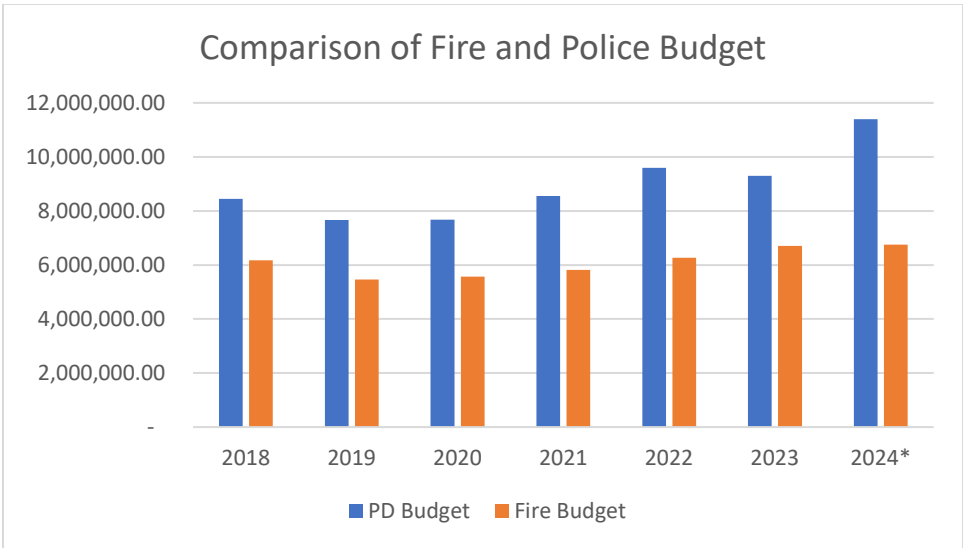


* 2023 was the first year that established a 2% Contingency in the General Fund Budget for unforeseen costs.

ESCI understands that each identified funding mechanism requires specific elections and approval thresholds, which the voters of Shawnee must pass. In the June 2022 presentation from Crawford Associates, who prepare the city's financial report, the City of Shawnee was cited to be in exceptionally good financial health with a score of 8.1.

It is ESCI's opinion that the City of Shawnee has funding mechanisms available to support the needs of the fire department. The fire department's budget has not grown in tandem with the city budget. The city has seen an average of 6.4% growth over the past 5 years while the fire department budget has, on average, grown by 4.4% annually. Conversely, the Police Department has seen a slightly higher growth of 5.4% (not including Emergency Management funds earmarked for tornado recovery). A continued imbalance may cause a future reduction in service by the Shawnee Fire Department.

Figure 6: Comparison of Fire & Police Budget



* Police (Emergency Management Division) Budget includes \$1,500,000 for continued tornado recovery

Management Components

Effective department management is a complicated and expanding challenge for service leaders. With increasing complexity comes increased cost. Today’s department must address management complexities that include structuring an effective organization, setting and measuring levels of service, staying abreast of modern technologies and methods, evaluating and maintenance of a qualified force, staffing developments for effective succession, and supporting financial sustainability for the future.

Foundational Management Elements

To be effective, a department's management must be based on several components. These include a clearly stated *mission* (the fundamental purpose of an agency); a *vision* for the future (where the organization is going); and the *values* or *guiding principles* (how the organization will treat its members as it navigates from its current state to its desired future state). From these fundamental elements, the organization evaluates the environment it operates within and establishes a series of strategic initiatives, goals, and objectives. These elements combine to form a strategic plan.

Shawnee Fire Department (SFD) has an established mission statement, but no outlined vision statement or core values. The mission statement is detailed in SFD Standard Operating Guideline #A.0001, dated 4/20/2021.

Mission Statement for the Shawnee Fire Department:

Prevent Harm. Survive. Be Nice.

Vision Statement of the Shawnee Fire Department:

(SFD does not currently have a vision statement.)

Shawnee Fire Department Core Values

(SFD core values are embedded in the Department's Code of Ethics but are not specifically stated.)

It is an industry best practice to utilize the mission, vision, and core value statements as a guide in developing a single strategic plan, which creates a work plan and guides the progress of the organization, ensuring organizational energy is invested in the most important initiatives. A strategic plan typically has the following elements:

- Internal and external environmental scan (SWOT analysis [Strengths, Weaknesses, Opportunities, and Threats]).
- Mission, vision, and values (or guiding principles).
- Initiatives, goals, and subordinate objectives with performance metrics or outcome statements.
- Manager assigned to each initiative.
- Timelines assigned to each objective.
- Responsible persons assigned to coordinate the achievement of each objective.

The strategic plan establishes timelines for the goals and objectives to be accomplished and assigns them to appropriate personnel to complete. In compiling a strategic plan, the goals and objectives are aligned as prioritized workflow, timelines ensure they stay on track, and the personnel assigned to achieve them are accountable for keeping the work product moving forward. The work is consistent with the mission, propels the agency toward its vision, and the values reinforce how personnel treats each other (culture) in the process of achieving the strategic plan.

While a city-wide strategic planning document from 2017 exists, SFD should consider conducting a department-specific strategic planning process to supplement the city's plan. The new strategic plan should cover three-to-five years, depending upon the scope of the work involved, and should be approved and adopted by the City Commission, which acknowledges and supports the work to be performed in implementing the plan.

Regulatory, Policy, and Guidance Documents

Consistent with other fire and EMS services nationally and even globally, SFD functions in a paramilitary manner. This ensures that when personnel are engaged in rapidly changing emergency situations, clear and concise direction from a central authority (Incident Commander) is followed without delay. Cultural norms tend to relax the formality of this structure during routine operations, but it nonetheless follows. The paramilitary structure must be supported by a standardized set of rules, regulations, and policies that guide appropriate behavior and accountability. These guiding documents are vital for success in all phases of fire department operation and at all levels.

SFD has a published set of regulatory documents, both guiding and directive in nature. These are generally classified as Standard Operating Guidelines (SOGs) or Standard Operating Procedures (SOPs). Some training is conducted on the SFD policies. However, there is no specific review schedule for the regulatory documents. Yet, all personnel can provide suggestions and/or draft proposed changes. The SOGs are utilized in some training evolutions. The regulatory documents are internally reviewed for consistency and for legal mandates.

All these documents should be reviewed and revised as appropriate on a planned cycle. ESCI recommends that one-third of the documents be evaluated each year so that the complete set is reviewed and revised every three years. There should also be established a formal process to develop new regulations, policies, and guidelines. Shawnee has begun the process of implementing policies through an external provider, Lexipol. It was noted during the site visit that this project has been ongoing for more than a year, and the first set of policies was recently rolled out to the firefighters.

Critical Issues

Public safety agencies routinely face a complex array of new critical issues and emerging challenges. Some public safety leaders unwisely choose to face these issues and challenges alone and forego the benefits of involving numerous talented and capable members of the organization at all levels. SFD's Fire Chief has stated the following critical issues facing the organization:

- Funding for new staff
- Funding for apparatus and stations

The addition of staff, replacement of apparatus, and renovations of/additions to fire stations are costly endeavors that could potentially take years to accomplish. These items require engaging with SFD leadership, City Manager, and the City Commission to develop strategies to address the development and use of funds. Doing so not only improves service to the community and ensures proper planning and use of City funds, but it will likely result in an improved Public Protection Class (PPC), lowering some insurance premiums within the City.

Communication

SFD does not invest considerable time or effort into its formal internal communication. Staff meetings are held at the senior staff level—Fire Chief, Deputy Chief, Battalion Chiefs, Training Chief, and Fire Marshal—and are scheduled every other Monday. Occasional shift meetings occur but are not regularly scheduled. Informal minutes are taken at the staff meetings. Emails and memos are utilized as needed. SFD does not have member newsletters or all-member forums. The Fire Chief and his command staff subscribe to an open-door policy, and there is a vertical communication path clearly identified (chain of command).

Community newsletters, media coverage, social media, and websites are the means most commonly employed by organizations to communicate with the public. SFD does not invest considerable time or effort into its formal external communication. SFD's communication with the public is more dependent upon the broader city by utilizing the department's website. No community newsletter or survey is issued to the citizens. SFD does have a social media presence; however, it is not updated regularly. Active engagement and frequent content are essential to maintaining a positive working relationship with the community. A proactive approach to communicating with the citizens at large, local news media, and internal stakeholders is essential to meeting this objective.

Record Keeping and Documentation

In any organization, documentation of activities is of paramount concern. Sound management decisions cannot be assured without sound data, which is gathered in records routinely.

The City of Shawnee has processes for documentation control. Public records access is provided in the city. Any hard copy records are secured by lock and key in filing cabinets or locked in offices, as well as stored in the city offices. All computer files are backed up within the city network servers and located within city facilities. Electronic logins are secured by passwords assigned to individual users with rights to various documents, files, and folders. SFD does not have department-specific guidelines and relies on the city policy.

All incident reporting records are kept electronically through a third-party service, ESO. Vehicle and equipment maintenance records are kept by either the department or by third-party service providers who work on the equipment and apparatus. The same is said for other records such as hose testing, Personal Protective Equipment (PPE) inspections, self-contained breathing apparatus (SCBA), ladder, and pump testing.

Security

Facilities, equipment, and records are all essential elements to a fire and emergency services agency. Significant public dollar amounts are invested into the services SFD provides to the community. Thus, it is critical that proper precautions are taken to protect those investments and those records from loss, whether intentional or otherwise.

Physical locks secure SFD buildings and offices, and a card access system is in place for access control. SFD's computers are secured inside buildings or vehicles where personnel must have keys to unlock doors and then have a valid username and password to gain access.

Emergency response vehicles are typically stored within a secured facility until responding to alarms, while staff support vehicles, that may be outside, are under lock and key. Equipment, other inventory, and internal records are maintained within the records management system.

Organizational Planning Processes

Evidence that the City of Shawnee invests in progressive planning can be found on its website. There, the citizens can access the 2017 – 2022 Strategic Plan, as well as the 2016 National Citizen Survey and the 2023 Community Survey. On its website, the City of Shawnee also provides its citizens with an online portal to report issues, an interactive map of capital improvement projects, and video recordings of presentations on a variety of topics and current city activities.

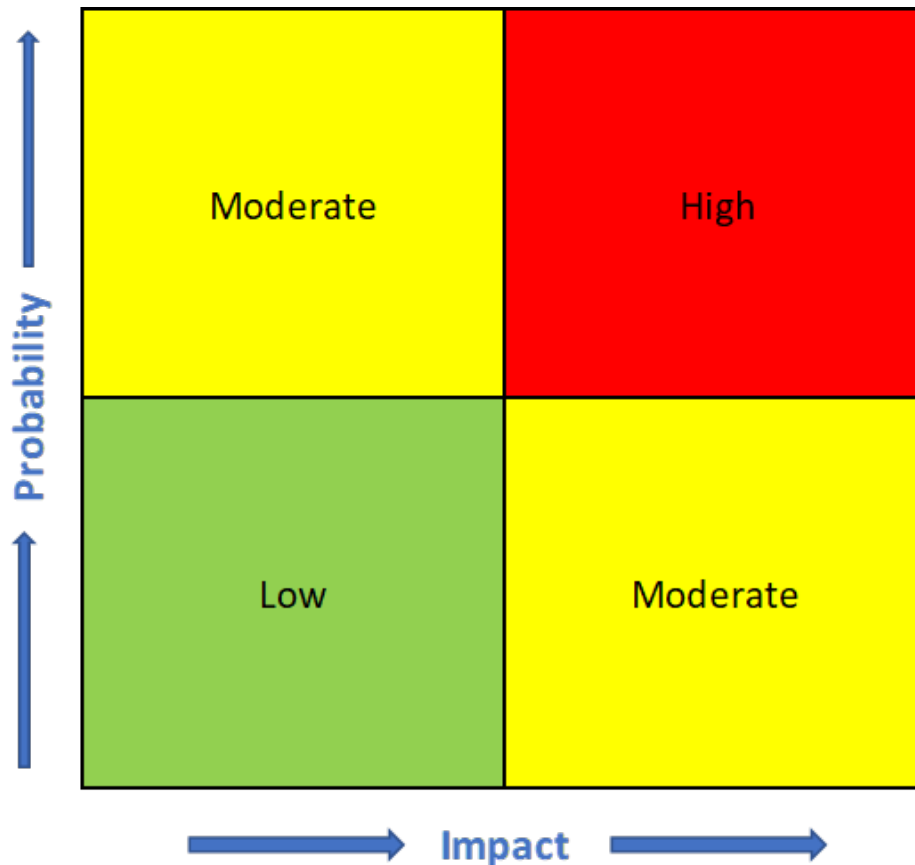
The fire service nationally creates and gathers large volumes of data in the performance of duties, both from emergency response activities and in preparation for and in anticipation of large-scale disasters. However, many of these same organizations do not analyze the data sufficiently to evaluate the effectiveness of their operations and then adjust as necessary to become more effective or efficient.

There are two major planning activities fire departments should employ: emergency preparedness and response planning, and administrative planning for the organization's future. There are sub-elements under each of these as well. Each of these are described in the following pages, as well as how SFD fares in either of these major categories.

Emergency Preparedness & Response Planning

As emergency response agencies, fire departments must thoroughly understand their community's risks. These risks must be quantified. There are numerous risk/consequence or risk/probability matrices available, but regardless of the labels on the axes, these matrices in their simplest form usually take the shape depicted in the following figure.

Figure 7: Risk (Impact/Probability) Matrix



Source: "Risk Impact/Probability Chart: Learning to Prioritize Risks." *Risk Impact/Probability Chart*. Web. 22 June 2016.

As the risk is quantified generally into one of the four quadrants, a decision is made based on the level of risk. Communities likely cannot create a zero chance of risk, which would indicate there is no risk in that community. Conversely, there cannot be a 100-percent chance of risk, since that would make it a certainty, not a risk. Instead, every community must come to grips with an acceptable level of risk, recognizing that it is improbable, impractical, and unaffordable to eliminate all risk.

Using a matrix helps fire department officials determine approximately where the line is between an acceptable and unacceptable risk. It is important to note that for the individuals directly involved in an incident, it is never considered an acceptable risk. The quadrants in the previous figure may be defined as follows.

- Low impact / low probability—Risks in the bottom left corner of the matrix are low level, with acceptable consequences if the incident occurs. These are considered **Low Risk**, which is often considered acceptable and requires no further action.
- Low impact / high probability—Risks in the top left corner are considered **Moderate Risk**—if the incident happens, the fire department can usually handle it with existing resources. However, effort should be made to reduce the likelihood that these incidents will occur. This is where community risk reduction strategies pay significant dividends.

- High impact / low probability—Risks in the bottom right corner are significant if they do occur, but they are unlikely to happen. Risks in this quadrant are referred to as **Moderate Risk** and are prime candidates for training and contingency planning. A fire department may spend time and energy preparing for such an incident and may even acquire specialized equipment and other non-staff resources to prepare for this risk. These risks also lend themselves well to community risk reduction strategies, such as public education, community engagement, and code enforcement.
- High impact / high probability—Risks toward the top right corner of the matrix are critical and viewed as **High Risk**. These should be the highest priorities for the fire department and for the community. Aggressive action is required, such as staffing for these risks, equipping for these risks, and engaging the community in risk reduction and preparedness.

Once the community risks are identified and appropriately categorized, plans of action are developed consistently within their category. In many instances, high-risk facilities are the subject of preplanning to prepare for a potential incident occurring there. Fire personnel become very familiar with these facilities, understanding what risks each of these facilities poses and what features the building has that can be used to gain a tactical advantage, such as area separation walls or built-in fire deluge systems. These facilities are known as target hazards.

A key component of response planning is the development of a critical task analysis and deployment plan for various incident types within the community. They are core elements of the Standards of Cover. Applying the principles of risk analysis and practical emergency response strategies and priorities, fire departments can address, in general terms, how they will respond to a variety of emergency incidents that may occur. Developing such a document serves to reinforce the department's approach to mitigating emergencies and helps to inform both policy makers and the community's citizens about the differences in response, such as to a single-family house fire as opposed to a commercial / industrial structure.

A Standards of Cover performs a safety function to the extent that it serves to remind both firefighters and chief officers of the limits of what can be prudently accomplished at an emergency scene. The creation and promulgation within the department of such a document can last on the agency's effectiveness.

Currently, no formal Emergency Preparedness & Response planning effort policy exists within the Shawnee Fire Department.

Administrative Planning

Administrative planning is often an underappreciated process. It does not have the urgency of response planning and is, therefore, easy to put off to a later date. Many fire departments do not fully appreciate the importance of these plans. There are multiple types of administrative planning devices. The most common are master planning, strategic planning, capital improvement planning, apparatus and equipment replacement planning, and personnel planning (which includes succession planning). Some elements of capital improvement planning, apparatus and equipment replacement planning, and to a lesser extent personnel planning (as it relates to staffing levels) are included in the master plan.

A master plan is essentially a long-range planning document of the community served by the fire department.

- It identifies the current conditions and assesses land use and development plans for the community, as well as forecasts the urban growth boundaries for potential future growth.
- Population and service demand growth are projected ten years into the future, and the impact of that growth is identified.
- Recommendations are made in a master plan which address critical infrastructure gaps, or gaps which will occur if the projected growth is not responded to appropriately and in a timely manner.

At this time, the Shawnee Fire Department does not have an effective master plan.

A strategic plan is of shorter duration, typically three-to-five years, and is internally focused.

- In this type of planning process, citizen-stakeholders are often interviewed to identify their attitudes, priorities, and concerns as they relate to the department.
- Internally, a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) is conducted.
- Reconciling the citizen-stakeholder feedback with the results of the internal SWOT analysis provides a clear picture of the organization's environment. This environmental scan shapes the strategic initiatives the department should focus on.
- Within each strategic initiative, multiple goals and subordinate objectives are established, complete with timelines, outcome measures, and responsible parties. A strategic plan is in essence a three-to-five-year internal work plan for a department.

The City of Shawnee does have a strategic plan that ran from 2017 through 2022, and the 2023 through 2027 update is currently in development. However, that plan is not exclusive to the Shawnee Fire Department.

Currently, the Shawnee Fire Department does not have a stand-alone strategic plan.

The capital improvement plan coincides with the apparatus replacement plan, including the funding mechanism and duration. The SFD utilizes the City of Shawnee's Capital Improvement Plan (CIP). Approved and adopted by the City Commission, the CIP outlines capital expenditures for the years 2024-2028 and also includes future projections for 2029-2033. Listed items of replacement or renovation include the following:

- Cascade System Replacement

- Extrication Equipment Replacement
- Fire Fleet Replacement – Command Vehicle
- Fire Fleet Replacement – Engine
- Fire Fleet Replacement – Ladder
- Fire Fleet Replacement – Squad
- PPE Replacement
- SCBA Replacement
- Station 3 Remodel

Succession planning is often challenging to organizations of any size. However, concerted efforts should be placed on identifying future opportunities for growth within the membership. This would include identifying future leaders, developing them into forward-thinking managers, and supporting their efforts to learn the required skills and knowledge to succeed in future leadership roles. Mentorship is a valuable tool in this regard.

The Shawnee Fire Department does not have a formal succession plan or mentorship program for its members.

These two endeavors, while time consuming, will provide the future Shawnee Fire Department with well-qualified members and leaders who will take the department to new heights.

Currently, little administrative planning formally exists within the Shawnee Fire Department. These plans are necessary to serve the community well into the future with appropriate infrastructure in place in advance of any growth that may drive an increase in service demand.

There are industry published guidance documents that can assist in the development of additional planning for SFD. These documents are:

- 21st Century Fire and Emergency Services White Paper published jointly by the International City/County Management Association (ICMA) and the Center for Public Safety Excellence (CPSE)—The paper discusses how leaders can address critical community issues that the fire service can impact. One of the principles outlined is to prepare for the speed of change in everything we do.
- Wingspread VII Statements of National Significance to the United States Fire and Emergency Services 2021—Over 50 industry leaders meet every five years to discuss and publish this report.
- Lavender Ribbon Report 2021 - Best Practices for Preventing Firefighter Cancer—The International Association of Fire Chiefs and the National Volunteer Fire Council have combined research resources to produce a simple and informative publication that provides best practices to fire organizations regarding techniques, policies, and systems to employ to prevent exposure to cancer-causing agents.
- International Association of Fire Chiefs Position Papers 2022—Provided on their web page, there are sample policies regarding best practices in all aspects of managing a fire department. These resources provide administrators with multiple examples relating to the primary issues in our nation's fire service.

Staffing

An organization's most valuable assets are its people. It is important that special attention be paid to managing personnel in a manner that achieves maximum productivity while ensuring a high level of job satisfaction for the individual. Consistent management practices combined with a safe working environment, fair treatment, opportunity for input, and recognition of the workforce's commitment and sacrifice are key components impacting job satisfaction. This section provides an overview of SFD's personnel structure and practices, as well as its staffing configuration and staffing deployment.



The personnel working for SFD provide a wide array of services to the community. This includes fire suppression (structures and wildland), EMS first response, specialized rescue, emergency management, fire prevention, public education, and hazardous materials response.

SFD has an authorized staffing of 57 positions. Of these, 51 are operational employees working on shift, all being full-time paid members. There are 6 administrative personnel, 5 being uniformed members and 1 civilian administrative assistant. The 5 administrative, uniformed personnel include the Fire Chief, Deputy Fire Chief, Fire Marshal, Deputy Fire Marshal, and Training Chief.

The work time for line members is arranged in 24-hour shifts. These shifts are comprised of the following on-duty and off-duty days: on, off, on, off, on, and four (4) days off. Each on-duty day begins at 7:00 a.m. and lasts until the morning of the next day.

There is a staffing guideline in place (SOG #A.0001) outlining the required positions each day and who should fill those. However, based on the on-site interviews with SFD personnel, some shifts operate outside of the written guideline to be flexible to meet the daily needs. Furthermore, the guidelines are outdated and in need of updating. For instance, a new supervisory position of “Major” was added in 2021 and should be included in the staffing guideline.

SFD is typical of most fire departments in its hierarchy, in that it has uniformed administrative and support staff, uniformed operations personnel responding to emergencies, and specialist positions that support the daily operations.

Administration & Support

Two important components of a well-organized and effective organization consist of administrative and support staff. The primary responsibilities of these positions are to ensure that the operational elements of the organization have the means to effectively accomplish the tasks and responsibilities associated with emergent and non-emergent incidents. Emergency services organizations require adequate oversight, planning, records management, administrative support, training, and maintenance. As with the operational components, administration and support services require enough resources to function properly.

It is important to note that the various staff positions within the SFD can be viewed from different perspectives. For example, chief officers in upper management positions may occasionally have a role in incident command at significant events. However, they typically perform non-incident responsibilities.

The following figure lists executive-level management positions within SFD whose responsibilities consist *primarily* of administrative and support functions.

Figure 8: Uniformed Administrative Positions & FTE

Position Title	Number of FTEs
Fire Chief	1 Full-Time Equivalent
Deputy Chief	1 Full-Time Equivalent
Chief of Training	1 Full-Time Equivalent
Fire Marshal	1 Full-Time Equivalent
Deputy Fire Marshal	1 Full-Time Equivalent
Total Uniformed	5

There are also support personnel within the department to provide logistical, technical, or professional support to its administrative and operational functions. They are listed in the following figure.

Figure 9: Non-Uniformed Support Personnel Positions & FTE

Position Title	Number of FTE & Status
Administrative Assistant	1 FTE, non-union/non-exempt
Total Non-Uniformed	1

As the previous two figures illustrate, SFD currently employs 6 administrative and support positions, or 10.5 percent of the workforce within the Fire Department. This is average in ESCI's experience. Typically, municipal or county fire departments maintain an administrative and support-to-operations ratio of at least 1:10, or a ten percent share of the total employee base. This factor could vary depending on the organization's complexity and the level of support that administrative staff provides to the operational employees during routine emergencies throughout any given day.

In addition, there are 51 uniformed operational positions of various ranks, certifications, and assignments. They are typically broken into battalions and associated companies of two to four (depending on daily staffing) with a company officer (Major or Captain), driver/operator (Lieutenant), and firefighters (Sergeant, Corporal, or Firefighter). Brush pumpers, squads, engines, and ladders can operate with as few as two personnel, although this is considered too few members assigned to particularly the larger response units. The National Fire Protection Association standard 1710 states that at least 4 personnel should be on a fire engine for emergency response. While that level of staffing is difficult for many fire departments to obtain, many departments have agreed to a minimum of 3 personnel on all fire response vehicles. While not to the level of the NFPA recommendation, a 3-member minimum on a suppression vehicle has become an industry norm.

The shift's Battalion Chief supervises all suppression companies, totaling up to 6 units and 16 subordinate personnel per shift. In an administrative setting, the Battalion Chief's span of control is manageable, with several subordinate personnel assigned to assist in the delegation of tasks.

Personnel Management

The City of Shawnee has a Human Resources (HR) Director, who oversees all city personnel policies and related practices for all employees in the city. Each department within the city is responsible for day-to-day management of the employees in their charge, and the Shawnee Fire Department is no exception. The Fire Chief maintains primary responsibility for human resource management for the SFD and coordinates with the City of Shawnee HR department, as necessary.

The city has an employee manual that governs the global personnel policies and practices of all employees. It applies to represented employees only if the topic is not addressed in the collective bargaining agreement. To the extent certain practices or procedures necessarily deviate from the city's global personnel practices due to their unique mission and structure, those exceptions are addressed in the SFD standard operating procedures or standard operating guidelines (SOPs/SOGs).

This is true for each department in the city where their unique mission or structure requires an explicit deviation from the standard city practices. Also, the collective bargaining agreement provides SFD represented members with additional benefits, guidance, and procedures that are specific to their needs.

New employees are given access to an electronic employee manual upon hire and are provided with orientation at the outset. Also, new employees are given access to the SOPs/SOGs specific to SFD.

Salary & Benefits

Full-time employees are provided with a salary and benefits package. Salaries increase based on the responsibility and authority of those in the various positions, as is typical for most organizations nationally.

The positions of Firefighter, Corporal, Sergeant, Lieutenant, Captain, Major, Battalion Chief, Deputy Fire Marshal, Fire Marshal, and Training Officer are represented by the Local #206 of the International Association of Firefighters AFL CIO/CLC (the Union). The Union collectively bargains a contract that outlines the salary and benefits of members of the bargaining unit. The Fire Chief, Deputy Fire Chief, and Administrative Assistant are not represented by the Union and are also not members of another bargaining unit. The current contract became effective July 1st, 2022, and remained in effect until June 30th, 2023. As contract negotiations are still ongoing, the contract term was extended by mutual agreement through September 30th, 2023.

The benefits provided to Fire Department employees are straightforward and consistent with those typically found in the fire service nationally. The following figure outlines those benefits with a brief description of each.

Figure 10: SFD Full Time Employee Benefits

Career Employee Benefits	Description of Benefit Coverage
Social Security	Limited to non-uniformed support personnel.
Worker's Compensation	Provided to employees. Employer paid.
Pension	Oklahoma State pension system.
Medical Insurance	Optional participation. Employee pays portion of monthly fee.
Dental Insurance	Optional participation. Employee pays portion of monthly fee.
Life Insurance	\$50,000 death benefit.
Vision Insurance	Optional participation. Employee pays portion of monthly fee.
Survivor Income Benefit	Provided as an option in Oklahoma State pension system.
Additional Life Insurance	\$50,000 accidental death benefit.
Physical Fitness Incentive	Provided per Department standard operating guideline.
Longevity Pay	Paid for each year of service.
Tuition Assistance	Provided to members and budgeted within the Department budget.
Medical Physicals	Provided annually to Fire Department members.

Personnel Records

The SFD manages its personnel records in conjunction with the Shawnee Human Resources Department, which includes maintaining records in a secure location, retaining applications for positions applied for, archiving of older records, retaining of performance evaluations, securing health files, and holding sensitive records such as injury, accident, health, and exposure records.

SFD and the city's HR Department maintain disciplinary policies, communicate those policies to all employees, and provide for a grievance appeals process for employees wishing for review from others further up the chain of command or outside of the chain of command. This procedure is outlined in the collective bargaining agreement.

Mental Health and Wellness Services

The frequency and significance of post-traumatic stress for first responders is a national challenge. First responder suicide is a tragic and unfortunately growing trend nationally. First responders perform their jobs in highly stressful circumstances in which dealing with death and severe injury are a daily occurrence. Mental health is an important aspect of keeping employees healthy and effective in their jobs over the long term. The City of Shawnee provides an Employee Assistance Program (EAP) to all employees without regard to the department they work for. Those seeking help will be directed towards specific resources, and if employees need urgent intervention, those services are also available as part of EAP and available 24/7 via phone or online.

Recruitment, Retention, and Promotion

SFD conducts recruitment activities when vacancies arise. This includes advertising on the city website and the creation of flyers to assist in generating applicants.

When processing applicants for positions within SFD, applicant qualifications, and references are checked, a background check is conducted, and a physical agility test is required. A written test is also conducted for candidates, which is administered by the Shawnee Fire Department. Successful candidates are further required to pass a medical examination and drug screening to comply with the Oklahoma State Firefighters Pension System. When provided with a conditional offer of employment, candidates are provided psychological and polygraph evaluations.

Once a candidate is hired and successfully completes probation, no annual physical performance testing is required; however, an annual physical fitness incentive is available for department members. There are no recurring skills testing requirements to determine whether incumbents continue to possess the skills necessary to perform the necessary functions once probation has been satisfied, although supervisory staff do monitor skills during various training cycles throughout the year. Physical fitness equipment is provided at some stations, and each member can use it.

Retention is significant to maintaining a well-trained and stable workforce. Areas that assist in keeping qualified personnel include formal recognition programs, reviewing exit interview information, employee surveys, soliciting feedback to improve policies and procedures, and a well-defined succession plan.

Currently, SFD does not provide several of these personnel retention-focused initiatives.

Implementing some or all of them may assist in retaining tenured and experienced personnel.

The promotional testing process is outlined for each opportunity as vacancies occur and when a list for the position is exhausted or has expired. Generally, the SFD's promotional procedure establishes guidelines for the process. The scoring for promotions includes a percentage for seniority, a written examination, an interview, and evaluation by an assessment board. The Board provides the Fire Chief with a list of the top three candidates as their recommendation. The Fire Chief can approve or deny the Board's recommendation. The eligibility list is established for one year or until the list is exhausted.

SERVICE DELIVERY AND PERFORMANCE

A vital function of an emergency services organization is delivering quick and quality service to the community it serves. By understanding current service demands and performance, department leaders can better develop a plan for future service delivery. Data will show the time and location of where incidents most likely occur, the types and number of incidents to which SFD responds, and how SFD response performance compares with national standards.

Service Delivery Analysis

The demand for services is the primary driver behind all emergency services organizations. The data will help SFD leadership determine what resource levels are sufficient to meet the community's needs. Especially in the case of this study, data will help determine where critical resources such as fire stations may be needed to best serve the public. Service demand analysis will also help SFD determine when it is best to schedule non-emergency activities such as training, fire safety inspections, public education events, and vehicle maintenance to minimize service interruptions to the community.

Incident Type Analysis

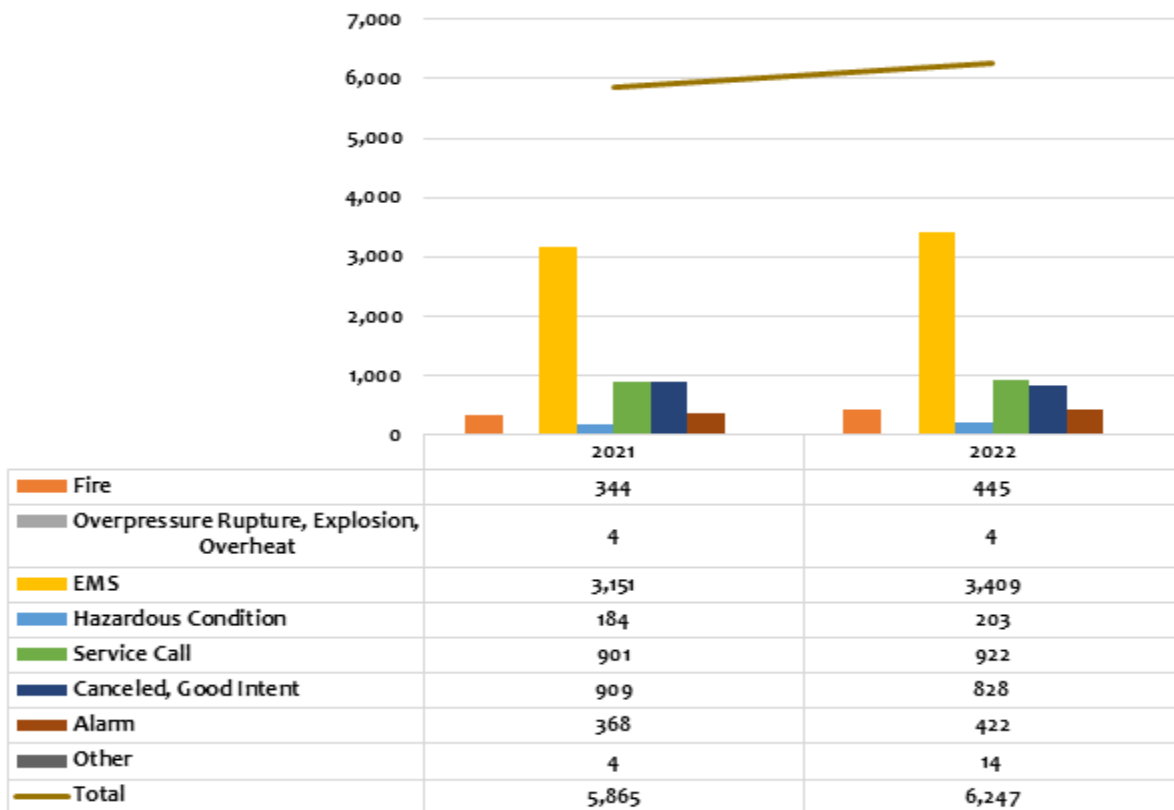
The National Fire Incident Reporting System (NFIRS) has developed a classification system to assist fire departments in categorizing the types of incidents to which a department responds. The following figure shows each of the nine major categories that NFIRS uses. The nine major categories are determined by the first number in the three-digit code. Within each category, incidents are then further subdivided using the final two digits of the incident code.

Figure 11: NFIRS Incident Types

Incident Series	Incident Heading
100-Series	Fires
200-Series	Overpressure Rupture, Explosion, Overheat (No Fire)
300-Series	Rescue and Emergency Medical Service (EMS) Incidents
400-Series	Hazardous Condition (No Fire)
500-Series	Service Call
600-Series	Canceled, Good Intent
700-Series	False Alarm, False Call
800-Series	Severe Weather, Natural Disaster ¹
900-Series	Special Incident Type ¹
¹ Shown throughout this report as “Other” incident type	

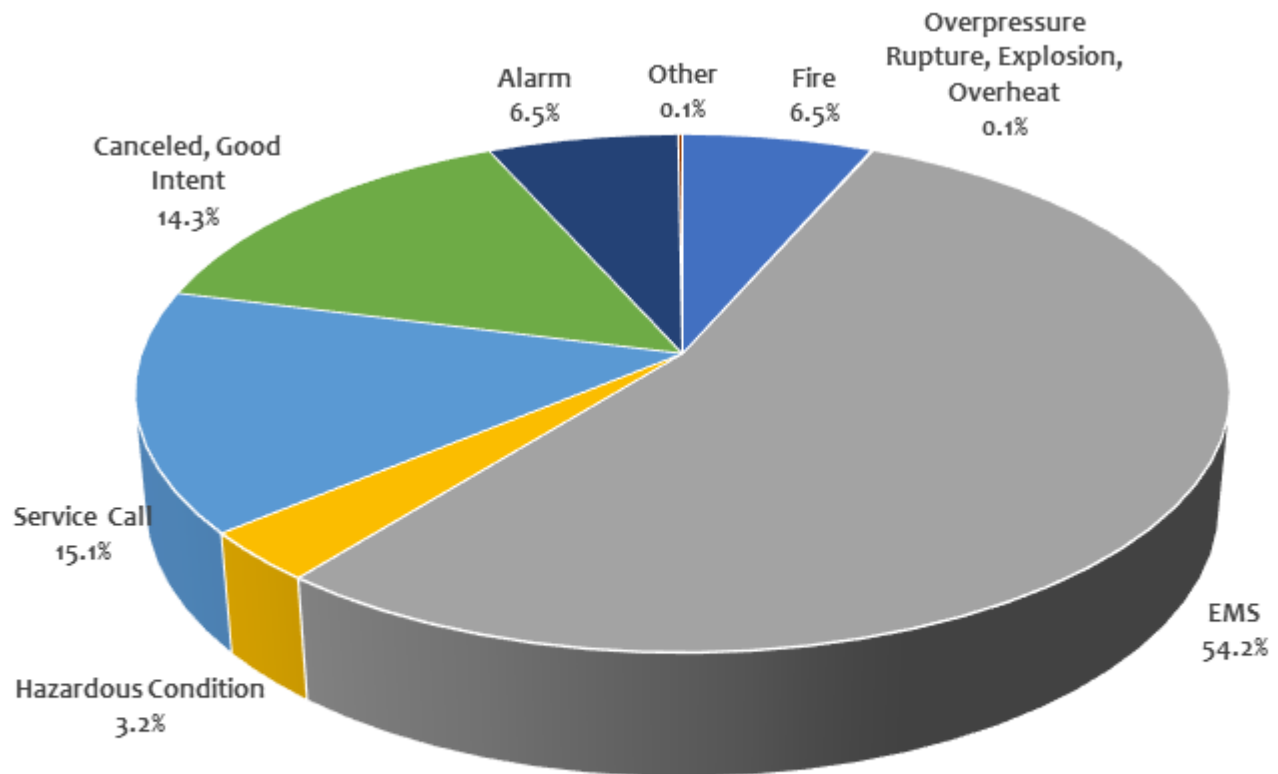
ESCI analyzed the data provided by SFD to determine the types of incidents for service from January 1, 2021, to December 31, 2022, which are displayed in the following figure. Any incident that did not have a basic incident type code within the data provided was excluded.

Figure 12: SFD Annual Totals by NFIRS Incident Type, 2021 and 2022



The following figure illustrates the service demand for each type of incident over the two-year period. This chart allows SFD to see which incident type comprises the greatest service demand for the Department.

Figure 13: SFD Service Demand by NFIRS Incident Type, 2021 and 2022



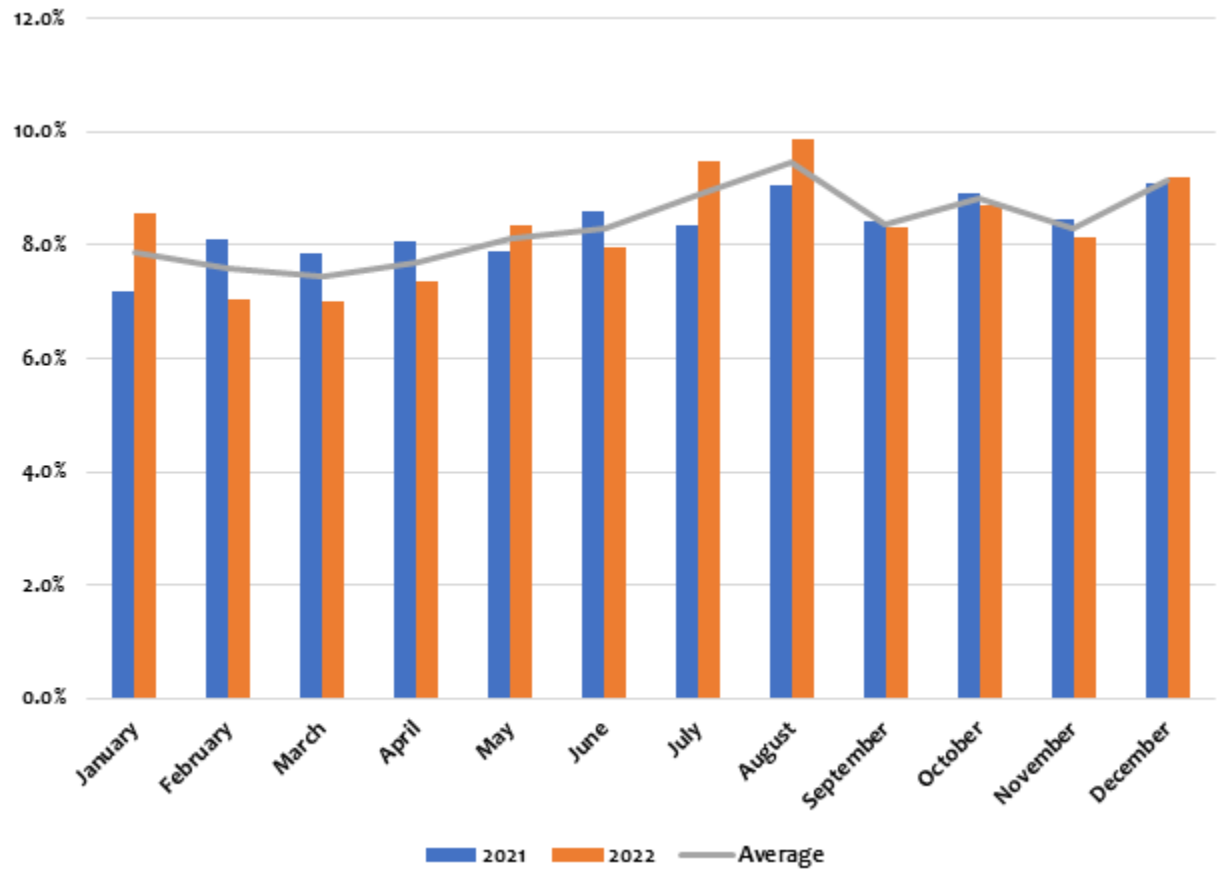
As with most fire departments across the nation, EMS has the highest service demand, accounting for 54.2% of the Department's total demand for service. This is lower than the national average which shows that 70% of fire department incidents are EMS calls.¹

Temporal Variation

Temporal variations analyze when incidents occur. This is an important facet of service demand because it allows SFD leadership to make the best decisions based on training, equipment, and apparatus. Additionally, it informs predictions on when to schedule non-emergency activities based on the lowest service demand. In this section, these patterns are displayed by month, day of the week, and hour to provide SFD on changes in service demand based on historical patterns on 2021 to 2022 incident data.

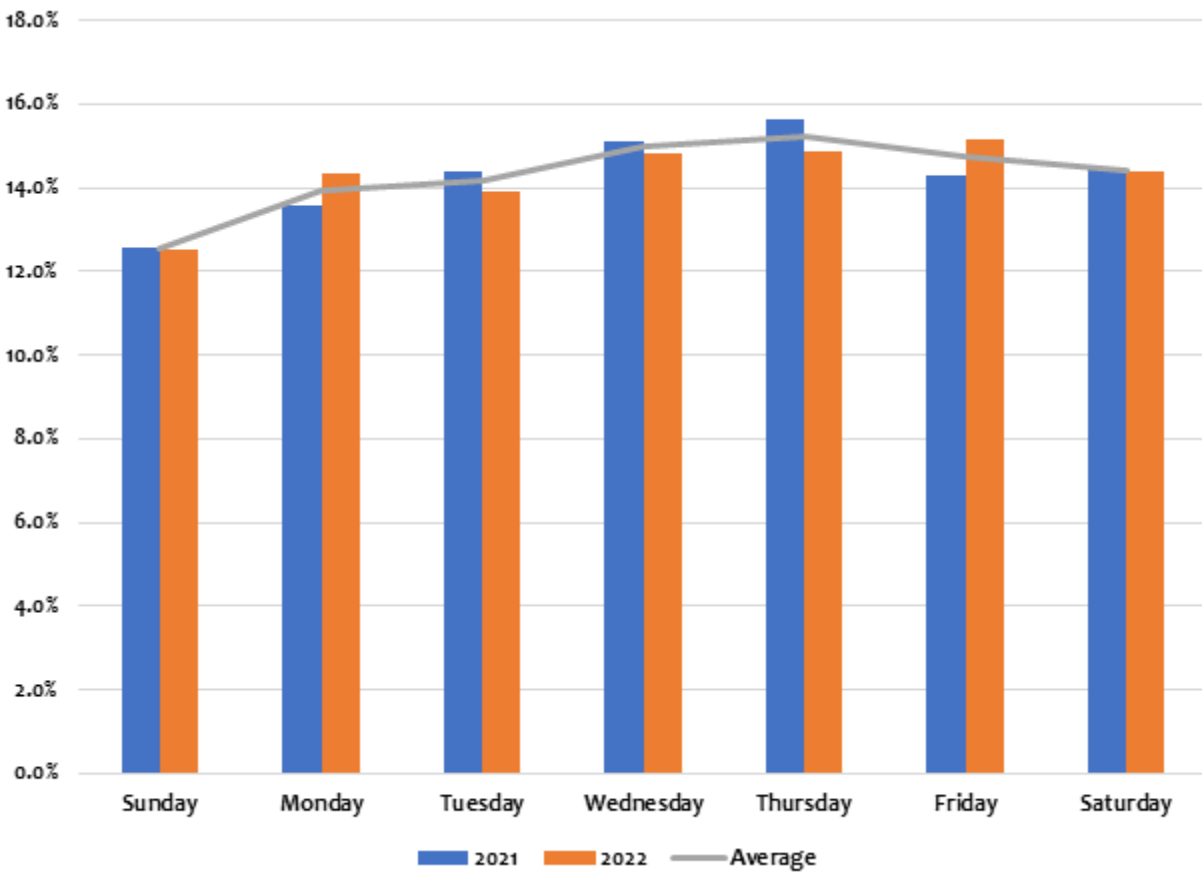
The first temporal variation analyzes service demand by month. As illustrated in the following figure, SFD service demand average service demand varies throughout the year, with March having the lowest level of average demand at 7.4% and August having the highest average demand at 9.5%.

Figure 14: SFD Service Demand by Month, 2021 and 2022



The second temporal variation analyzes service demand by day of the week. As illustrated in the following figure, SFD service demand is lowest on Sunday when 12.5% of the incidents occur. Then, there is an increase throughout the week to a peak on Thursday at 15.2%. Since the lowest demand for service occurs on the Sunday, this would be the best time to schedule non-emergency activities. If non-emergency activities must be scheduled for a weekday, Mondays would be best to limit service delivery interruptions.

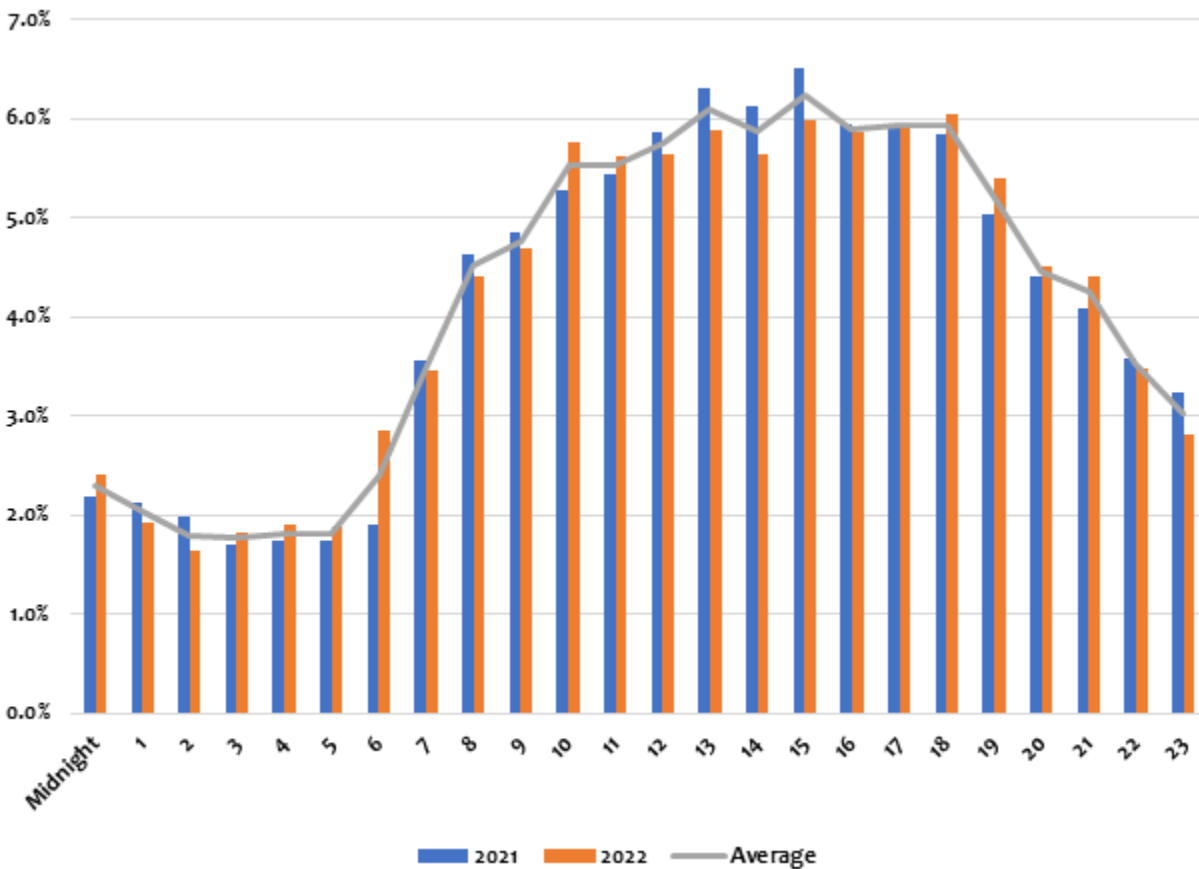
Figure 15: SFD Service Demand by Day, 2021 and 2022



The final temporal variation analyzes service demand based on time of day. As illustrated in the following figure, SFD service demand is lowest between the hours of 2:00 am and 5:00 am, with 1.8% of the incidents occurring per hour during this time. Starting at 5:00 am, there is a steep incline through the morning hours. This steep incline coincides with the residents and visitors waking up, preparing for, and beginning to travel to their daily activities. Service demand levels out between 12:00 pm and 6:00 pm, where it fluctuates between 5.8% and 6.2%. At 7:00 pm service demand decreases throughout the evening and into the night.

Although this is the time of the lowest service demand, a national study analyzing data from 2014 to 2016 found that residential fatal fires were the highest between 1:00 am to 2:00 am and 4:00 am to 5:00 am. Additionally, the study found that 48% of residential fatal fires occurred in the 8-hour period of 11:00 pm to 7:00 am.²

Figure 16: SFD Service Demand by Hour, 2021 and 2022



Response Performance

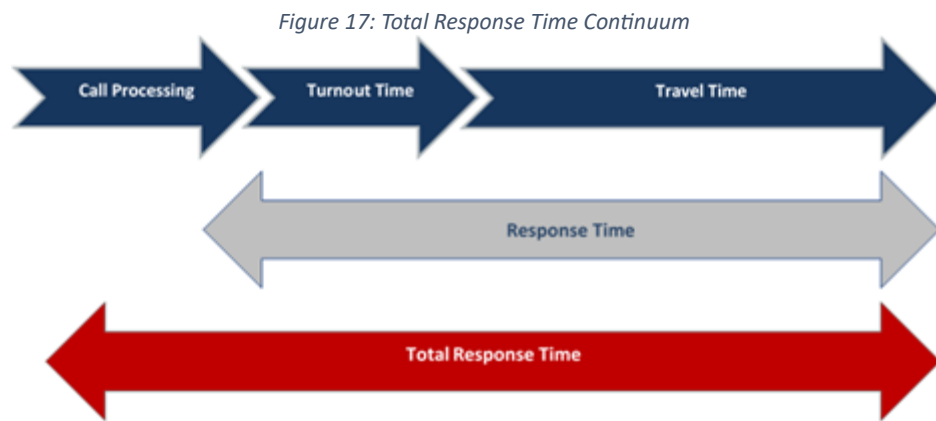
From the perspective of the citizen, their judgment of the local fire department is often based on how quickly units arrive to assist when the citizen calls 911. ESCI relies on the standards identified in NFPA 1225 and 1710 to assess the response time performance for career fire departments.

Response time performance is comprised of the following components:

- **Call Processing Time**—The amount of time between when a call is answered by the 911 primary Public Safety Answering Point (PSAP) or dispatch center and when resources are dispatched.
- **Turnout Time**—The time interval between when response units are notified of the incident and when the apparatus begins to respond.
- **Travel Time**—The time the responding unit spends on the road traveling to the incident until arrival at the scene. This is a function of speed and distance.
- **Response Time**—The time from initial alerting of an incident until arrival on the scene. Response Time equals the sum of “Turnout Time” and “Travel Time.”
- **Total Response Time**—This is the most apparent time to the caller requesting emergency services, as the time from when the emergency call is placed until units arrive on the scene.

Tracking the individual components of response time can help SFD identify impediments to timely response and make operational adjustments to improve, including developing response time goals and standards relevant and achievable. Fire service best practices recommend that fire service organizations monitor and report the components of Total Response Time.

The Total Response Time Continuum is comprised of the three elements described above—Call Processing, Turnout Time, and Travel Time. The components of the SFD Response Time Continuum are evaluated in further detail in the next sections. The following figure is an illustration of the Total Response Time Continuum.



Historically, fire departments have used the performance measurement of average response time to describe the levels of performance. The average is a commonly used descriptive statistic, also called the mean of a data set. However, averages may not accurately reflect the performance for the entire data set because the average can be significantly skewed by data outliers, especially in small data sets. One extremely good or bad value can skew the “average” for the entire data set.

Percentile measurements are a better measure of performance since they show that most of the data set has achieved a particular level of performance. The 90th percentile means that 90% of responses were equal to or better than the performance identified, and that the other 10% can be attributed to data outliers, inaccurate data, or situations outside of normal operations that delayed performance. This can be compared to the desired performance objective to determine the degree of success in achieving the goal.

An important consideration when evaluating fractile performance is that the results of each category are not additive, meaning that the sum of two or more constituent metrics cannot be simply added together to find the sum. This is because each dataset is discrete and, as such, must be observed individually, particularly when data quality is an issue. If a metric, such as travel response time, possesses the majority of its data points, while turnout time is not accurately documented, a significant difference can exist between the response time calculated using the fractile descriptive and the sum of turnout time and travel time.

For this analysis, ESCI analyzed each incident that SFD responded to from January 1, 2021, to December 31, 2022. For each component, times were only used for the first arriving unit for each incident, even if multiple units were dispatched. Typically, only those incidents with an emergency response priority (lights and sirens) are utilized for the analysis. However, there was no accurate method to determine which could be classified as emergency responses from the data provided by SFD to ESCI. ESCI did remove any call that was classified with the NFRIS type of "Other" as many times these types of incidents contained nonemergency incidents.

Call Processing Performance

The industry standard for call processing (or alarm handling) time is NFPA 1225: *Standard for Emergency Services Communication*. This standard recommends that communication centers have call processing times of not more than 60 seconds, 90% of the time. Call processing time was not analyzed because data was not available for this measure.

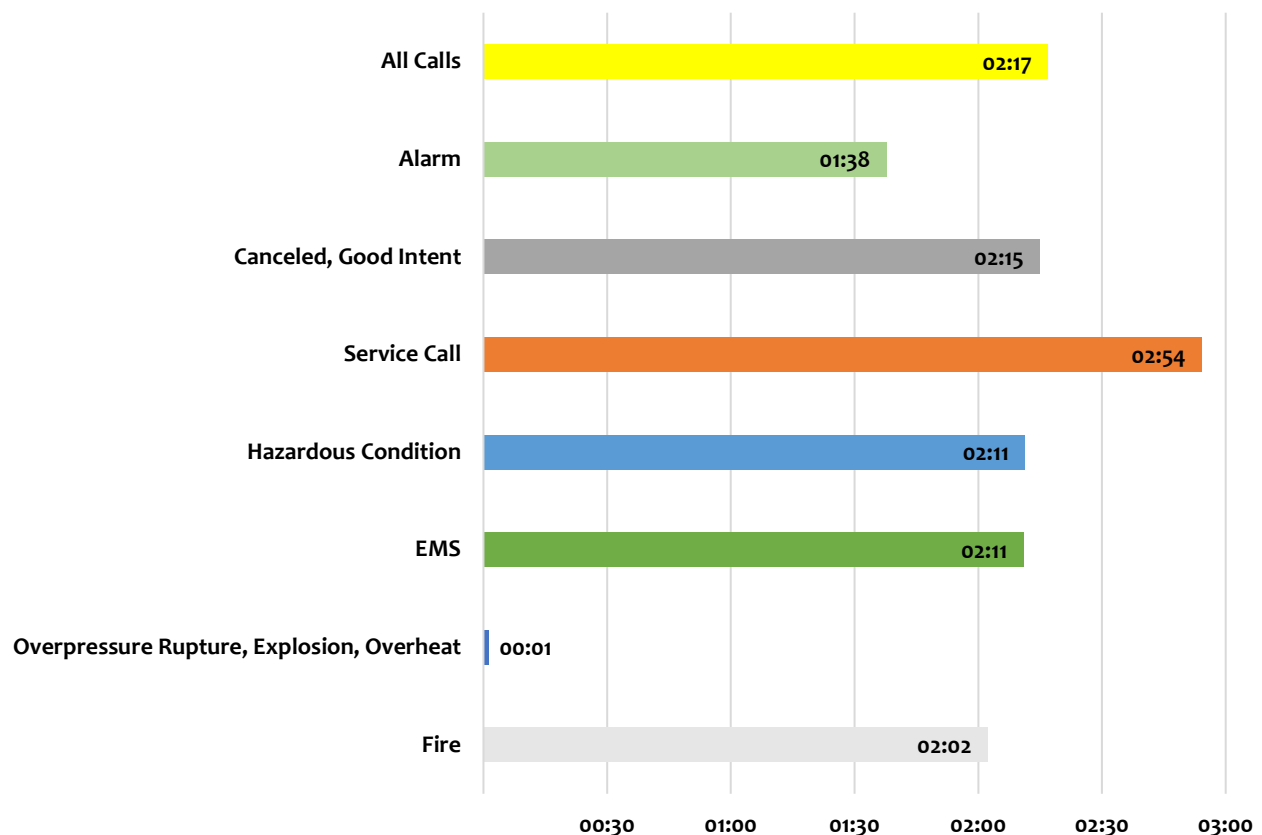
Turnout Performance

The second component of the Total Response Time Continuum, and one that is directly affected by response personnel, is turnout time performance. Turnout time is the time it takes personnel to receive the dispatch information, move to the appropriate apparatus, don necessary protective equipment, and begin responding to the incident. NFPA 1710 recommends a 90th percentile turnout time of 80 seconds for fire or special operations incidents, and 60 seconds for all other incidents. The extra 20 seconds for fire or special operation incidents takes into consideration the time it takes personnel to don specific equipment for these types of incidents. Any incident that did not have an “en route” time was excluded from the data set.

The following figure illustrates SFD turnout time performance. SFD’s overall turnout performance is 2 minutes, 17 seconds (137 seconds).

SFD leadership should investigate the reason for extended turnout times and implement ways to improve. Areas that should be investigated are station design, station alerting systems, and how the times are recorded.

Figure 18: SFD First Unit Turnout Performance, 2021 and 2022

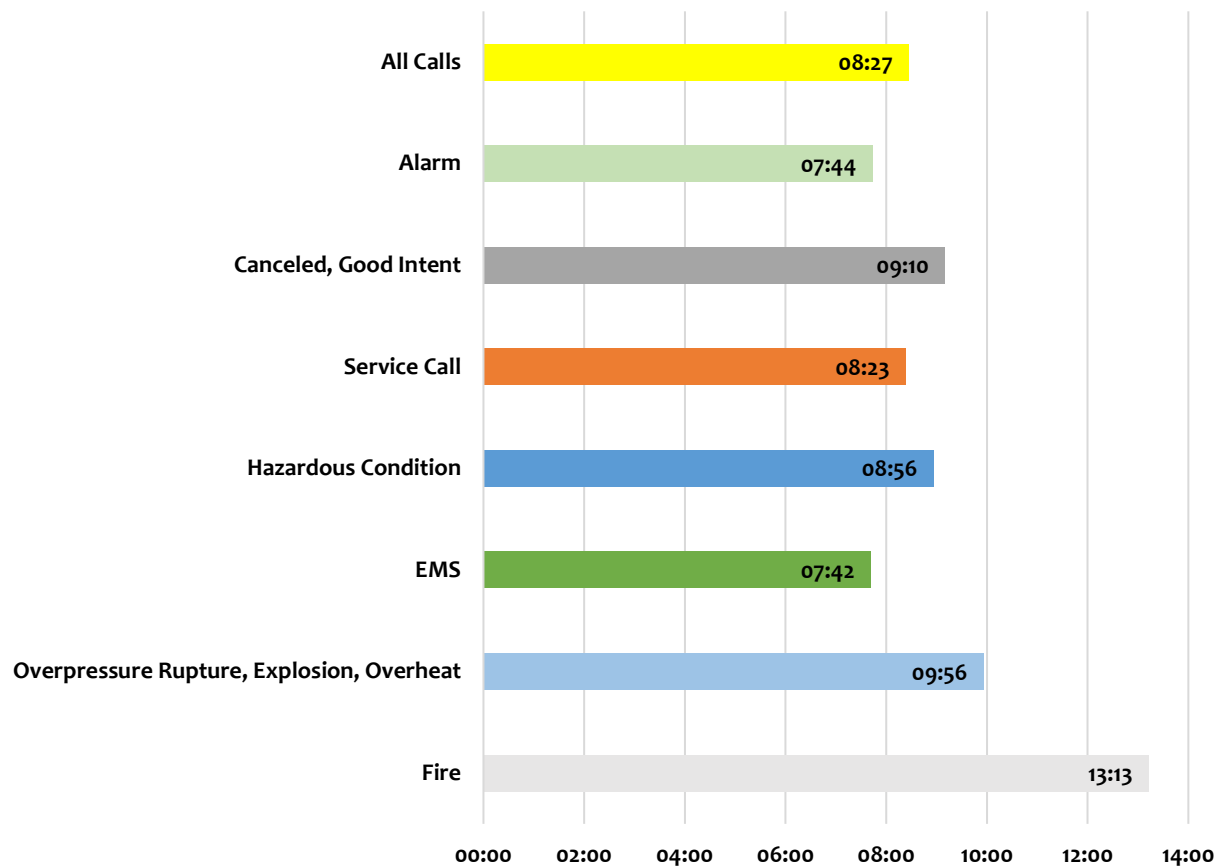


Travel Performance

The third component is the amount of time between when the apparatus departs for the call and when it arrives on-scene, known as travel time. This component is extremely important in a fire location study because the proper placement of fire stations greatly influences travel time. NFPA 1710 recommends that the first due fire or EMS unit travel and arrive on the scene within four minutes (240 seconds). For travel performance evaluation, any incident without an arrival time was removed.

The following figure summarizes the SFD travel time performance. SFD's overall travel performance is 8 minutes, 27 seconds (507 seconds).¹

Figure 19: SFD Travel Performance, 2021 and 2022



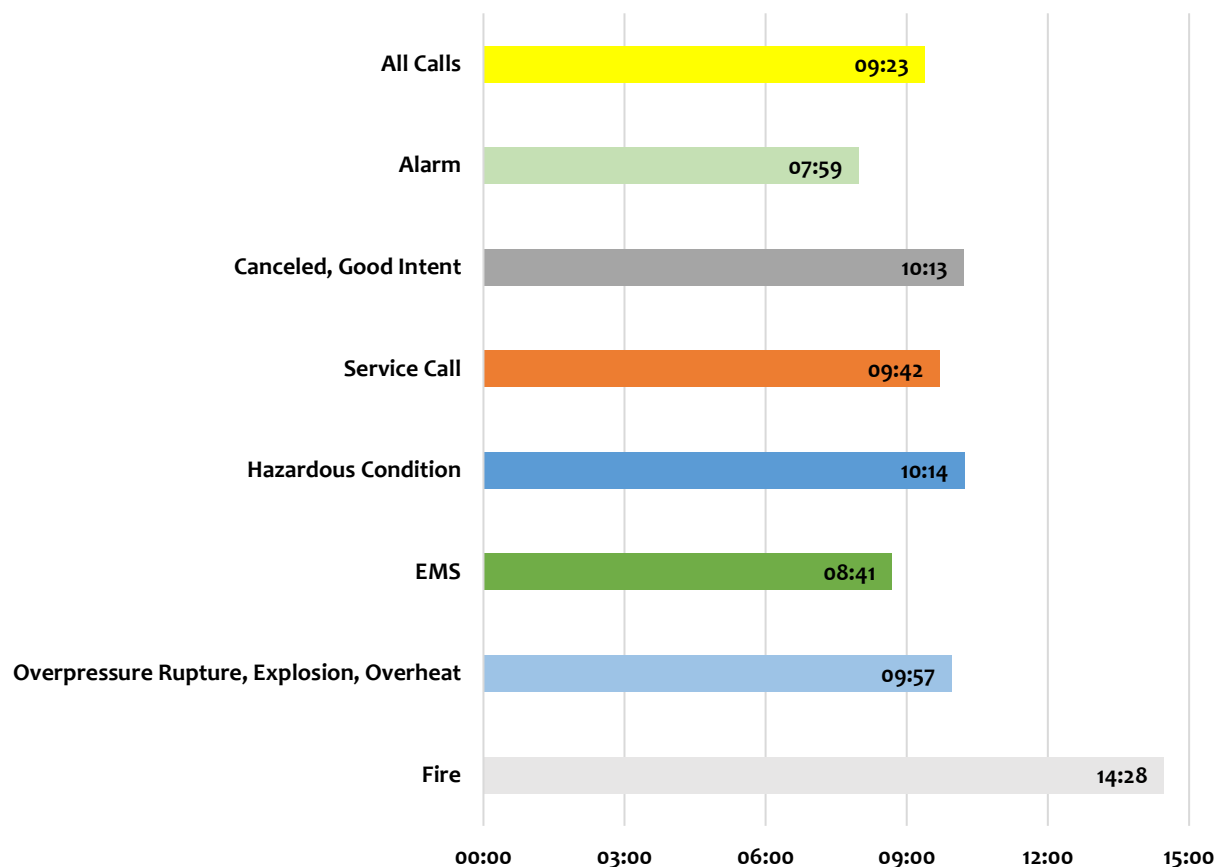
¹ In reviewing the travel time performance, it is important to recall that the Shawnee Fire Department covers a fire district that extends significantly beyond the City of Shawnee boundaries.

Response Time Performance

Response time is the amount of time it takes from initial notification to the fire department until the first unit arrives on the scene. Response time performance is not specifically addressed by NFPA 1710; however, it is a combination of the turnout and travel time standards, and therefore, it would be 5 minutes, 20 seconds (320 seconds) for fire and special operations incidents and 5 minutes (300 seconds) for all other incidents.

The following figure shows that the SFD response time for all incidents is 9 minutes, 23 seconds (563 seconds). Response time is an important factor because it represents the components that are under direct fire department control, whereas the total response time includes call processing.

Figure 20: SFD Response Time Performance, 2021 and 2022



Total Response Time Performance

Total response time performance is the final part of the Total Response Time Continuum. This is the total time from the time the emergency call is received by the dispatch center to the time the first emergency unit arrives on the scene of the incident. Although there is not a national standard for total response time, an expected standard can be calculated by adding the NFPA standards for call processing time performance, turnout time performance, and travel time performance. This expected standard comes out to be 6 minutes, 20 seconds for fires and special operation incidents, and 6 minutes for all other incidents. Data was not available to measure SFD total response time performance.

Geographic Service Demand

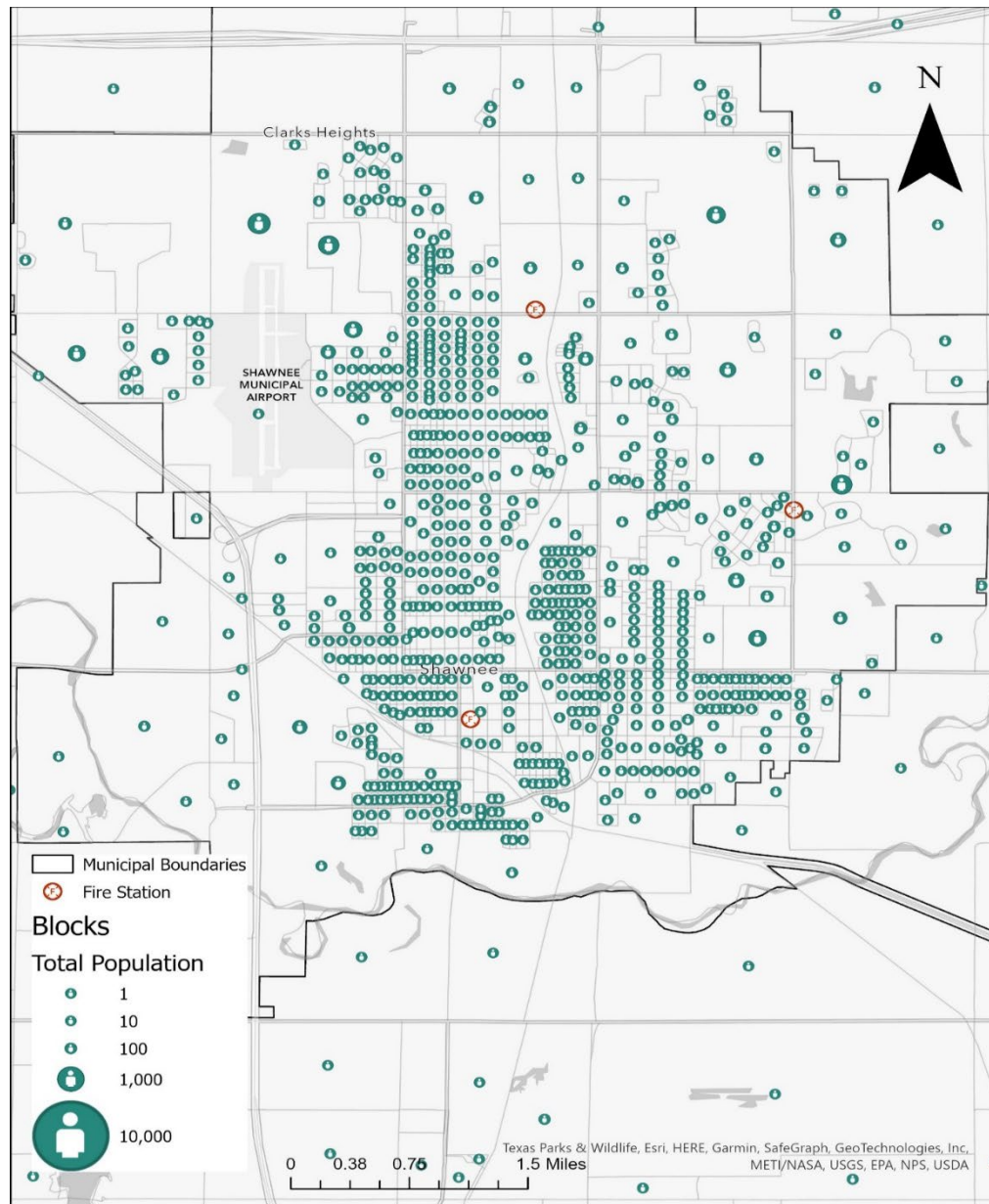
Since human activity is the primary cause of emergency incidents, many communities see a relationship between population density and service demand. Areas with greater population density often experience greater levels of service demand. From a logical standpoint, higher population density correlates with an increased number of people experiencing a medical emergency, the number of structures that may be involved in a fire, and the movement of vehicles that may experience an unexpected collision.

Figure 21: Incident Response Based on City Limits

	All Incidents	Fire Incidents	EMS Incidents
Within City Limits	84.9%	70.1%	86.7%
Outside City Limits	15.1%	29.9%	13.3%

The following figure shows the population density of the City of Shawnee, which is based on 2020 census block data provided by the U.S. Census Bureau.

Figure 22: Shawnee Population Density

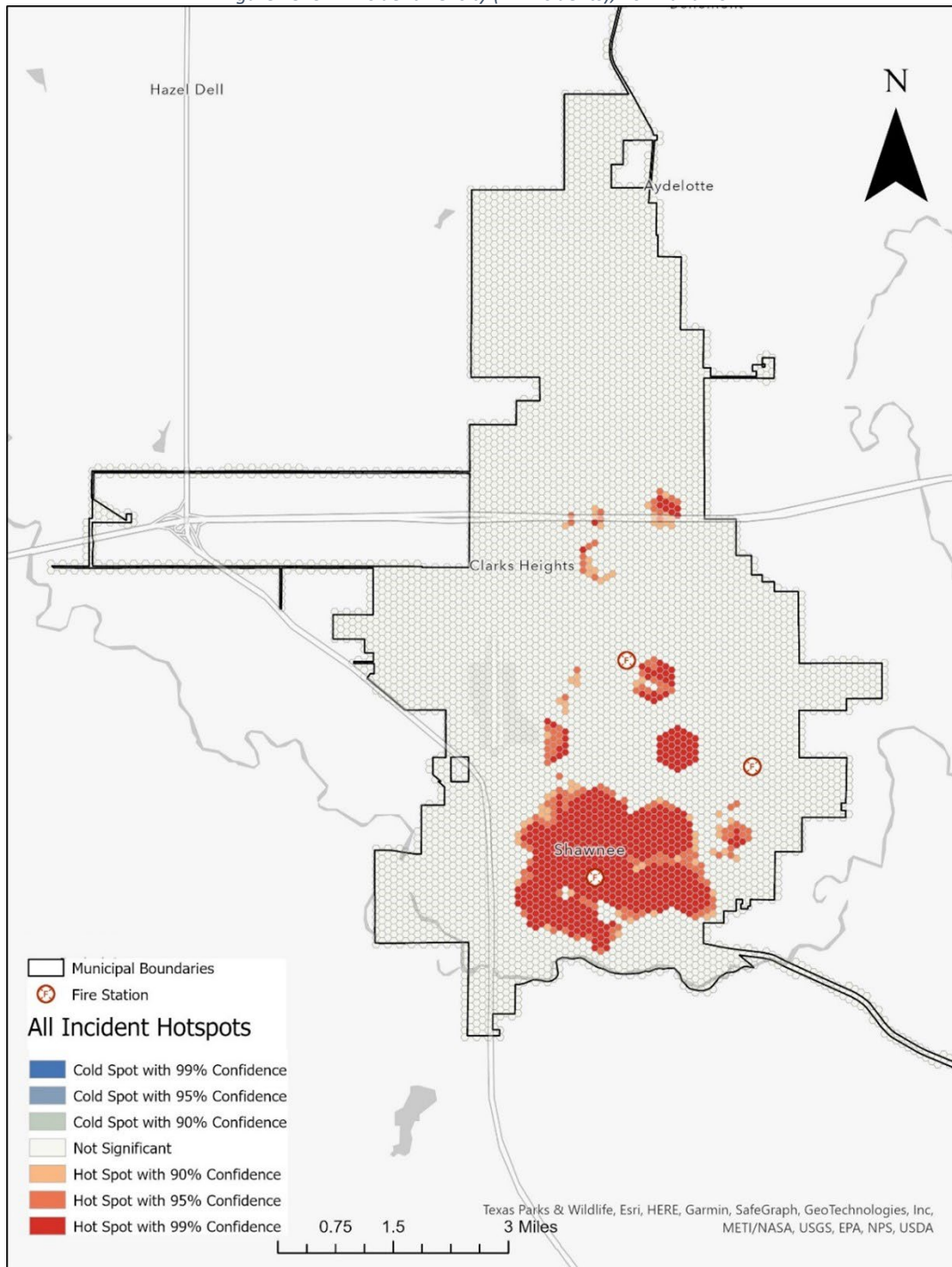


ESCI used SFD's 2021 and 2022 incident data to create a heat map showing incident density using a fishnet hotspot analysis. This process generates map-based visual data that reveals statistically significant spatial clustering within the Shawnee data. The map data below helps discover hotspots (represented in red) and statistically insignificant areas (represented in white) related to the density of incident response. Specifically, the fishnet hotspot analysis used by ESCI constructed a polygon grid over the city's footprint to count the number of incident points that fall within grid's elements. Then, the analysis develops a z-score, p-value, and confidence level bin.

- The z-score is a statistical measure that helps to understand how far away an incident point is from the mean of an incident dataset, relative to the standard deviation.
- The p-value, or probability value, is a fundamental concept in hypothesis testing. It represents the probability of obtaining the observed results when the null hypothesis is true.

- The confidence interval provides a measure of the uncertainty in statistical estimates based on the dataset.

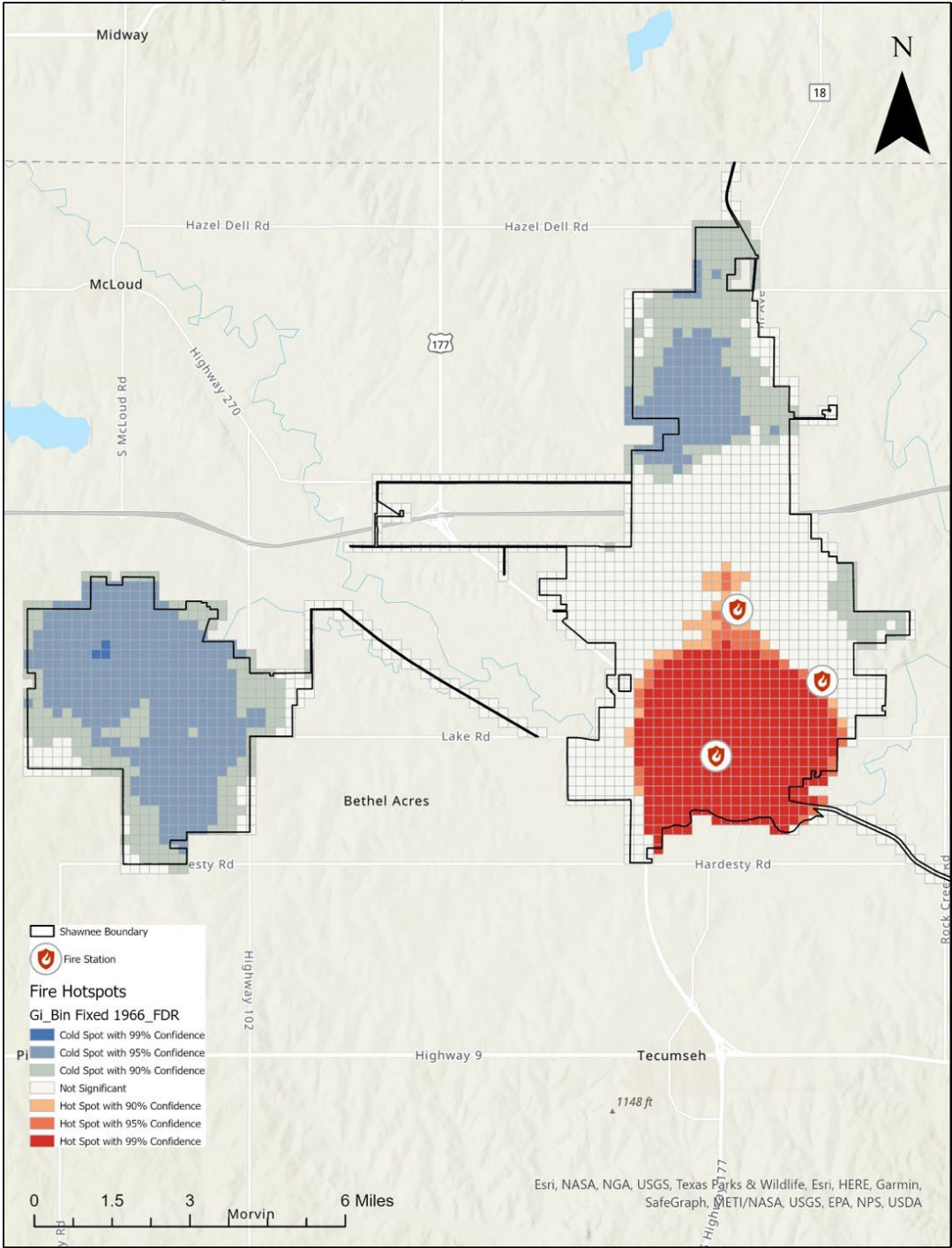
Figure 23: SFD Incident Density (All Incidents), 2021 and 2022



ESCI also broke the incident density down into fire and EMS incidents. The following figure shows the incident density for fire incidents from 2021 and 2022. Fire incident density has a similar pattern to total incident density. Fire Incidents included any incident that was coded in the 100-series for NFRIS. Figure 8 shows a table of the NFRIS incident types.

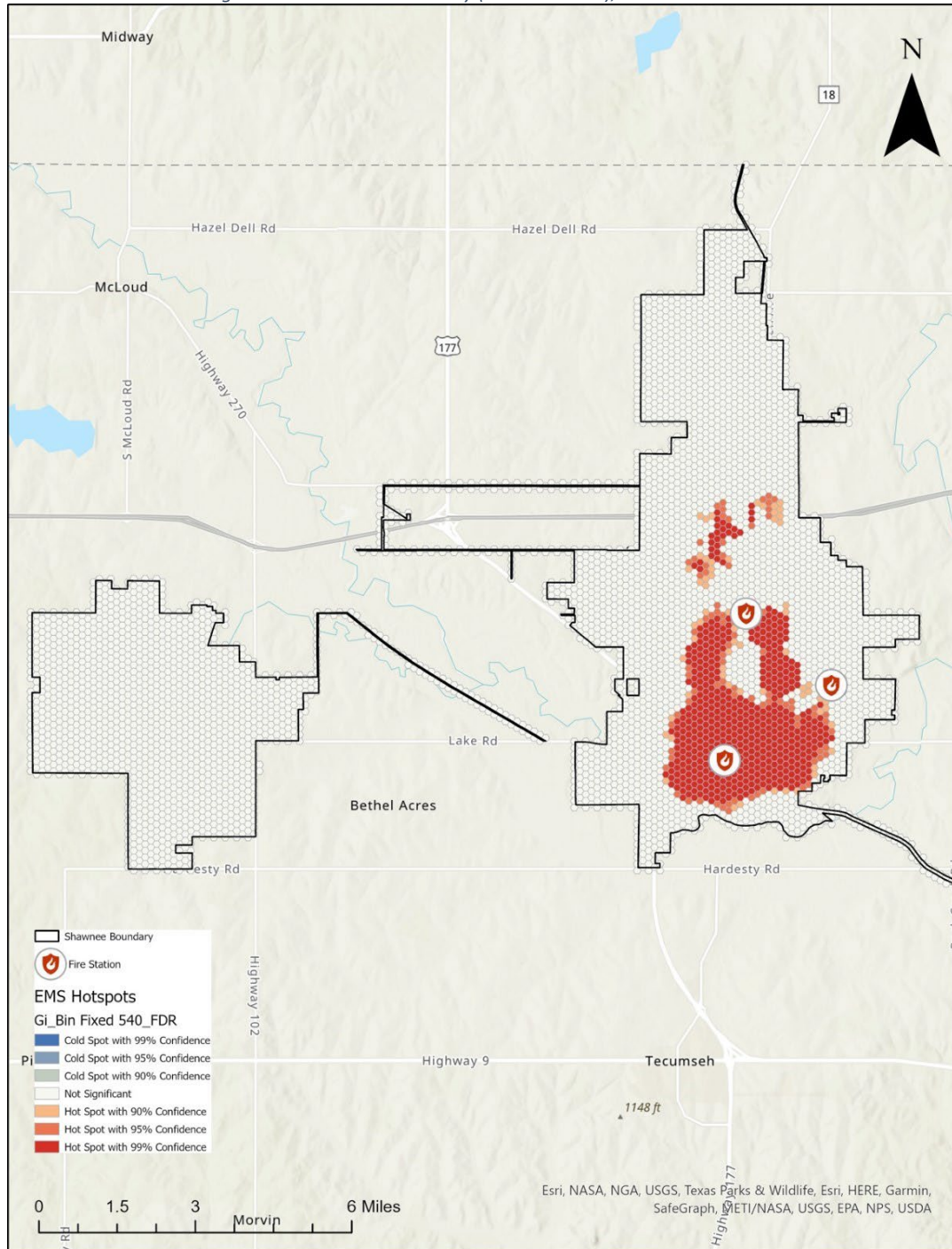
As noted, shown in the below figure, Shawnee's fire incident response is focused in the southern area of the city's boundaries. Additionally, the map reveals statistically significant spatial clustering that identifies cold spots as represented in blue. The city's population, commercial density, and overall frequent incident area aligns with the identified hotspots.

Figure 24: SFD Incident Density (Fire Incidents), 2021 and 2022



EMS incident density again correlates to both total incident and fire incident density. The following figure shows EMS incident density for 2021 and 2022 incidents. EMS Incidents included any incident that was coded in the 300-series for NFRIS. Figure 9 shows a table of the NFRIS incident types.

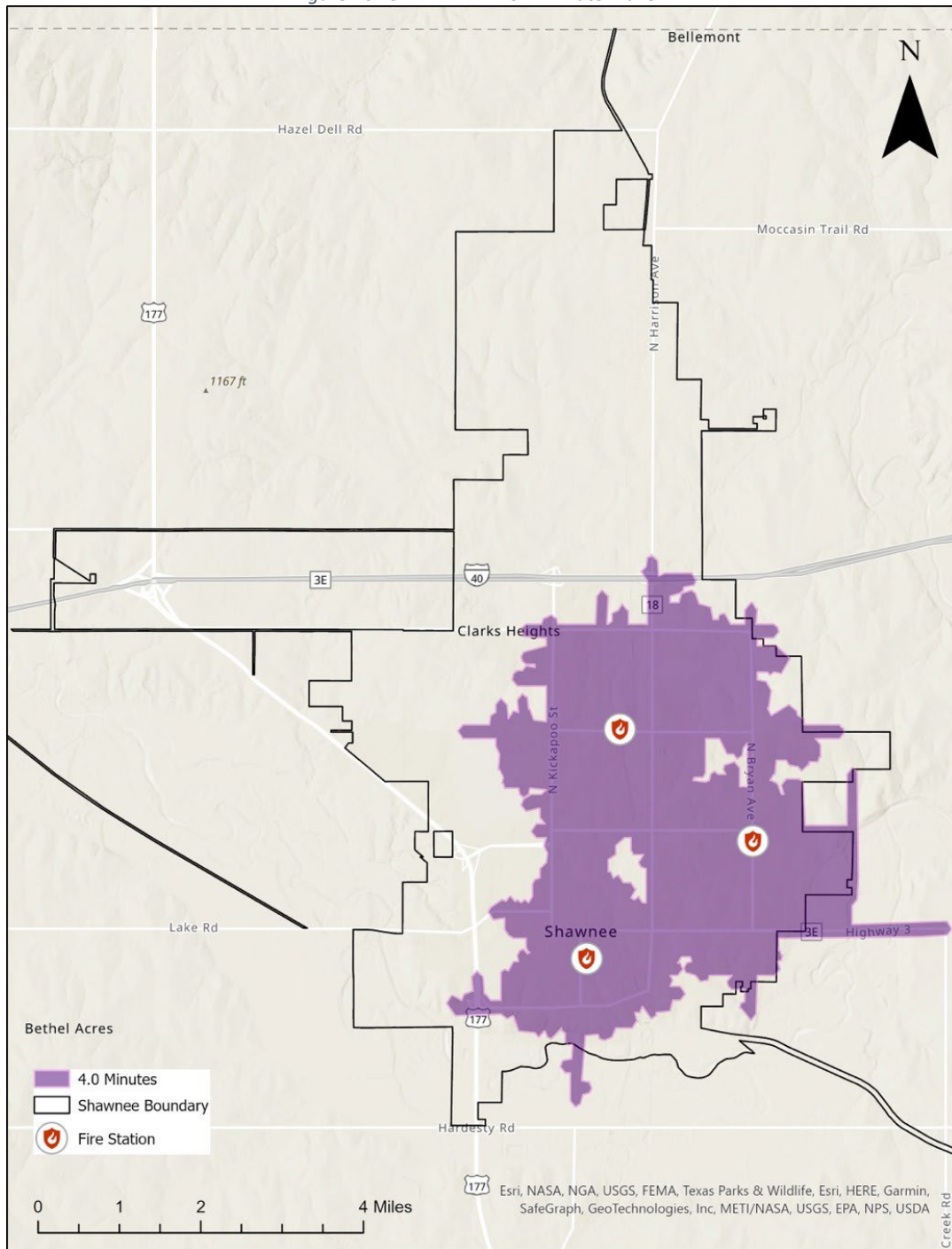
Figure 25: SFD Incident Density (EMS Incidents), 2021 and 2022



NFPA Distribution

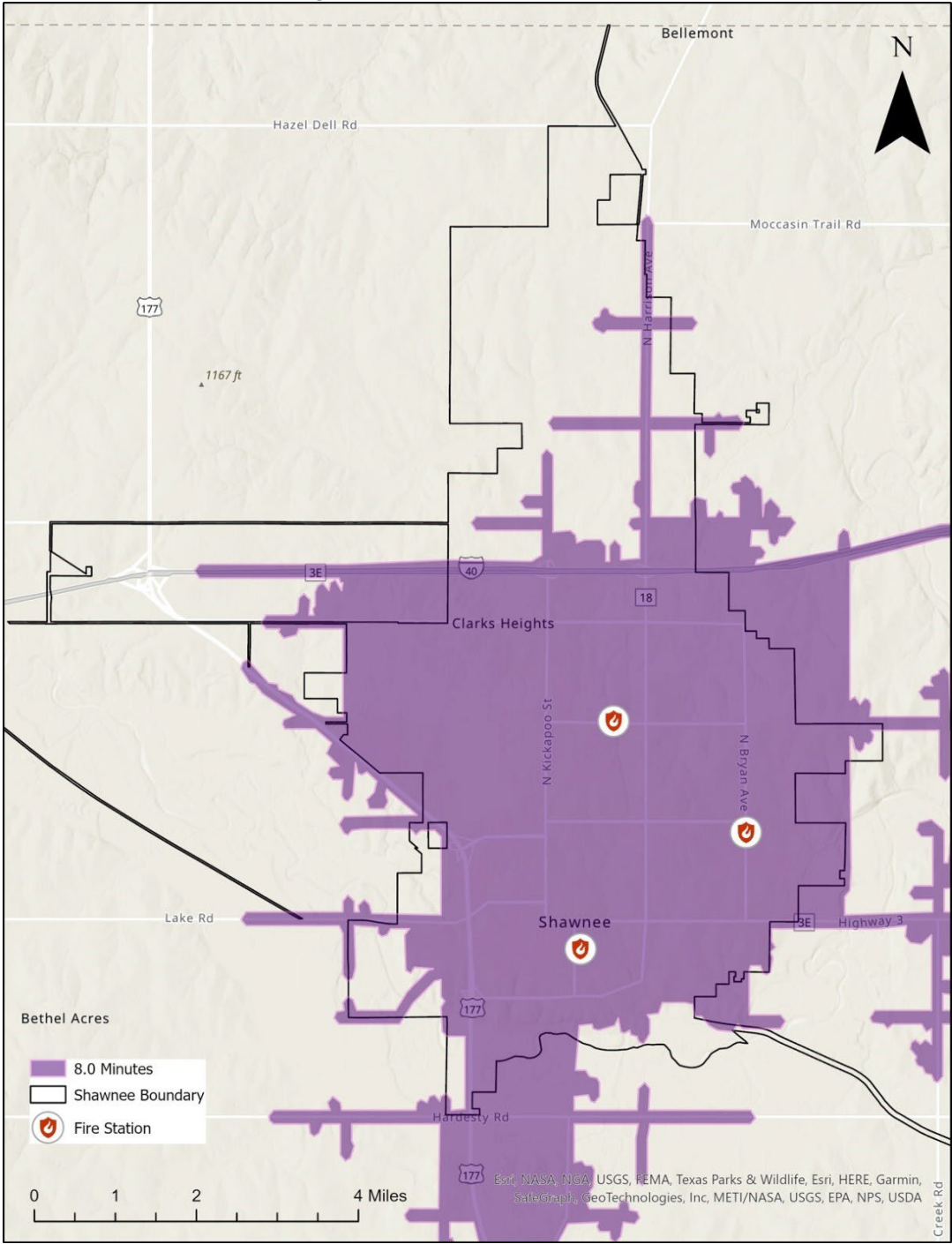
The National Fire Protection Association (NFPA) is an industry trade association that develops and provides standards and codes for fire departments and emergency medical services for use by local governments. One of these standards, NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, serves as a national consensus standard for career fire department performance, operations, and safety. Within this standard, a travel time of 240 seconds, or 4 minutes, is identified as the benchmark for career departments to reach emergency calls within their jurisdiction with the first arriving unit. Also, the response (called the Effective Response Force) is recommended to arrive at the incident within 480 seconds, or 8 minutes. The following figure illustrates SFD's ability to meet these standards based upon predicted travel times using historical traffic data from Esri for traffic patterns at 8:00 am on Monday mornings.

Figure 26: SFD NFPA 1710 4-Minute Travel



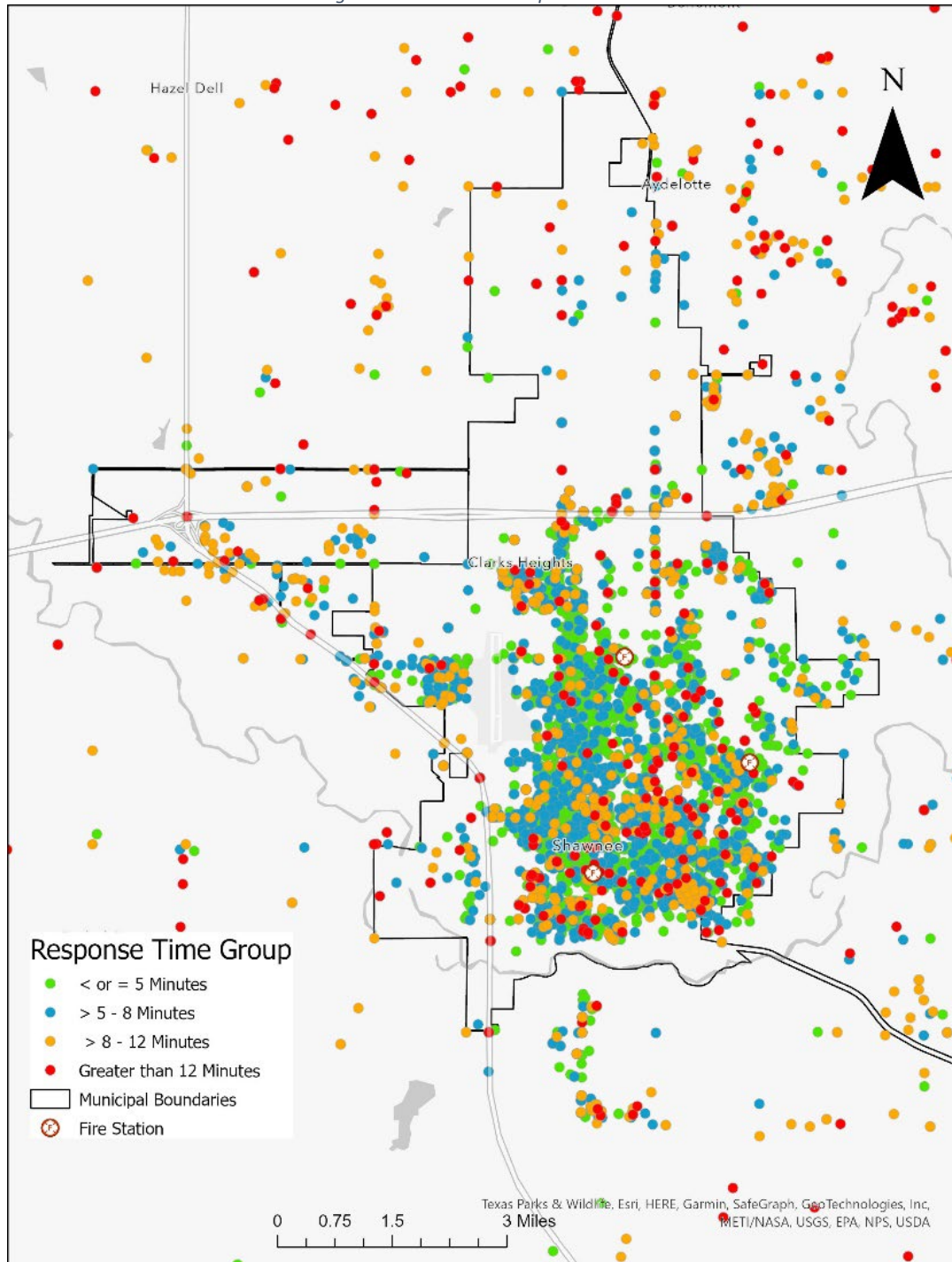
Unshaded pockets indicate that the area falls outside of the model's maximum extension from the road network. In Shawnee, 31.55% of the streets fall within 4 minutes of a fire station and 84.42% are within 8 minutes of a fire station. If the Twin Lakes area roadways are included in the analysis, 22.97% of the streets fall within 4 minutes of a fire station and 61.47% are within 8 minutes of a fire station.

Figure 27: FD NFPA 1710 8-Minute Travel



While the preceding figure illustrates the theoretical travel time, it assumes that all units are within the station at the time of dispatch. In reality, units are not always at the station; sometimes, units from other stations may respond. As illustrated in the following figure, SFD response times to 2021 incidents were less than 5 minutes for 59.6% of incidents, 5 to 8 minutes for 25.7% of incidents, 8 to 12 minutes for 9.1% of incidents, and greater than 12 minutes for 5.5% of incidents.

Figure 28: SFD Actual Response Times



Effective Response Force

NFPA 1710 recommends that for moderate risk incidents or greater—such as a fire in a 2,000 square foot residential dwelling—the balance of the initially dispatched resources arrive on the scene within 8 minutes from the time they started to travel to the scene. ESCI evaluated the theoretical concentration of SFD resources to determine how the spacing of multiple resources (the response apparatus within their respective fire stations) are arranged so that an initial Effective Response Force (ERF) can arrive on-scene within the time frames outlined by NFPA.

NFPA defines ERF as “the minimum amount of staffing and equipment that must reach a specific emergency zone location within a maximum prescribed total response time and is capable of initial fire suppression, EMS, and/or mitigation. The ERF is the result of the critical tasking analysis conducted as part of a community risk assessment.” The following figure illustrates the ERF as recommended for a range of fires based upon the size and type of the structure.

Figure 29: NFPA 1710 Recommended ERF Initial Assignment

Functions/Tasks	Single-Family Residence (2,000 SF)	Open Air Strip Shopping Center (13,000–196,000 SF)	3-Story Garden Apartment (1,200 SF)
Command	1	2	2
Apparatus Operator	1	2	2
Handlines (2 members each)	4	6	6
Support Members	2	3	3
Victim Search and Rescue team	2	4	4
Ground Ladders/Ventilation	2	4	4
Aerial Device Operator (if ladder used)	(1)	(1)	(1)
Initial Rapid Intervention Team	4	4	4
Initial Medical Care Component	N/A	2	2
Total	16 (17)	27 (28)	27 (28)

Figure 25 illustrates what percent of the service area can be reached in 8 minutes. Within the 8-minute threshold recommended by the NFPA, SFD can assemble 2 firefighters to 61.47% of the coverage area, 4 firefighters to 60.54% of the coverage area, 6 firefighters to 46.70% of the coverage area, 8 firefighters to 21.09% of the coverage area, 10 firefighters to 19.11% of the coverage area, and 12 firefighters to 15.42% of the coverage area.

Reliability Study

The ability for each unit to be available within its zone is referred to as response reliability, and it is impacted by workload and call concurrency. As call concurrency or workload increases, the availability for the primary unit to respond to additional calls for service decreases. When that primary unit is not available, other units must respond from a potentially greater distance, thus impacting the ability to provide service within a timely manner. ESCI measures the reliability of the Shawnee Fire Department in two ways, examining workload and call concurrency.

Workload

Workload is a measure of how busy each unit within the department is, and it could be analyzed from a simplistic perspective, considering the number of incidents to which SFD responds. However, incident responses vary in length of time, so while two units may respond to the same number of incidents, the actual work involved will likely differ.

A better measure of workload is found in unit hour utilization (UHU). With this method, the amount of time assigned to incidents is compared to the amount of time the unit is in service, which is expressed as a percentage of the whole. For instance, a UHU value of 25% means that the unit is operating on incidents 25% of the time it is in service, thus only being available for other emergencies 75% of its time. When units from neighboring fire stations all have high UHU values, it means that new emergencies may encounter increased response times because it is highly likely that the closest, second closest, and third closest units are not available due to being on other incidents.

Note that UHU only considers the unit's time starting with its dispatch and ending when it returns to service. It does not include the time it takes for a unit to drive back to the fire station, time needed to complete any necessary paperwork such as required patient care reports, or time spent on non-emergency activities such as training.

While there are limited formal performance benchmarks to use as a target, in May 2016, Henrico County (VA) Division of Fire published an article after studying their department's EMS workload.³ As a result of the study, Henrico County Division of Fire developed a general commitment factor scale for their department. The following figure is a summary of their findings.

Figure 30: Commitment Factors as Developed by Henrico County (VA) Division of Fire, 2016

Factor	Indication	Description
16%-24%	Ideal Commitment Range	Personnel can maintain training requirements and physical fitness and can consistently achieve response time benchmarks. Units are available to the community more than 75% of the day.
25%	System Stress	Community availability and unit sustainability are not questioned. First due- units respond to their assigned community 75% of the time, and response benchmarks are rarely missed.
26%-29%	Evaluation Range	The community served will experience delayed incident responses. Just under 30% of the day, first-due ambulances are unavailable; thus, neighboring responders will likely exceed goals.
30%	“Line in the Sand”	Not Sustainable: Commitment Threshold—community has less than a 70% chance of timely emergency service and immediate relief is vital. Personnel assigned to units at or exceeding 30% may show signs of fatigue and burnout and may be at increased risk of errors. Required training and physical fitness sessions are not consistently completed.

The following figure shows the UHU values for SFD units. ESCI categorizes units into four distinct categories: command units, suppression units, squad units, specialty units. Command units tend to have lower UHU values, because most of their time is spent on administrative tasks rather than emergency incidents. Additionally, when command units do respond to emergency incidents, they often only remain on the scene until the major hazards have been mitigated. Command responsibilities are then normally transferred to a lower level, like the officer of a suppression unit. Suppression units are engines and truck (ladder) companies. Although all suppression units are below the “Ideal Commitment Range” of 16% to 24%, SFD should continue to monitor suppression UHU values to ensure units have proper time to complete non-emergency activities such as training, physical fitness, station chores, and building inspections. The squad is a first response for medical emergencies. Specialty units consists of brush units, hazmat response units, and utility vehicles.

Figure 31: SFD UHU

Apparatus	Type	2021	2022	Average
Chief 1 (Fire Chief)	Command	0.21%	0.59%	0.40%
Chief 2 (Deputy Fire Chief)	Command	0.16%	0.24%	0.20%
Fire Prevention 1 (Fire Marshal)	Command	0.52%	0.50%	0.51%
Fire Prevention 2 (Deputy Fire Marshal)	Command	0.17%	0.71%	0.44%
Training 1 (Training Chief)	Command	0.15%	0.32%	0.24%
Chief 6 (On Shift Battalion Chief)	Command	4.44%	5.00%	4.72%
Engine 1	Suppression	0.49%	0.68%	0.59%
Engine 2	Suppression	4.04%	4.48%	4.26%
Engine 3	Suppression	5.54%	5.87%	5.71%
Ladder 1	Suppression	3.04%	3.75%	3.40%
Ladder 3	Suppression	0.57%	0.41%	0.49%
Squad 1	Squad	6.86%	5.49%	6.18%
Brush Pumper 1	Specialty	0.93%	2.43%	1.68%
Brush Pumper 2	Specialty	0.89%	1.34%	1.12%
Brush Pumper 3	Specialty	6.53%	8.49%	7.51%
Brush Pumper 4	Specialty	0.03%	0.30%	0.17%
Hazardous Material 1	Specialty	0.05%	0.03%	0.04%
Utility 1	Specialty	0.01%	0.00%	0.01%

Call Concurrency

Call concurrency refers to the number of incidents occurring simultaneously within the service area. As concurrent incidents increase, the ability to respond to additional service calls decreases. As illustrated in the following figure, concurrency of greater than one incident occurs infrequently for the Shawnee Fire Department. On average, SFD only handled more than one simultaneous incident 20.4% of the time in 2021 and 2022.

Figure 32: SFD Call Concurrency, 2021-22

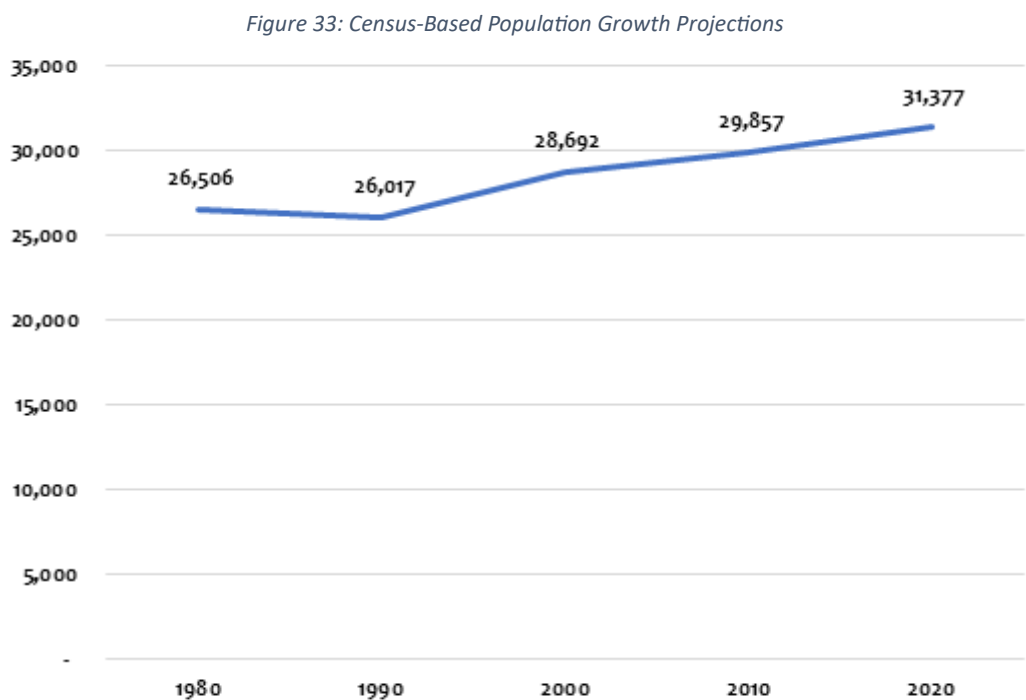
Concurrent Incidents	2021	2022	Average
Single Incident	79.5%	79.7%	79.6%
Two Incidents	18.4%	18.1%	18.2%
Three Incidents	2.0%	2.0%	2.0%
Four Incidents	0.2%	0.2%	0.2%
Five Incidents	0.0%	0.1%	0.0%
More than Five Incidents	0.0%	0.0%	0.0%

POPULATION GROWTH PROJECTIONS

Since human activity is considered the primary driver of emergency service demand, it is essential to have a robust projection of the future population size of the city. It is not possible to determine the exact number of future residents, but an estimate can be determined by analyzing population history, future land use, and related population growth predictions.

Population History

Analyzing population history is helpful when determining future population projections. The following figure shows the population history of the City of Shawnee from 1980 to 2020 using the U.S. Census Bureau decennial census statistics.



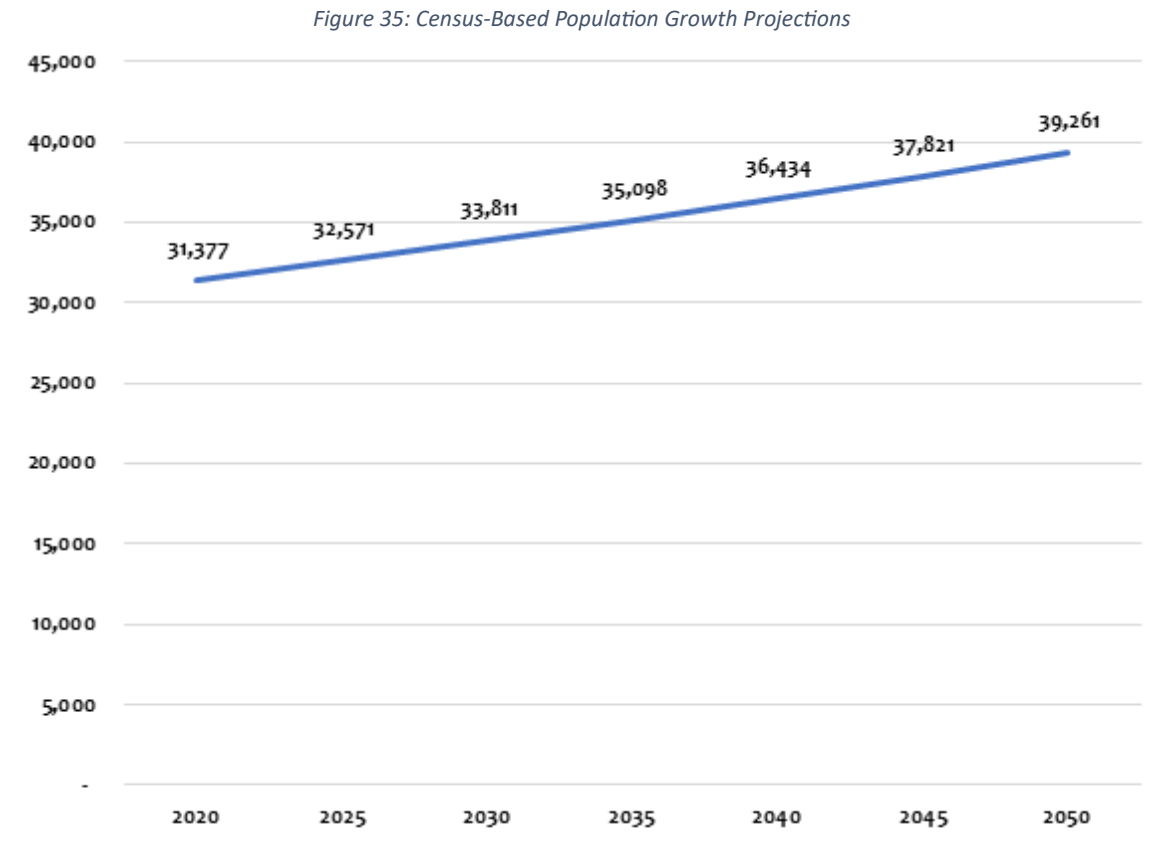
The largest percentage of change in population over the last 40 years occurred between 1990 and 2000 when the population increased by 10.3%. There was a decline in population from 1980 to 1990. Most recently, the population increased 5.1% from 2010 to 2020. The following figure shows the percent of change between each decennial census from 1980 through 2020.

Figure 34: Decennial Census Percent of Change, 1980 to 2020

Years	Percent of Change
1980 to 1990	-1.8%
1990 to 2000	10.3%
2000 to 2010	4.1%
2010 to 2020	5.1%

Population Growth Projections

ESCI utilized the growth assumptions defined in the 2040 Shawnee Comprehensive Plan to estimate the future population of the city. The plan estimates that the population of Shawnee will experience a 0.75% annual growth. ESCI applied this rate to the 2020 US Census population as a starting point to estimate the population through 2050. These estimates are shown in the following figure.



SERVICE DEMAND PROJECTIONS

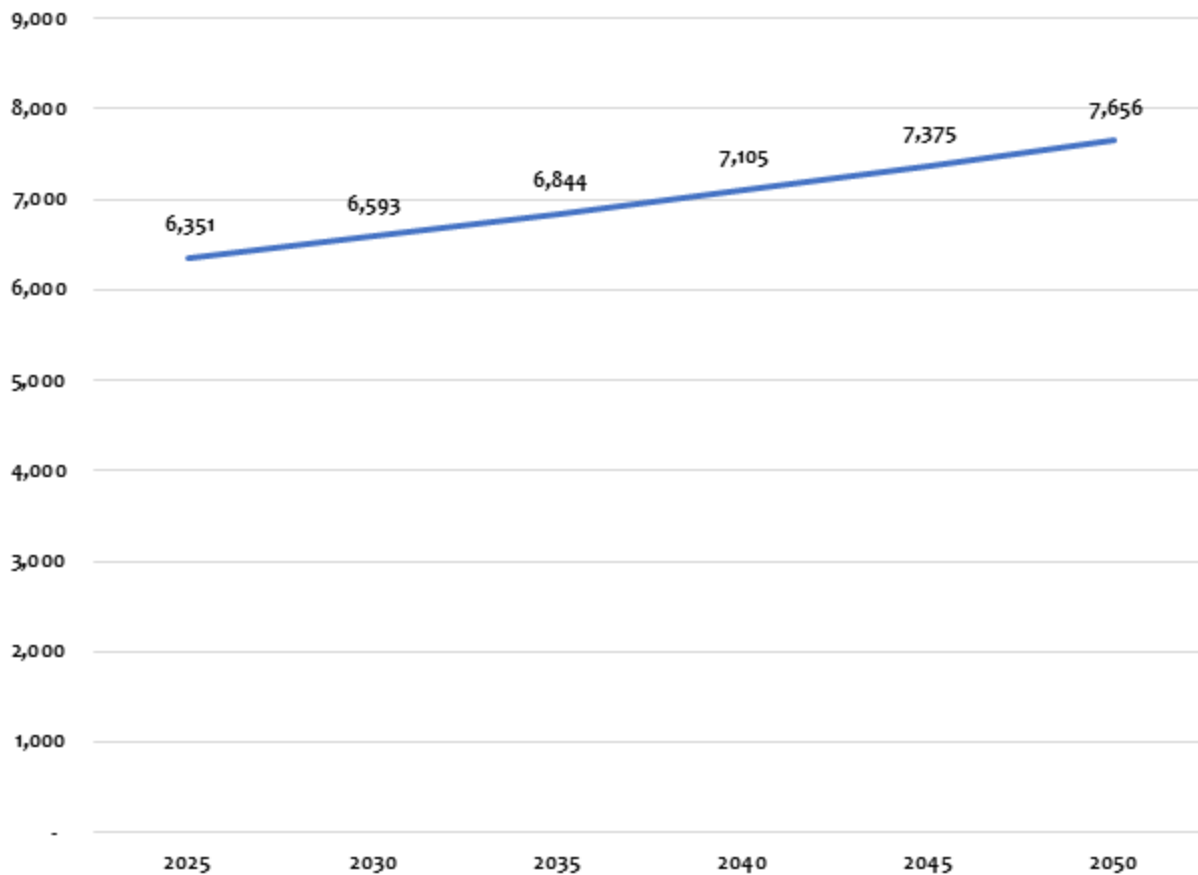
When evaluating the deployment of resources and staffing, it is imperative that consideration be given to potential changes, such as population growth, demographic shifts, and economic activity, which can directly affect emergency workload. Changes in service demand might require changes in the deployment of staffing, apparatus, and stations to maintain acceptable performance levels.

Future population size and the activity of that population are significant predictors of future service demand. All requests for EMS service are driven by people. The National Fire Protection Association (NFPA) reports that approximately 70% of all fires are the result of people doing either something they should not (i.e., illegal burning, misuse of an ignition source) or not doing something they should (i.e., failing to maintain equipment).⁴ It is therefore reasonable to use future population change to predict future service demand.

Service Demand Projection Analysis

The current service demand per 1,000 residents is determined by taking the average annual number of responses from 2021 to 2022 (6,056) and dividing it by the population numbers in thousands. Looking at the 2020 U.S. Census Bureau population of 31,077, the rate of total service demand is about 195 incidents per 1,000 population. Based on that ratio, the following figure illustrates the projected service demand for the Shawnee Fire Department.

Figure 36: Annual Service Demand Projections, 2025-2050



Impact of Aging Population on Service Demand

The previous method produces the potential number of calls in the future; however, it does not consider demographic changes. The existing population will likely continue to age in place. The growing number of older adults will likely increase the demand for emergency medical services as the elderly population is a disproportionately greater user of these services. National medical industry studies suggest that patients over 65 years of age are three times more likely to access local emergency services than other age groups.⁵

Fourth Fire Station Recommendation

New developments along with increased target hazards create the need for additional fire stations and/or response units. Policymakers must determine when and where to add fire department resources and at what cost the desired level of service is to be achieved. Although this question has been answered by any community with more than one fire station or response unit, the challenge is to find a quantifiable threshold to determine that point for each specific situation, because it varies from community to community and even within a specific jurisdiction. The overall answer is part financial and part professional judgment. In fact, in the literature of the fire service today, there is little definitive guidance on how this should be accomplished.

There are several steps that can be identified. They consist of:

1. Identifying areas with minimum coverage
2. Identifying feasible locations for a new facility or response resource
3. Evaluating those locations using specific criteria

Fire Station Location Discussion

ESCI evaluated SFD service delivery system regarding current station location and system performance metrics gathered during the evaluation to determine if the current system has the capacity to handle the future expected service demands. As with any emergency services system, the ability to provide current service needs and prepare for future community needs becomes a delicate balancing act for government officials who are entrusted with community funds generated for such purposes. These funds are all too often spread thin among competing priorities. Furthermore, fire departments are faced with systems that often experience fewer fires than in previous generations, but still require an appropriate level of preparedness “just in case” to prevent catastrophic results during potential emergencies.

It is imperative that the Shawnee Fire Department take advantage of nationally established standard metrics to justify and support their requests for the needed resources that support their service delivery. The key resource components of a fire department, or any system for that matter, are listed in the following figure.

Figure 37: Measuring System Effectiveness



There is a direct relationship between available personnel and equipment as well as the timing of their application, all of which determines fire department effectiveness during an emergency.

Increasing or decreasing one or more of these components can significantly affect the system's ability to mitigate an emergency incident efficiently, safely, and effectively.

When a Fire Station or Response Resource is Needed

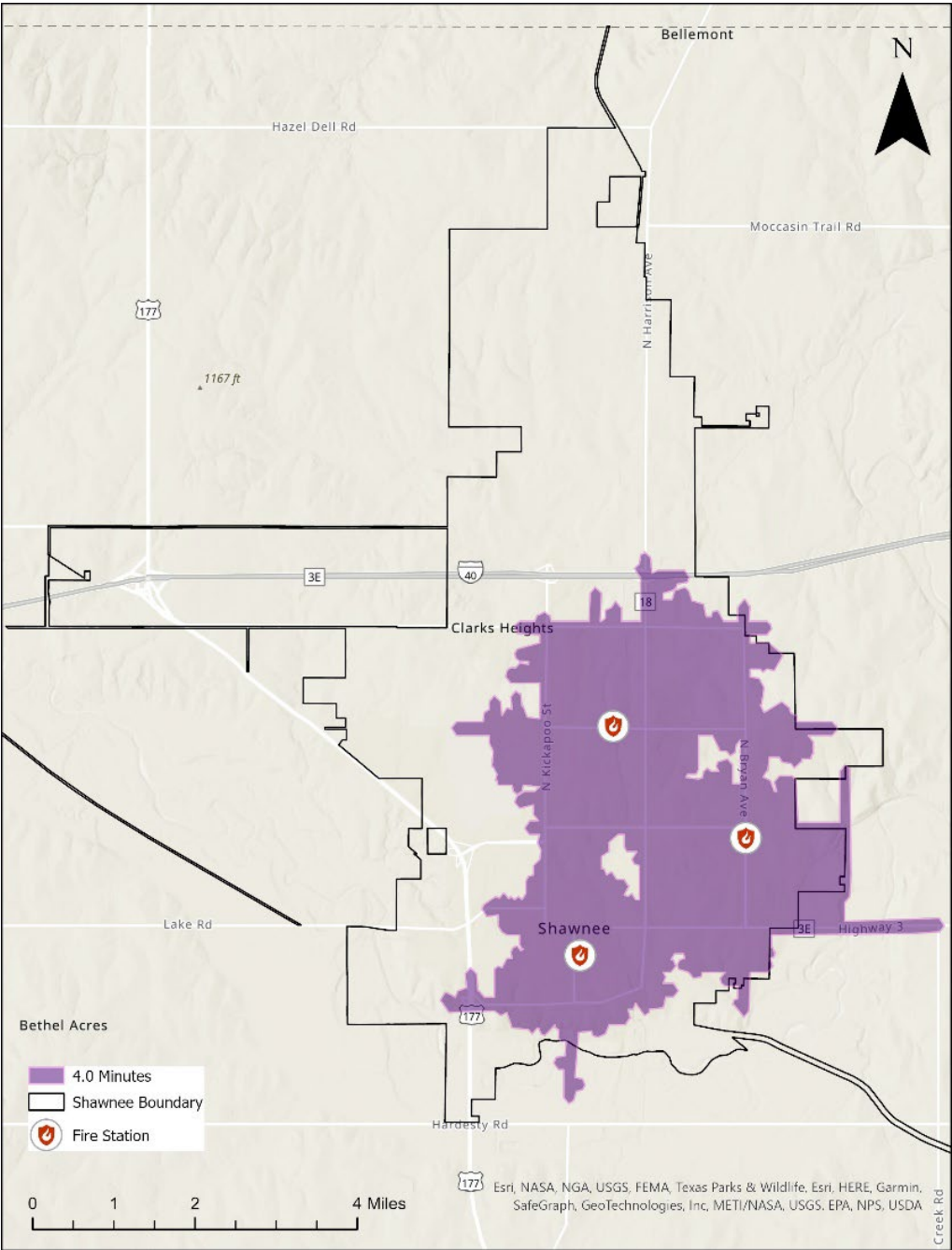
Unfortunately, there is no universally accepted algorithm to determine the magnitude of resources needed. The process is a continuous analysis, as it requires reviewing incident location data, response times, roadway networks, traffic patterns, and development plans.

One form of measurement is to assess the roadway and transportation network to ascertain the percentage of road mileage that is theoretically covered by the time criterion. This is done using computer-based modeling that will create a polygon that describes the areas of coverage. This process will also identify gaps and deficiencies where response time is not adequate. The underlying analysis is dynamic, because it will change as new residential and commercial developments come online and the roadway network is expanded and updated. In addition, as more people move to Shawnee and more visitors travel to the city, the increased number of cars on city roads will create additional traffic issues. Even though emergency vehicles are equipped with lights and sirens, traffic congestion will slow response times. Furthermore, new development will bring new roads and road networks that have not yet been built and cannot be measured.

As growth and development extend beyond the range of travel time of the existing fire stations, the percentage of calls that exceed the performance requirement will likely increase. This means it will take longer to get emergency service resources to those that need assistance. It should be noted that growth alone does not create an instant demand. New construction has the advantage of having been built in compliance with newer, better codes and often demonstrates a higher level of ownership interest.

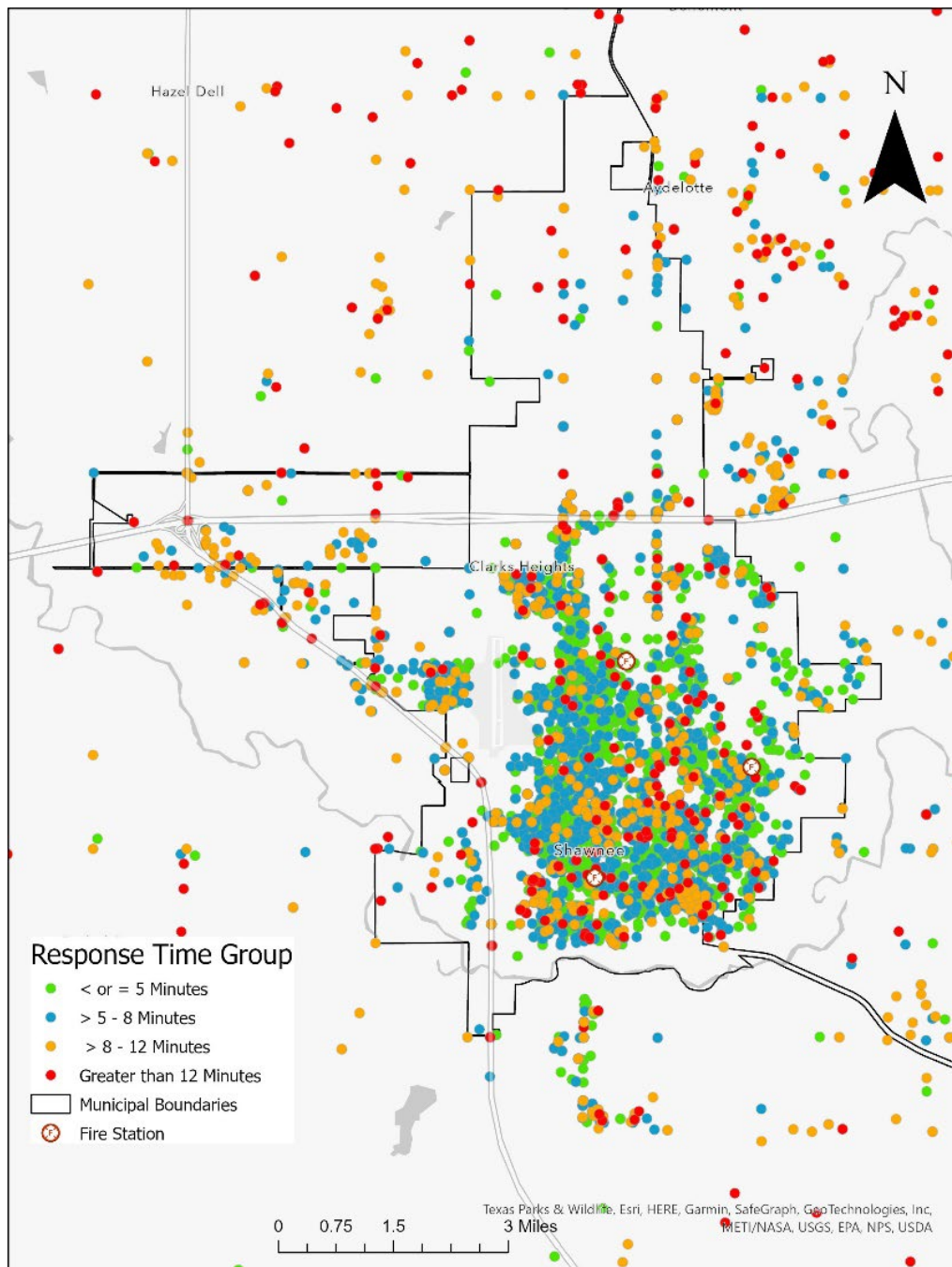
Shawnee is expecting growth along I-40 to include areas to the north of the Interstate. All three fire stations are located south of I-40. As shown in the following figure, there is a lack of four-minute coverage north of I-40.

Figure 38: 4 Minute Coverage



The following figure also shows that the incidents with a longer response time (shown in orange and red) are more prevalent north of I-40.

Figure 39: Response Time Coverage



Apparatus, Equipment, & Fleet Maintenance

Capital assets include all facilities, all rolling stock (apparatus), and the key equipment used on the apparatus dedicated to achieving the mission of the Shawnee Fire Department. The single most expensive infrastructure elements in a fire department are the facilities and apparatus. Because of this expense, a plan must be developed to address replacement, refurbishment, and maintenance. The funding of these elements is difficult to absorb for most agencies in a single year, thus a multi-year funding strategy or sustained funding sources must be identified. The replacement or refurbishment must be planned far enough ahead of the actual expense to allow the agency time to acquire the funds necessary to implement the plan. Recent challenges related to apparatus and equipment acquisitions have further emphasized this point. Longer than usual delivery times and supply chain disruptions have become commonplace in the emergency services industry.

The SFD does not have a standalone Capital Improvement Plan that highlights all future apparatus, equipment, and facility needs. However, the City of Shawnee utilizes a Capital Improvement Plan for future budgeting and implementation purposes that incorporates the next 5 years of projected capital needs, as well as providing an outlook for the subsequent 5 years.

Regardless of an emergency service agency's financial status, if appropriate capital facilities and equipment are not available for use by responders, it is impossible for a fire department to deliver services effectively.

Facilities

Each of the Shawnee Fire Department's buildings were visited during the dates of March 28-29, 2023. The visits included a walk-around of each building with focus on construction, building condition, building amenities, and visible problems or issues. The apparatus assigned to each facility appeared in working order and their condition has been rated by the fire department administrative staff. Personnel onsite were welcome to contribute comments and concerns. The information was compiled into a spreadsheet for each building and is included later in this report. Specific recommendations for each building are identified and should be reviewed individually. The apparatus assigned to each facility is also listed with the current condition included.

Many issues common to many of the stations were identified. In general, the overall condition of the facilities varied between poor and good. There are a variety of layout configurations and design components affecting working conditions and efficiencies; however, the newly remodeled Station 2 is clearly more functional and more efficient than the other fire stations. Station 1 shares the building with City Hall administrative offices and is no longer large enough to effectively serve both functions. Station 3 is also in poor condition. While on site, previous water damage was noted in the living quarters and dorm area. If the station is not remodeled as planned, this issue should be addressed expeditiously. The general cleanliness and organization at each facility were not listed as concerns and therefore most likely met the expectations of the Fire Department administration.

Many of the buildings house a varied number of personnel. Some household style kitchen appliances and furniture are overused and inadequate in many applications. Kitchen appliances, furniture, and eating areas should accommodate the size of the crew assigned to the building and potential future growth. The department should update the household style appliances and furniture with commercial quality replacements as current pieces wear out and funding is available or as part of a building-wide renovation project, if necessary.

Each station is equipped with an emergency generator. The department should review the status of the emergency generators and provide the right size fuel tanks for each application, since these facilities are critical infrastructure for the community.

Not all fire stations are equipped with Personal Protective Equipment (PPE) extractors. Extractors are needed at each station. Many forms of cancer are becoming increasingly identified as job-related exposure, and protective equipment that has been contaminated with many of these cancer-causing fire byproducts is a potential cause. Further, PPE should be stored in an environment that protects the material from vehicle exhaust and damaging UV light. All stations should have accommodations for proper PPE storage.

Some of the facilities have floor coverings that are difficult to clean. As floors need to be replaced, the department should install floor products that require less maintenance. In general, new fire stations should be designed for easy maintenance and durability.

New Stations

When planning for new fire stations, a standard design should be identified for future fire station construction. To the extent possible, new fire stations should be designed for rapid access to the truck bays from any location in the station. This improves turnout time for responding crews. Expansion of the station to accommodate additional apparatus, crews, and living/training space ensures future flexibility of these facilities. Low maintenance materials should be a factor in the design, as well as ventilation and other environmental strategies. Every new fire station should be designed with emergency generators to operate for a sustained period of time to ensure continuous operation during an emergency. In addition, fire station compatibility with the surrounding neighborhood should be considered in the architecture of the new stations.

Apparatus

The apparatus serving frontline duty were evaluated by Shawnee Fire Department administration utilizing ESCI's apparatus assessment criteria along with the facility assessments and are listed at the bottom of each detailed facility assessment below in this report. In addition, there were some common themes that warrant additional discussion here.

Concern was expressed during the on-site visit that the fleet was being overly burdened by maintenance issues. Currently, fire department vehicles are maintained by a third-party entity in the Oklahoma City area. When maintenance is needed on these vehicles, the Fire Chief and/or Deputy Fire Chief drive the unit to the facility. This is a very inefficient method to conduct vehicle maintenance. In addition to further wear and tear on the vehicle, along with increased mileage, the long drive into Oklahoma City takes at least two staff positions several hours to accomplish. The process is repeated when the vehicle is ready to pick up. Furthermore, many staff members reported performing substantial maintenance activities on the vehicles. In many instances, it is a very acceptable method to conduct minor maintenance items since apparatus operators are trained in minor maintenance items and are often the first to notice signs of needed repair. However, emergency vehicles are unique machines with complicated components, and a highly trained individual with specialized training should be utilized for any in-depth repairs or technical maintenance issues.

Fire Department staff conveyed to ESCI that new apparatus are on order. The delivery times of recently ordered apparatus have been delayed, resulting in some of the criteria for removal of frontline apparatus from service to be stretched beyond the standard.

NFPA 1901, 1911, and 1912 are applicable standards for the purchase, refurbishment, maintenance, and retirement of fire apparatus. ESCI supports Annex D of these standards as they relate to replacement schedules for heavy fire apparatus (engines, tankers, and ladder trucks). Generally, the annex recommends a maximum of fifteen years of frontline service, followed by a maximum of ten years in reserve status, followed by removing the unit from service. However, usage can have a significant effect on the resource role during its life expectancy, as is the case in SFD. Thus, the following figure should be a useful guide for the Department, providing a formulaic approach to apparatus replacement.

Figure 40: Apparatus Replacement Criteria

Evaluation Components	Points Assignment Criteria
Age	One point for every year of chronological age, based on in-service date.
Miles/Hours	One point for each 10,000 miles or 1,000 hours.
Service	1, 3, or 5 points are assigned based on the type of service the unit receives. (For instance, fire pumpers would be given 5, because it is classified as severe duty service.)
Condition	This category considers body condition, rust, interior condition, accident history, anticipated repairs, etc. The better the condition, the lower the points.
Reliability	Points are assigned as 1, 3, or 5 depending on the frequency that a vehicle is in the shop for repair. (For example, 5 would be given to a vehicle that is in the shop two or more times per month, while 1 would be assigned to a vehicle that is in the shop once every three months or less.)

Point Ranges	Condition Rating	Condition Description
Under 18 points	Condition I	Excellent
18 to 22 points	Condition II	Good
23–27 points	Condition III	Consider Replacement
28 points or higher	Condition IV	Immediate Replacement

Figure 41: Shawnee Fire Station 1

Address/Physical Location:		16 W 9 th Street				
		Station 1 is co-located with Shawnee’s City Hall, and it also houses the Fire Department administrative offices.				
		The station no longer provides sufficient space to function as a fire station, Fire Department Headquarters, and City Hall.				
Survey Component		Observations				
Structure						
Construction Type		1	Condition		Poor	
Date of Construction		Built in 1972	Bay Type		Back In	
Auxiliary Power		Yes				
Cascade System/Gear Extractor		Yes/No				
Square Footage		6,200				
Facilities Available						
Exercise/Workout		No				
Kitchen/Dorm (mixed gender?)		Yes – Common dorm sleeping area				
Locker/Shower (mixed gender?)		Yes (Yes)				
Training/Meeting Rooms		No				
Washer/Dryer		Yes – Station uniforms				
Diesel Fueling Station		No				
Safety & Security						
Sprinkler/Smoke detection		No/No				
Security		No				
Apparatus exhaust system		Yes				
Assigned Apparatus/Vehicles						
Unit Designation	Year	Type/Make	Condition	Min. Staffing	Pump	Tank
Chief 6	2017	Chevy Suburban	III	1	N/A	N/A
Ladder 1	2018	Pierce	I	2	Yes	Yes
Squad 1	2014	Pierce	III	2		
Engine 1	2008	E-One	IV	Reserve	Yes	Yes
Brush Pumper 1	2008	Ford	IV	Reserve	Yes	Yes
Recommendations: This building no longer sustains the joint operation of a fire station and City Hall. Relocating one or the other would be appropriate, followed by a renovation of the facility to support the single purpose building.						

Figure 42: Shawnee Fire Station 2

Address/Physical Location:		1401 N Bryan Avenue				
		This space was recently remodeled (2016) and functions well for the Shawnee Fire Department.				
Survey Component		Observations				
Structure						
Construction Type		Type 3	Condition		Good	
Date of Construction		Built in 1999 Remodeled in 2016	Bay Type		Back in	
Auxiliary Power		Yes				
Cascade System/Gear Extractor		Yes/Yes				
Square Footage		6,000				
Facilities Available						
Exercise/Workout		Yes				
Kitchen/Dorm (mixed gender?)		Yes – Common dorm sleeping area				
Locker/Shower (mixed gender?)		Yes (Yes)				
Training/Meeting Rooms		No				
Washer/Dryer		Yes – Station uniforms				
Diesel Fueling Station		No				
Safety & Security						
Sprinkler & smoke detection		Yes/Yes				
Security		No				
Apparatus exhaust system		Yes				
Assigned Apparatus/Vehicles						
Unit Designation	Year	Type/Make	Condition	Min. Staffing	Pump	Tank
Engine 2	2016	Pierce	II	2	Yes	Yes
Brush Pumper 2	2011	Ford	III	2/Cross	Yes	Yes
Hazmat 1	2013	International	I	Reserve	N/A	N/A
Recommendations: Keep this facility in the forefront of future upgrades. While recently renovated, it can quickly become obsolete if not maintained and updated regularly. Dorm style sleeping areas should be evaluated to provide for dual gender accommodations.						

Figure 43: Shawnee Fire Station 3

Address/Physical Location:		306 E MacArthur Street				
		While on-site, several ceiling tiles showed signs of previous water damage, which must be investigated and remedied – either as part of the Station remodel or as a stand-alone project.				
Survey Component		Observations				
Structure						
Construction Type		1	Condition		Poor	
Date of Construction		Built in 1974 Painted in 2016	Bay Type		Back in / Drive Through	
Auxiliary Power		Yes				
Cascade System/Gear Extractor		Yes/Yes				
Square Footage		10,000				
Facilities Available						
Exercise/Workout		Yes				
Kitchen/Dorm (mixed gender?)		Yes – Common dorm sleeping area				
Locker/Shower (mixed gender?)		Yes (Yes)				
Training/Meeting Rooms		Yes				
Washer/Dryer		Yes – Station uniforms				
Diesel Fueling Station		No				
Safety & Security						
Sprinkler & smoke detection		No/Yes				
Security		No				
Apparatus exhaust system		Yes				
Assigned Apparatus/Vehicles						
Unit Designation	Year	Type/Make	Condition	Staffing	Pump	Tank
Engine 3	2018	Pierce	I	2	Yes	Yes
Ladder 3	2004	E-One	IV	Reserve	Yes	Yes
Brush Pumper 3	2020	Ford	I	Reserve	Yes	Yes
Rescue Boat 1	2011	Rescue One	II	Front Line	No	No
Rescue Boat 2	2022	INMAR	I	Front Line	No	No
Recommendations: Replacement of this station would be appropriate. At just under 50 years old, the life cycle of this building - at 24/7 usage - has been met. Dorm style sleeping areas should be evaluated to provide for dual gender accommodations. Funding is available for a station remodel, which is currently in the design phase.						

Training Facilities & Infrastructure

An effective, standards-driven training program is a vital part of a fire department's safety and accident prevention program. Training is especially important for high risk/low frequency scenarios, such as a building collapse or rail accident. Regular participation in an effective and continuous training program results in safer, more efficient, and effective emergency operations. Proficient emergency responders develop confidence in their abilities to handle emergency incidents through regular access to training centers for repetitive drills (skill maintenance and refinement) and to develop new abilities.

Emergency responders must be equipped with a balance of knowledge and skills that are periodically exercised in a realistic but safe environment. Modern fire training centers continue to evolve with the blending of suitable space, durable yet adaptable structures, and current technology. Training center facilities must incorporate classroom resources, computer resources, incident simulation equipment, and individualized study resources.

A fire department needs access to an area where firefighters can safely practice and maintain manipulative skills proficiency. Equally important are open spaces that include devices (props) that provide or create the realistic effects associated with fire, EMS, and rescue incidents. Training facilities provide a controlled and safe environment to simulate emergencies to develop and test emergency response personnel skill sets. Training involves both individual and group manipulative skills development in the operation of firefighting equipment and fire apparatus. NFPA 1402: *Guide to Building Fire Service Training Centers* is a standard that describes the appropriate design and construction of facilities for fire training.

The Shawnee Fire Department does not currently have an adequate training facility. They have a shared use agreement with the local vocational technology center and are allowed use of the facility when available. This solution is ineffective for several reasons.

- 1) The technology center is not centrally located. Its combined use by all fire companies would likely result in longer than usual response times when emergency incidents occur during training events and crews are outside of their normal response area.
- 2) Scheduling is subject to availability as technology center classes take precedence. This also limits the ability for a fire company to spontaneously decide to go train on a subject, given an identified need that arises.
- 3) Frequency of use is tied directly to the ease and availability of the training facility. Currently, the use of the shared facility is relatively infrequent. Furthermore, the Insurance Services Office (ISO) states that, to obtain the maximum available credit for training facilities, a department would need to use the facility 18 hours per member annually.

While on-site, Fire Department staff conveyed to ESCI that land was available in a more centrally located area of the city and was already designated for use as the Fire Department training facility. However, additional funding would have to be identified for the facility's construction.

CULTURAL ASSESSMENT

Project Overview

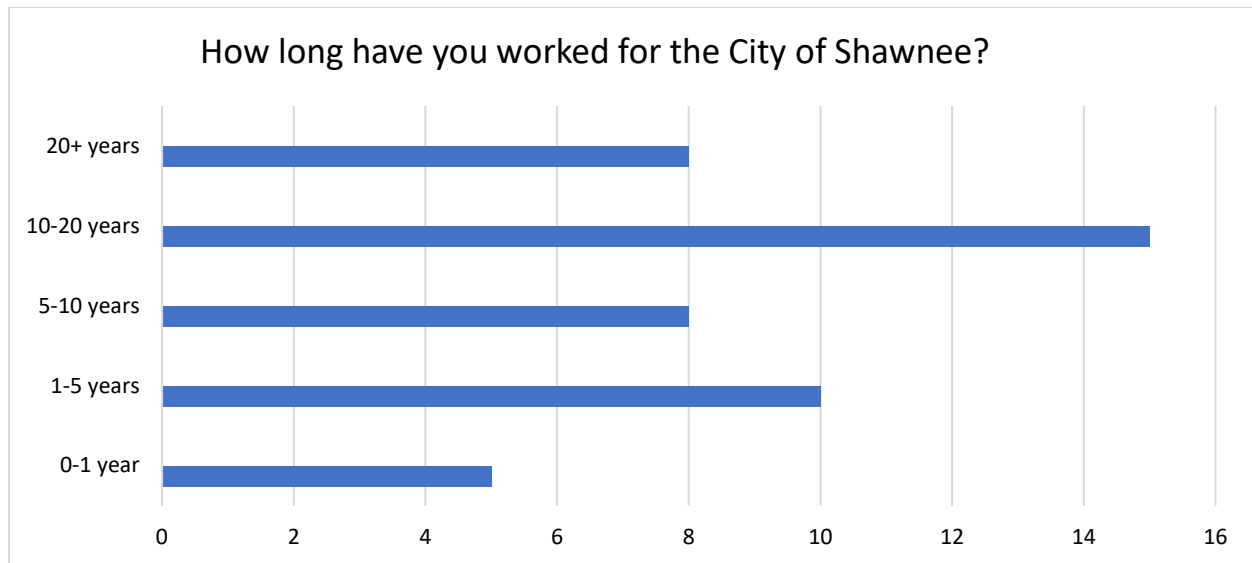
The Shawnee Fire Department (SFD) is a three-station department that runs approximately 6,400 calls per year, which makes them busier than many of the surrounding agencies. SFD has undergone some significant cultural events in recent years, which has led the City of Shawnee to desire to understand the culture of their fire department more comprehensively.

To accomplish this, the City of Shawnee has partnered with Emergency Consulting International (ESCI) to conduct an Agency Evaluation and a Cultural Assessment. An Agency Evaluation is an impartial audit detailing the fire department's capabilities, limitations, support programs, and services. The Cultural Assessment aspect of the Agency Evaluation is defined as an audit of the shared values, belief systems, attitudes, and the set of assumptions shared within the Shawnee Fire Department. This audit is a third-party, objective assessment of the workplace experience to understand how cultural factors influence their time at work.

To gain this comprehensive view of the workplace culture at SFD, this study involved a three-part data collection methodology: (1) leadership interviews, (2) focus groups, and (3) an anonymous online member survey. Data collection occurred from March 2023 to May 2023.

- Focus group meetings were held during the site visit, which took place from 3/27/23 to 3/29/23.
- Conducted in parallel, leadership interviews consisted of 1-on-1 conversations with key leaders in the organization. For management personnel unavailable at that time, follow-up interviews were conducted by phone.
- The online survey was distributed to all organization members through an email distribution list provided to ESCI. The survey collected information using a combination of Likert (rating) scale, short answer, and long answer response options.

In summary, ESCI personnel spent twenty-seven hours interviewing 52 Shawnee Fire Department employees ranging from less than a year on the job to twenty-five plus years. A total of 60 surveys were distributed, and 46 responses were received, accounting for a 76% response rate.



The desired outcome of this Cultural Assessment is to identify and remove barriers that prevent employee engagement. Engagement is the emotional and intellectual commitment an employee has toward their work, their workplace, and its established goals and objectives. Engaged employees are passionate about their work and are willing to go above and beyond to help their organization succeed. These employees are often more motivated, committed, and enthusiastic about their job, and they feel a sense of ownership and purpose in their work. Engaged firefighters are more likely to be productive, to remain at their department, and desire to contribute to its success.

The following sections describe key findings based on all three types of data collected. Accompanying recommendations address specific issues to strengthen and further improve the workplace culture at the Shawnee Fire Department.

Key Findings

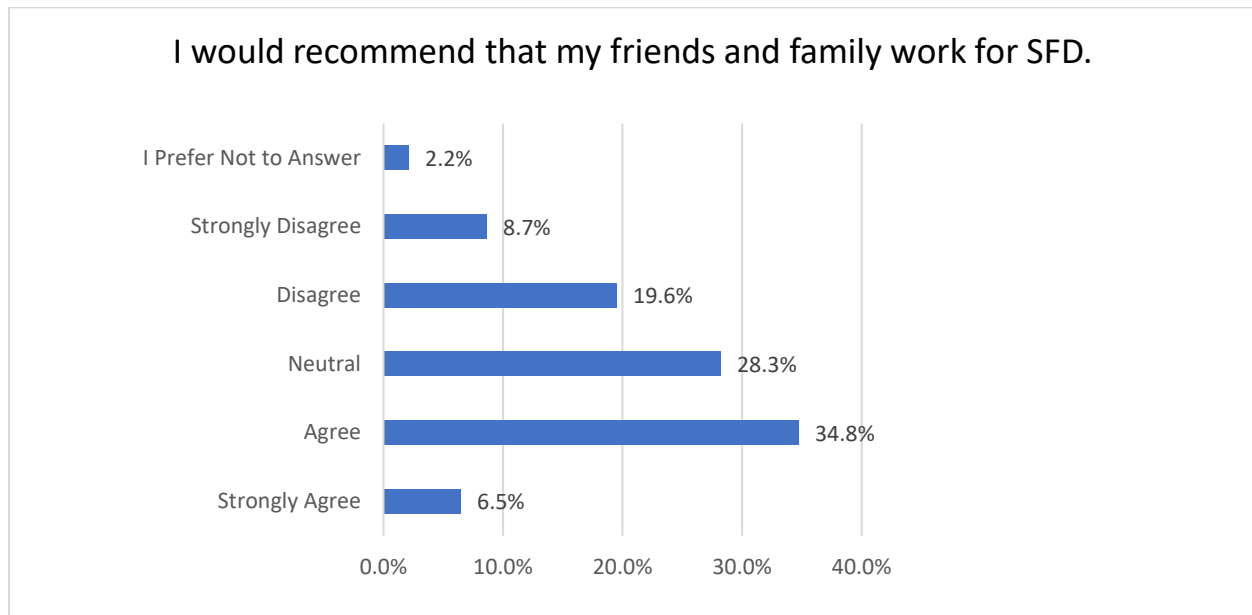
This section provides key findings of the study by synthesizing the analysis from the three data collection methodologies. The information is distributed into six sections. The first section describes the department's internal and external community relations. The second section identifies strengths and weaknesses associated with the leadership within the department. The third section explores how effectively information is being communicated. Section four investigates perceptions held by the employees of the Shawnee Fire Department. The fifth section assesses intrinsic and extrinsic trust. The last section studies the relationships of SFD.

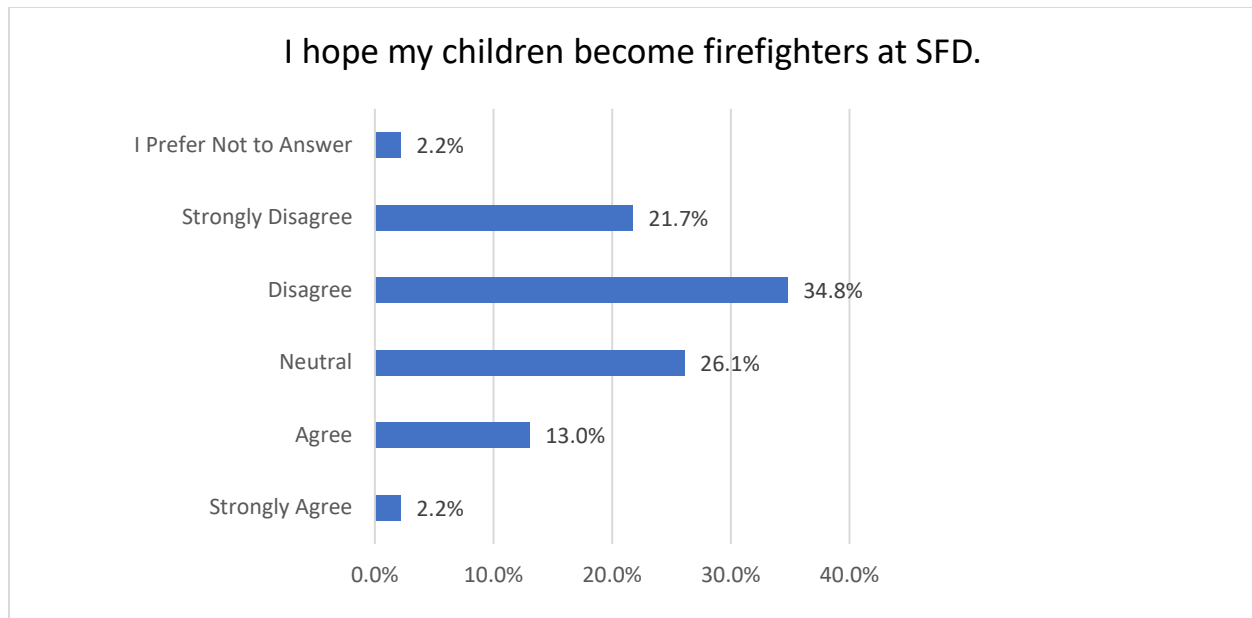
Shawnee Fire Workplace Culture: Community

Many of the firefighters identified a sense of connection to the residents of the City of Shawnee. This connection enhances the effectiveness of firefighters in emergency response, prevention efforts, and overall community safety. It adds a sense of purpose to the job, creating a deeper relationship with the community.

Family Environment

In many of the interviews, employees used the word “family” to describe their relationships with others that worked for Shawnee. The following questions focused on the desire of the employees to share SFD with their family. Respondents were given the statement, “I would recommend that my friends and family work for SFD.” Of those that responded, only 41% stated they would recommend their friends and family to work for the department. In contrast, 28% stated they would not recommend working for SFD. Additionally, 57% stated they would not want their children to become Shawnee Firefighters, with only 15% responding in the affirmative.





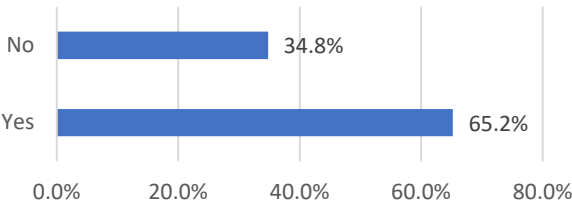
Pride in the Community

Firefighters take great pride in being part of their community because it instills a strong sense of duty to serve and protect their neighbors. Knowing they are making a positive impact and potentially saving lives within their own community gives firefighters a sense of fulfillment and pride. It also allows them to establish, and build, trust with the people they serve. Currently, 65% of the firefighters are from the area, but only 15% actually live in the city. One firefighter noted his pride because, “It’s my hometown.”

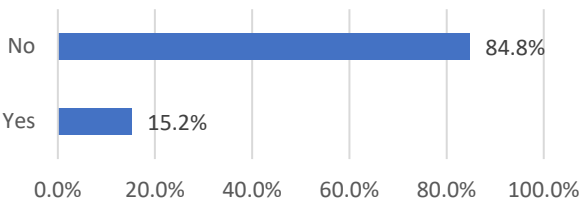
Survey results show overall satisfaction with SFD with 60% identifying it as a great place to work (13% Strongly Agree and 47% Agree). This is contrasted with 22% disagreeing with the Shawnee Fire Department being a great place to work. One firefighter stated, “Shawnee has always been a department that prides itself on helping the community and anyone else that is in need of help, including their own.” Another employee stated, “I have a high regard for being chosen to work here, and it is a great opportunity that many people would love to have.”

During the interviews, expressing pride in their work was a recurring theme. It was typically associated with being able to conduct effective operations in a less-than-ideal situation. One respondent wrote, “I am proud of our department for the work we do with the staffing we have to work with.” When asked what made them proud to work for SFD, a firefighter stated, “Accomplishing the work we do and handling the amount and type of calls with limited staffing and manpower.” The survey showed that 89% (Strongly Agree/Agree) of the employees were proud of the work they did at SFD.

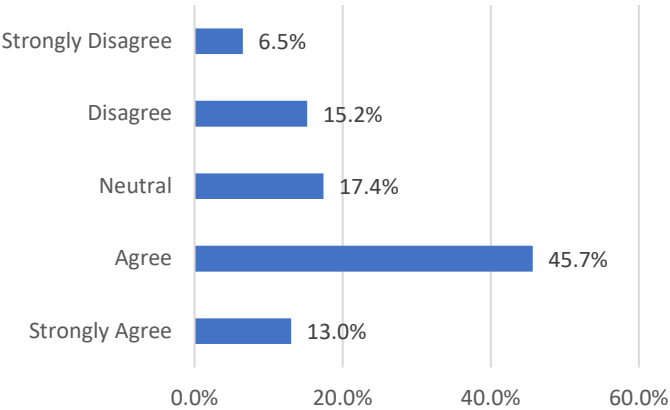
I am from Shawnee or the surrounding communities.



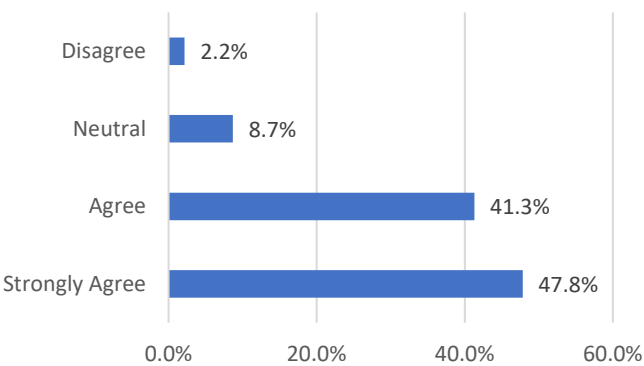
I currently live in the City of Shawnee.



Shawnee Fire Department is a great place to work.



I am proud of the work I do in SFD.

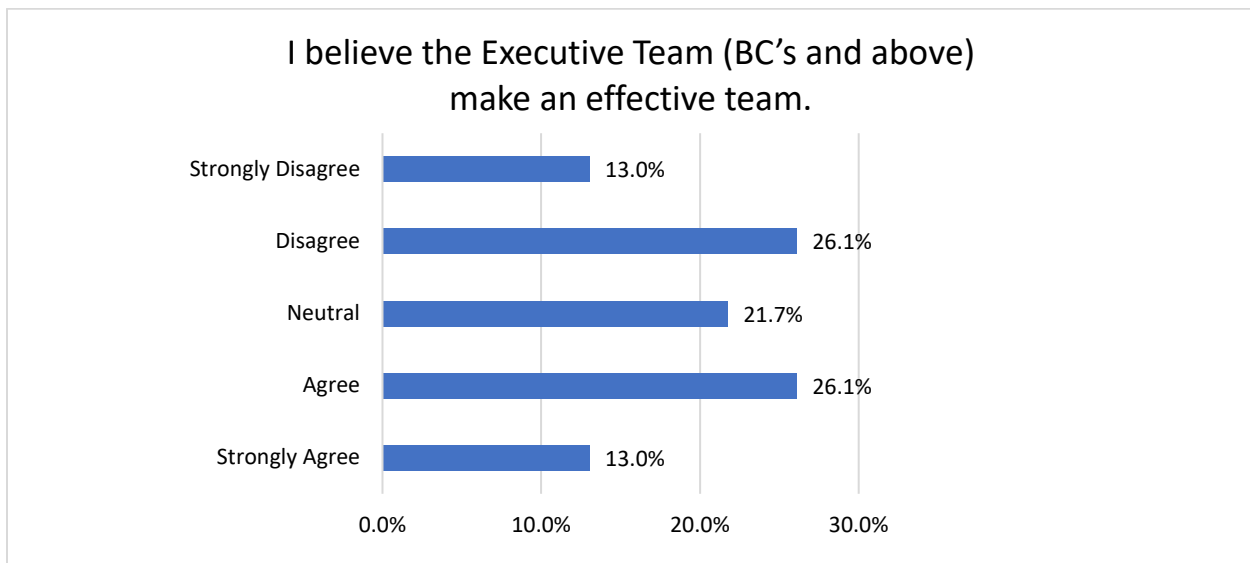


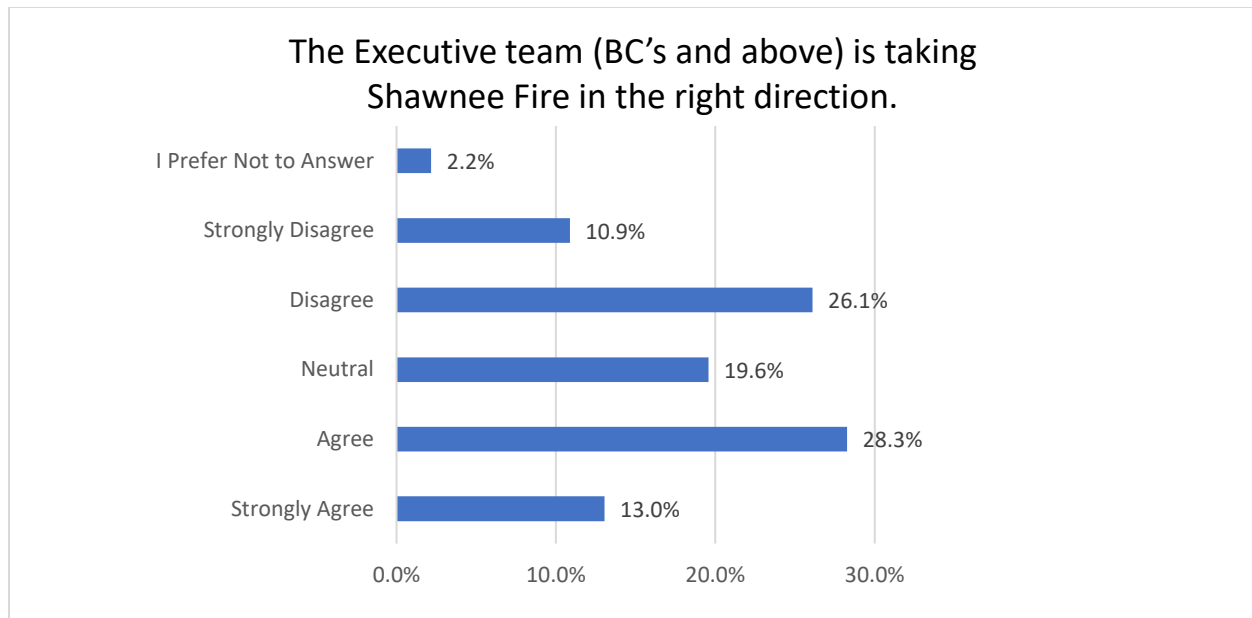
Shawnee Fire Workplace Culture: Leadership and Vision

During interviews and focus groups, it was identified there were differing perspectives on the department's current leadership. A significant event regarding the Fire Chief, and decisions made at a shift meeting have left a lasting impression on several members of the organization. This event has fractured the organization and will require an active and intentional approach to mending broken relationships.

Leadership Direction

When the members of SFD were provided statements regarding the effectiveness of the Executive Team (Battalion Chiefs and above), the results indicate 39% view the current Executive Team as being effective, with 39% viewing them as being ineffective. The survey identified 41% feel the Executive Team is taking the organization in the right direction, while 37% believe they are not.



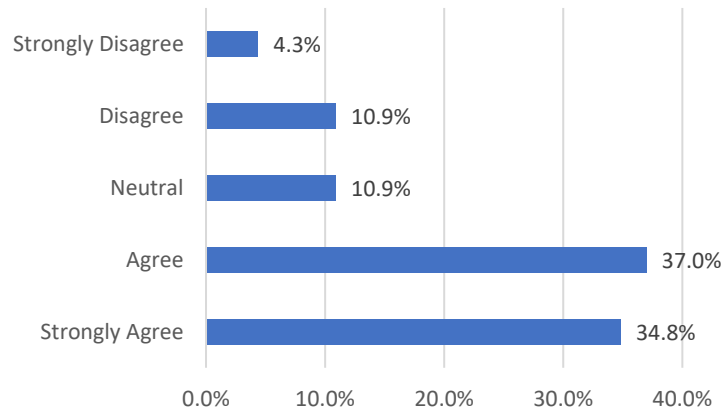
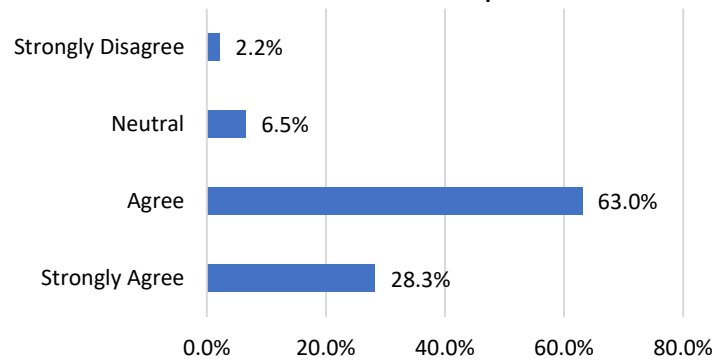
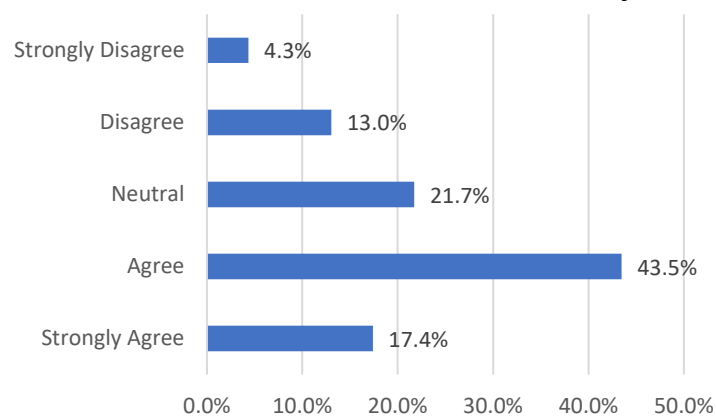


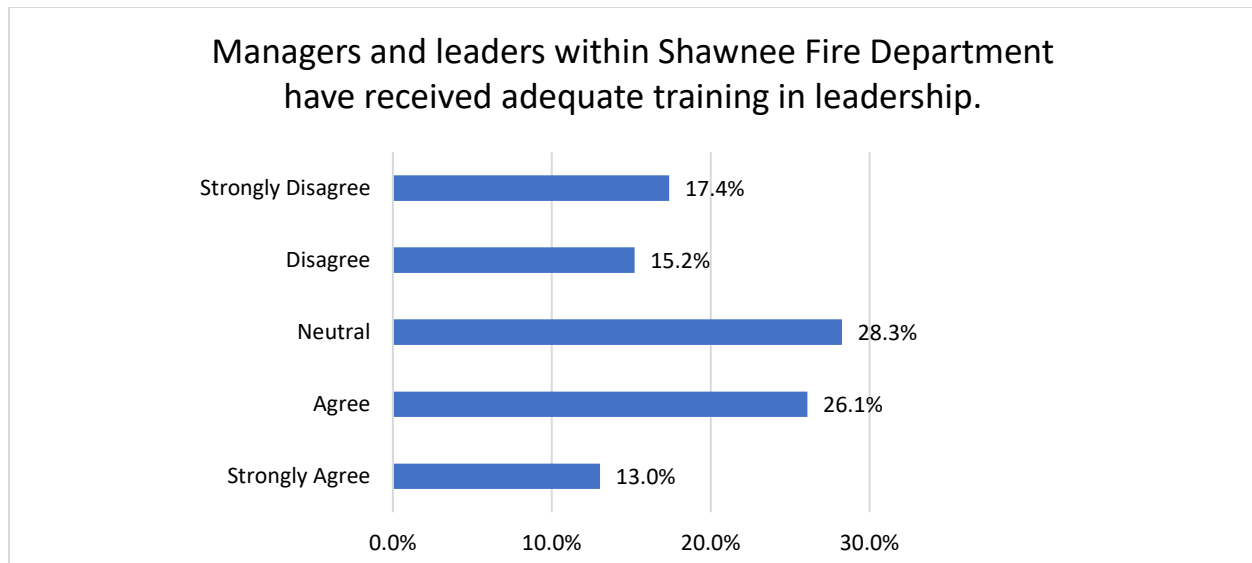
Training and Effectiveness

When confronted with an issue, it is evident the SFD believe their supervisor will handle it appropriately (72% Strongly Agree/Agree). This high percentage indicates a strong level of trust in the ability for supervisors in the organization to complete important matters brought on behalf of their subordinates.

The membership overwhelmingly stated there are strong leaders within the organization that are not currently holding supervisory positions (91% Strongly Agree/Agree). These “informal leaders” should be identified and encouraged to prepare for supervisory roles.

Overall, 61% of SFD employees feel they are receiving an adequate amount of training to meet the demands of the job. During the interviews and focus groups, comments were made about the improvement in training with the implementation of the “Major” rank, which oversees the day-to-day training responsibilities. The survey identified that only 39% of respondents feel the “Leadership” training being provided to managers and leaders is adequate.

My supervisor will handle any issue I bring forward.**I have identified strong leadership skills in people who are not supervisors.****The training I receive from SFD is sufficient to meet the demands of the job.**

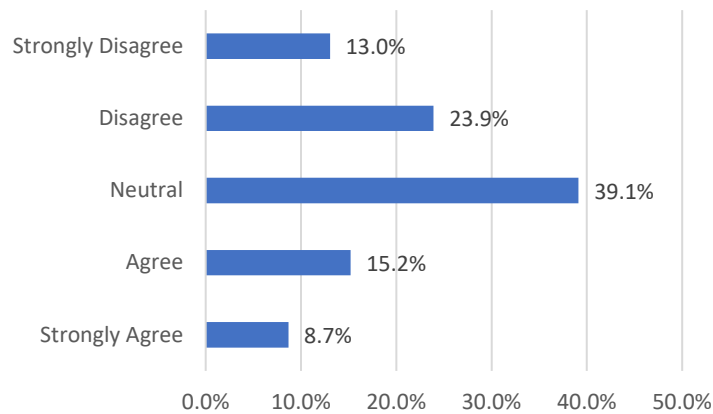


Vision and Direction

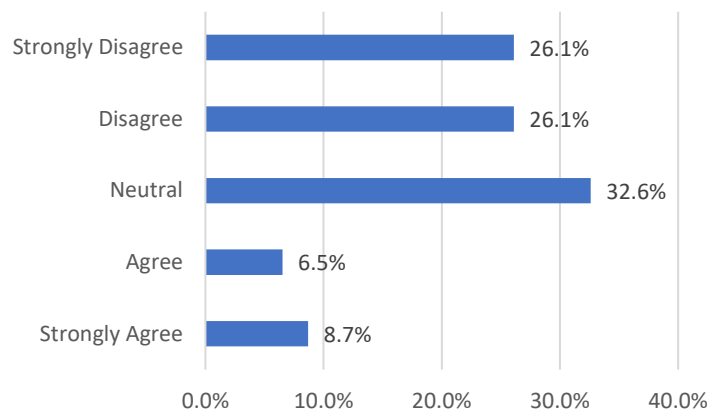
Having a clearly articulated vision is essential for an organization because it provides a sense of direction and purpose. A well-defined vision serves as a guiding beacon that aligns the efforts of all stakeholders towards a common goal. It helps create clarity, motivation, and a shared understanding of the organization's aspirations and desired future. With a clear vision, employees and stakeholders can make informed decisions, prioritize activities, and work collaboratively towards the Department's success. It also helps attract and retain talented individuals who are aligned with the organization's values and goals. Ultimately, a clearly articulated vision fosters unity, focus, and a sense of identity within the organization, enabling it to adapt to challenges, seize opportunities, and achieve long-term growth and impact.

Employees were asked if they fully understand the vision of the organization and only 24% answered in the affirmative. This indicates a clear vision has not been established or communicated. When given the statement "I have a voice in the direction of the organization," only 15% stated they did have input, while 52% indicated they did not.

I fully understand the vision of the organization.



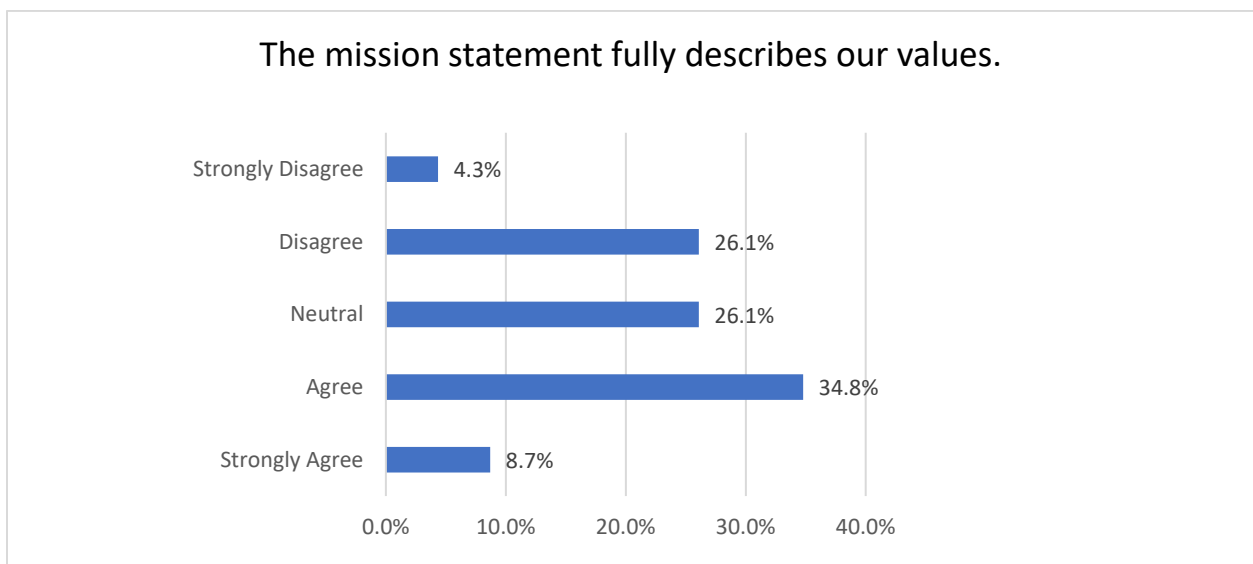
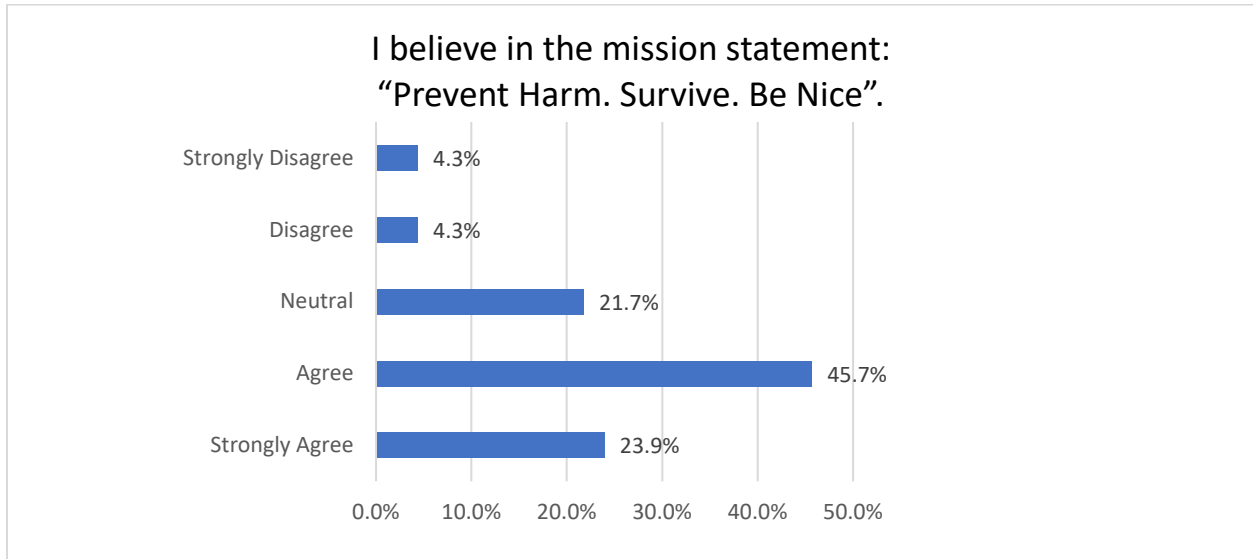
I have a voice in the direction of the organization.



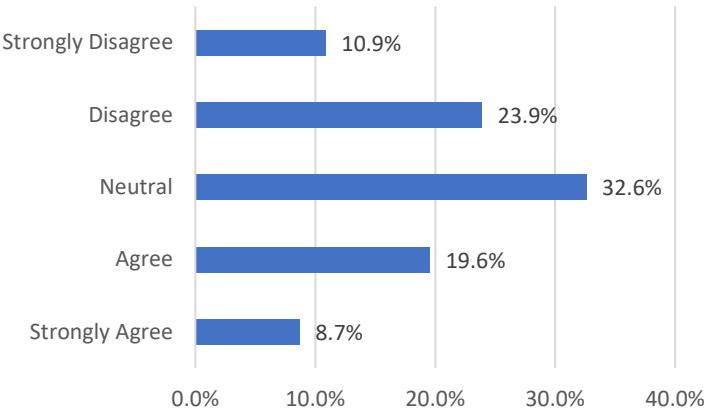
Mission and Values

A mission statement and core values are important to a fire department as they serve as the ethical foundation and guiding principles for its members. These values define the department's culture, shape its behavior, and guide decision-making processes. In the high-stakes and challenging environment of firefighting, mission and values provide a moral compass and establish the expectations for every firefighter. They promote accountability, trust, and mutual respect among team members, enhancing collaboration and communication during emergencies. Core values also foster public trust and confidence, as they demonstrate the department's commitment to serving the community with the highest standards of ethics and professionalism. By upholding its core values, a fire department can maintain its integrity, enhance its effectiveness, and fulfill its mission of protecting life, property, and the well-being of the community it serves.

The survey results conclude that 70% (Strongly Agree/Agree) of employees believe in the mission statement, “Prevent harm. Survive. Be nice,” but only 44% (Strongly Agree/Agree) believe it describes the values of SFD, and just 28% (Strongly Agree/Agree) believe this is being implemented at all levels of the organization.



The mission is implemented at all levels of the organization.

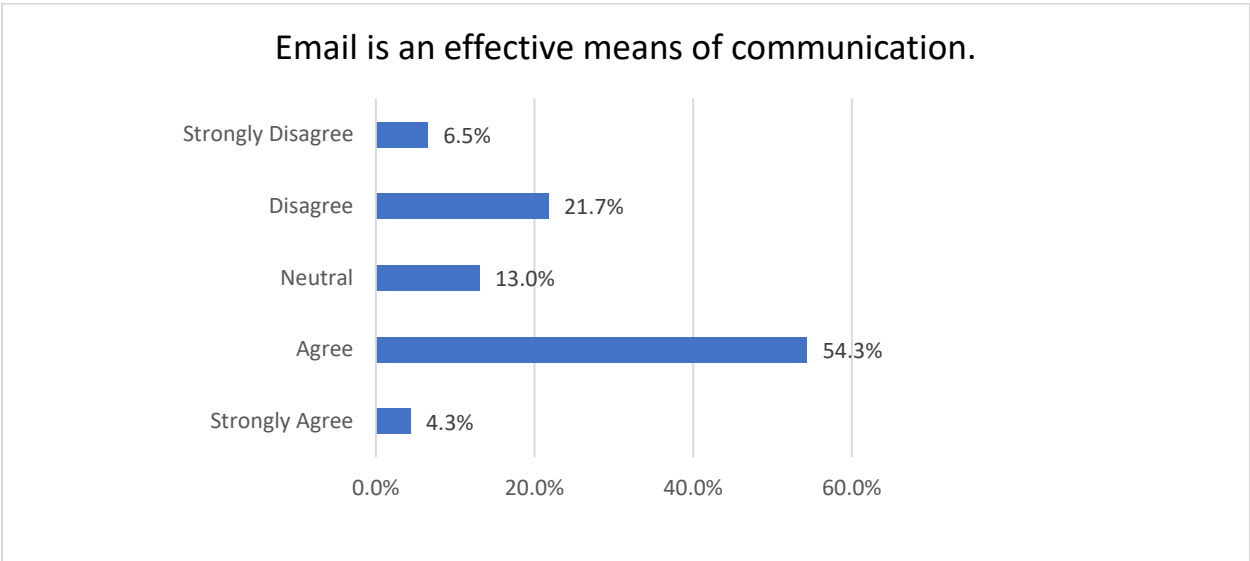


Shawnee Fire Workplace Culture: Communication

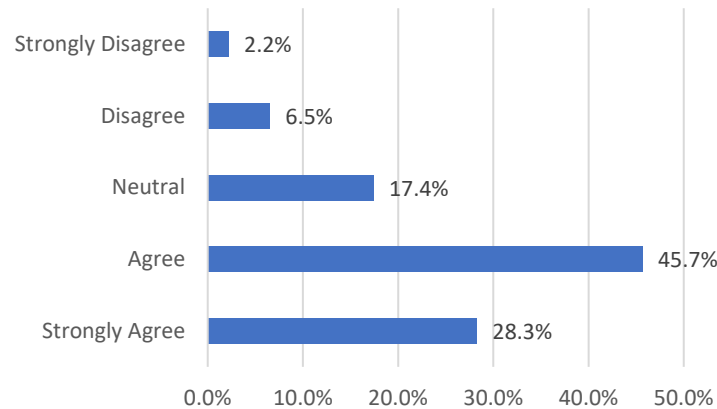
Effective communication within an organization is crucial as it serves as the lifeblood of successful collaboration and operations. Clear and open communication fosters transparency, shared understanding, and alignment among team members. It enables the efficient exchange of information, ideas, and feedback, facilitating timely decision-making and problem-solving. Strong internal communication also enhances employee engagement, morale, and a sense of belonging, leading to increased productivity and job satisfaction. Moreover, effective communication ensures that everyone is aware of organizational goals, priorities, and expectations, promoting a cohesive and coordinated approach towards achieving those objectives. Ultimately, a well-established communication system within an organization nurtures trust, builds strong relationships, and empowers individuals to work together towards shared success.

Means of Communication

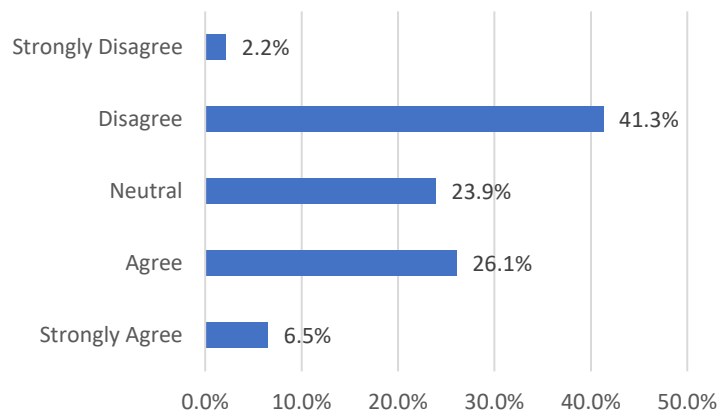
The shift schedule associated with SFD creates a challenge for adequately dispersing all information. Some members will be off work for several days and there is an opportunity for information to be lost. Based on the survey results, SFD employees feel email is an effective means of communication (59% Strongly Agree/Agree), however face-to-face is preferred (74% Strongly Agree/Agree), where 44% identify meetings as being an important method of communication.



I prefer receiving information face-to-face.



Meetings are a waste of time.



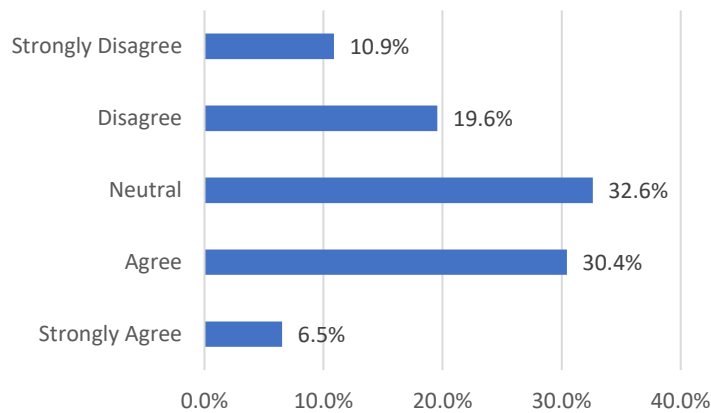
Quantity and Quality of Interdepartmental Communication

Providing an appropriate amount of relevant information is often challenging within the fire service, because adequate communication is subjective in nature. The results of the survey show only 37% (Strongly Agree/Agree) feel they receive sufficient information on departmental updates, while 31% (Disagree/Strongly Disagree) do not. However, when something important arises, 50% (Strongly Agree/Agree) recognize this information gets distributed to the organization appropriately.

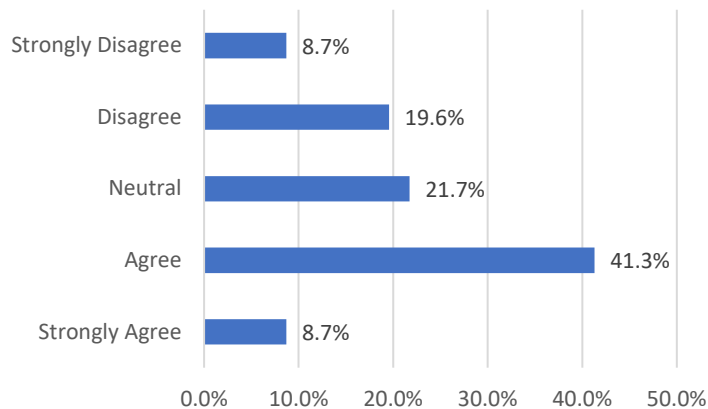
During the interviews and focus groups, many comments were made about the status of capital improvement projects or station enhancement projects. The results of the survey indicate nearly an even split among respondents, stating the status of the project is effectively communicated (35%

Agree, 35% Disagree, with 30% Neutral). Additionally, when given the statement, “I would like to receive more information from the Executive Team (BC’s and above) when a project is delayed or cancelled,” 54% (Strongly Agree/Agree) stated they would like more information. Half of all respondents (50% Strongly Agree/Agree) identified a clearly defined and understandable process for reporting the need for station repairs, with 24% (Disagree/Strongly Disagree) stating that there is not an effective reporting process.

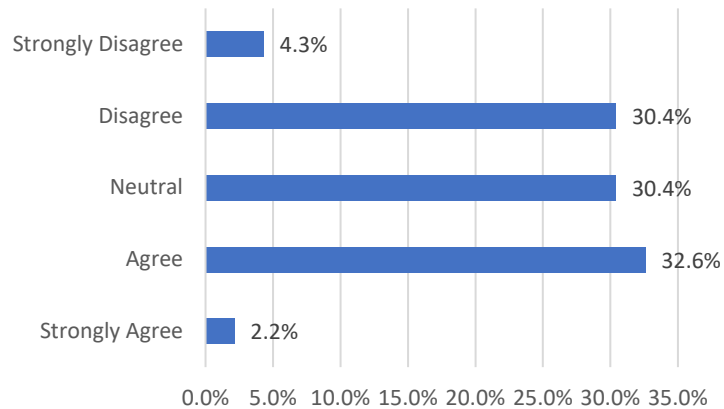
I receive sufficient information on departmental updates.



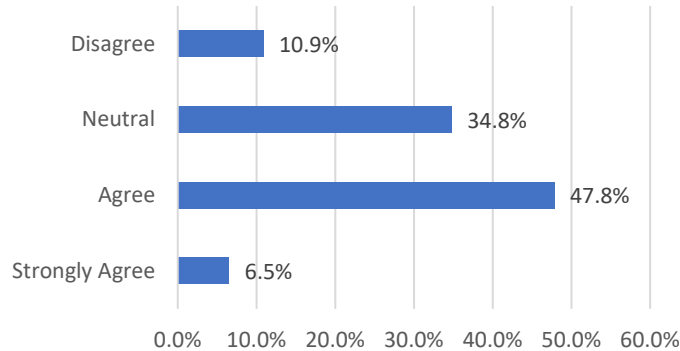
When an important issue arises, the necessary information is distributed to the Department.



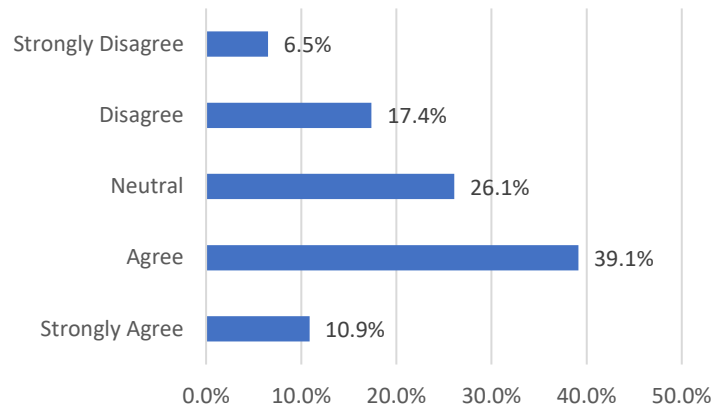
**If a department project is not able to be completed,
the reason is communicated effectively.**



**I would like to receive more information from the Executive
Team (BC's and above) when a project is delayed or cancelled.**



**The procedure for reporting station repairs is
clearly defined and understandable.**

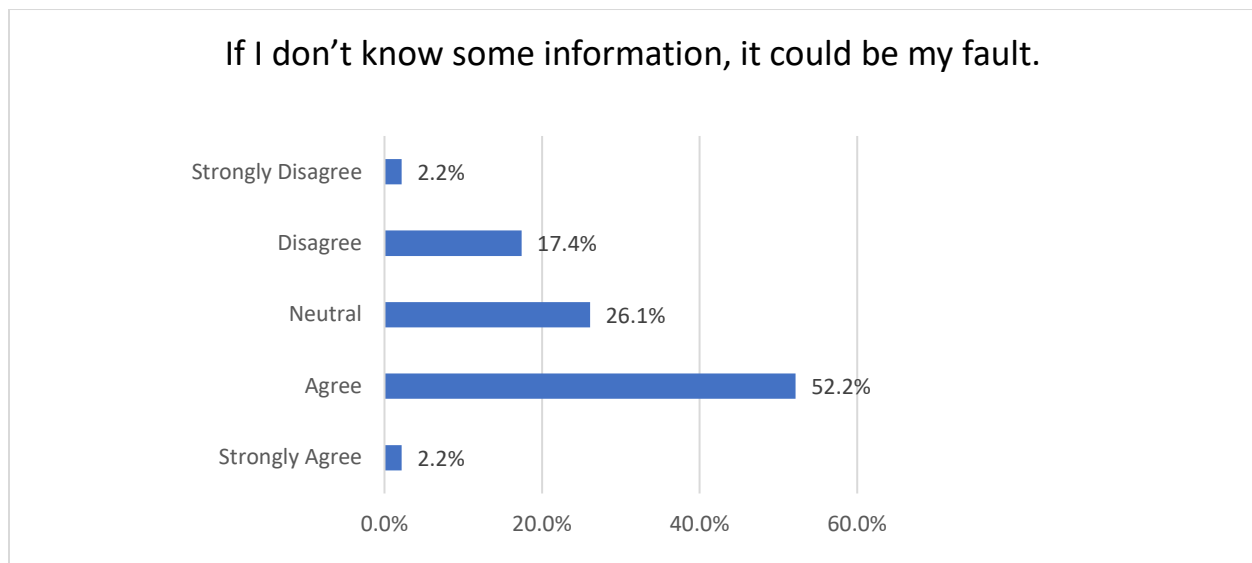


Responsibility to Improve Communication

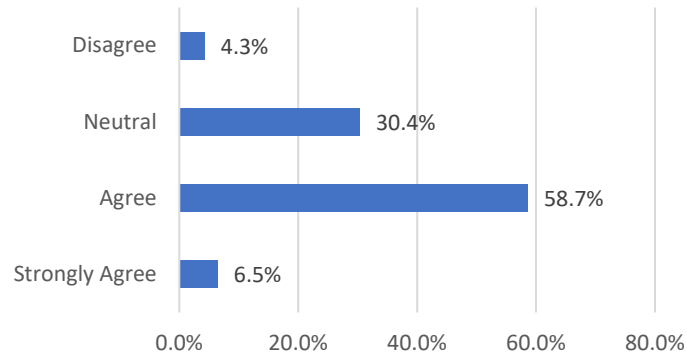
Effective communication requires two people: the transmitter of information and the receiver of that information. Challenges to communication are often multifaceted with hinderances by both the transmitter and receiver. The following section explores a variety of possible explanations for communication issues.

In the survey, 54% (Strongly Agree/Agree) of respondents assume some responsibility when there is information they do not know. Additionally, 66% (Strongly Agree/Agree) of participants admit there are actions they can do to improve communication, and 87% (Strongly Agree/Agree) mention they will actively seek information they do not have. In firefighting, the timeliness of some information is important. The survey showed that 37% (Strongly Agree/Agree) often learn of information days or weeks later, while 35% (Disagree/Strongly Disagree) do not have this issue.

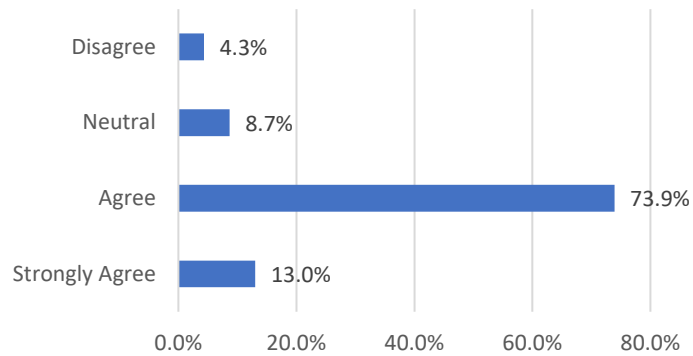
The final statement in this section is, “If a committee was established to improve communication, I would like to be on it.” The responses indicate that 37% (Disagree/Strongly Disagree) would not be a part of a committee to resolve communication issues, while only 22% (Strongly Agree/Agree) would be on the committee. When asked how they could be a better employee, one firefighter stated “By communicating issues I have within the department instead of having a negative attitude of, ‘What is the point? It won’t be addressed anyway’.”



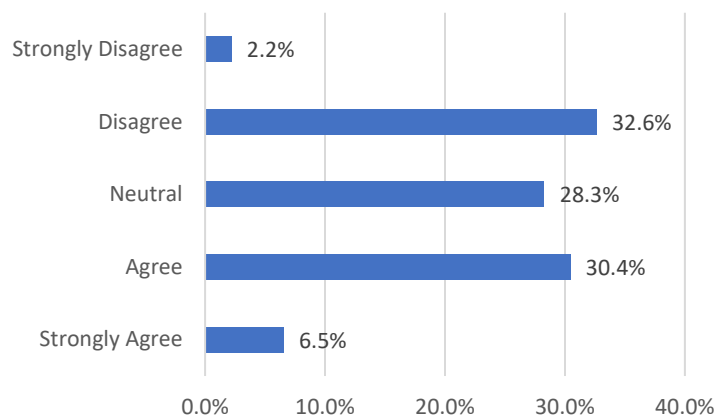
There are things I can do better to improve communication.

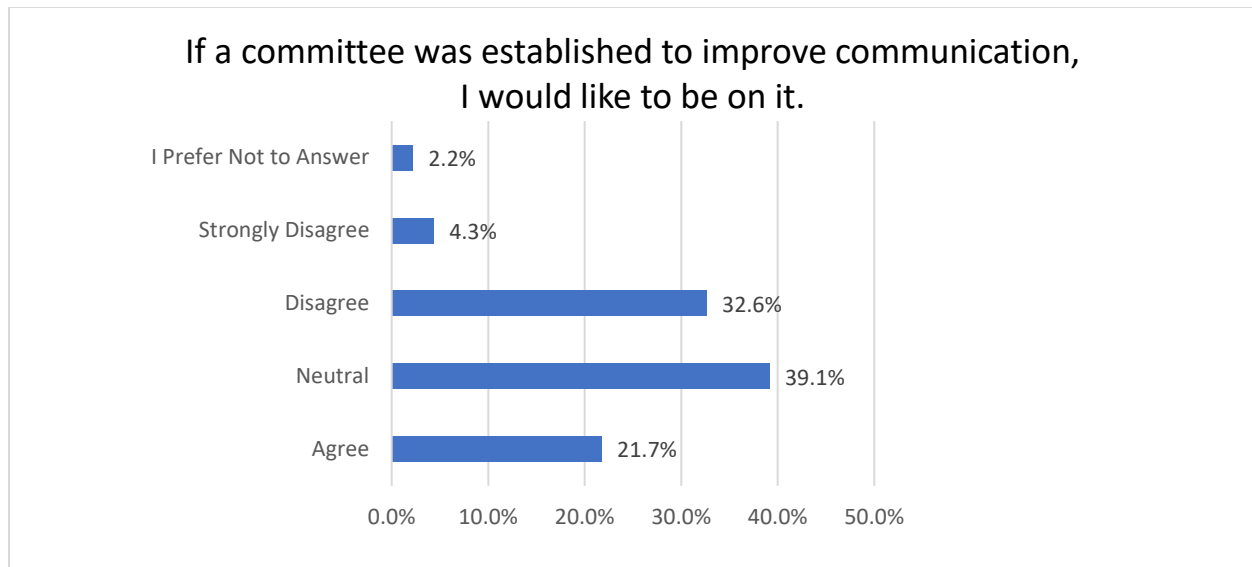


I will often seek out information I don't know.



I often find out information days or weeks late.



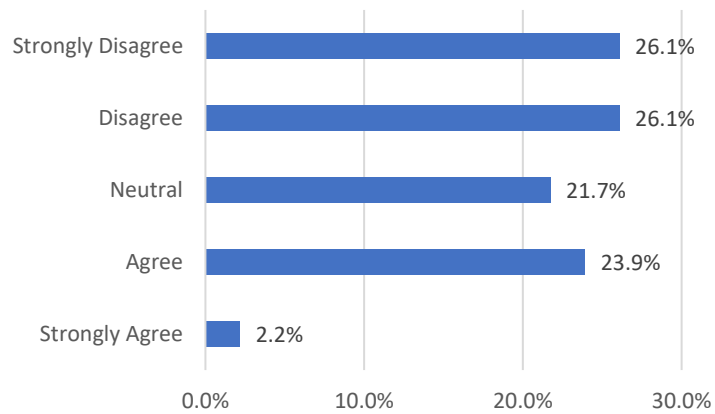


Communication Between Shifts

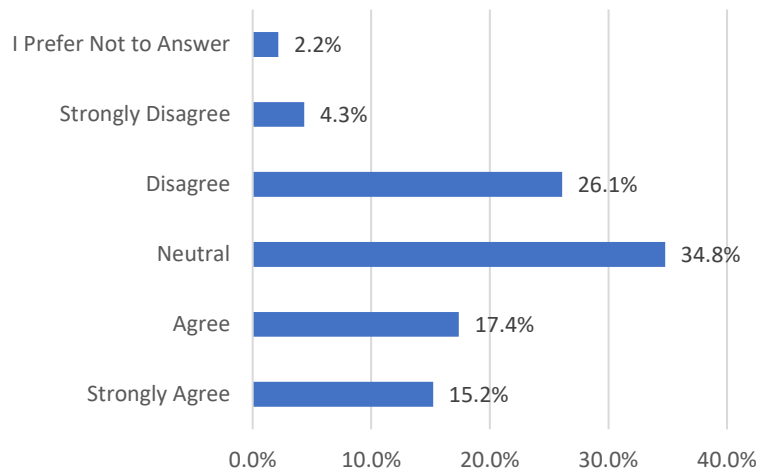
In the fire service, communication is challenged because of administrative personnel working different schedules than those assigned to shift work. This dynamic can make it difficult to deliver consistent information to all personnel. For the “suppression” personnel, pertinent information is conveyed at the beginning of the shift when the oncoming crew arrives.

During the interviews and focus groups, it was identified that some personnel received more consistent information than others. These comments were supported by the survey, with 52% (Disagree/Strongly Disagree) identifying information is not dispensed consistently among the shifts. When the group surveyed as asked if this was intentional, 33% (Strongly Agree/Agree) felt it was intentional, with 30% (Disagree/Strongly Disagree) stating they did not feel that it was intentional. Additionally, 48% (Strongly Agree/Agree) felt they received important information from the off-going shift, which indicates information is being inconsistently dispensed between shifts. The respondents also stated that they communicate best with those employees who are assigned to their own shift (89% Strongly Agree/Agree).

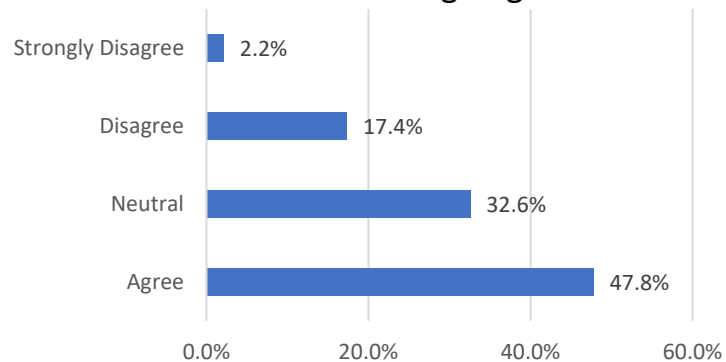
Information is dispensed consistently between all three shifts.

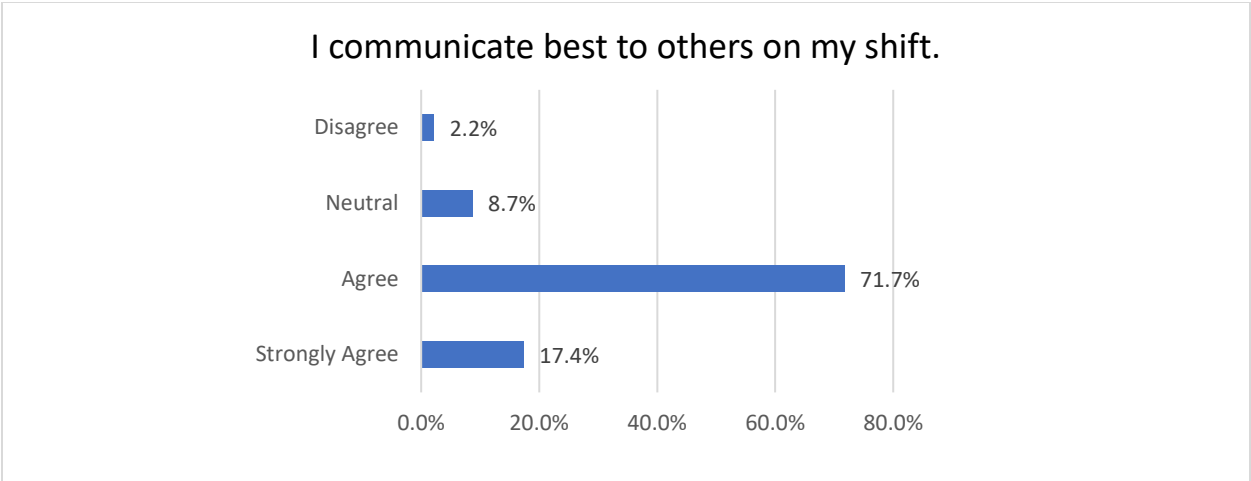


There is information intentionally withheld by others.



My shift always receives important information from the off-going shift.



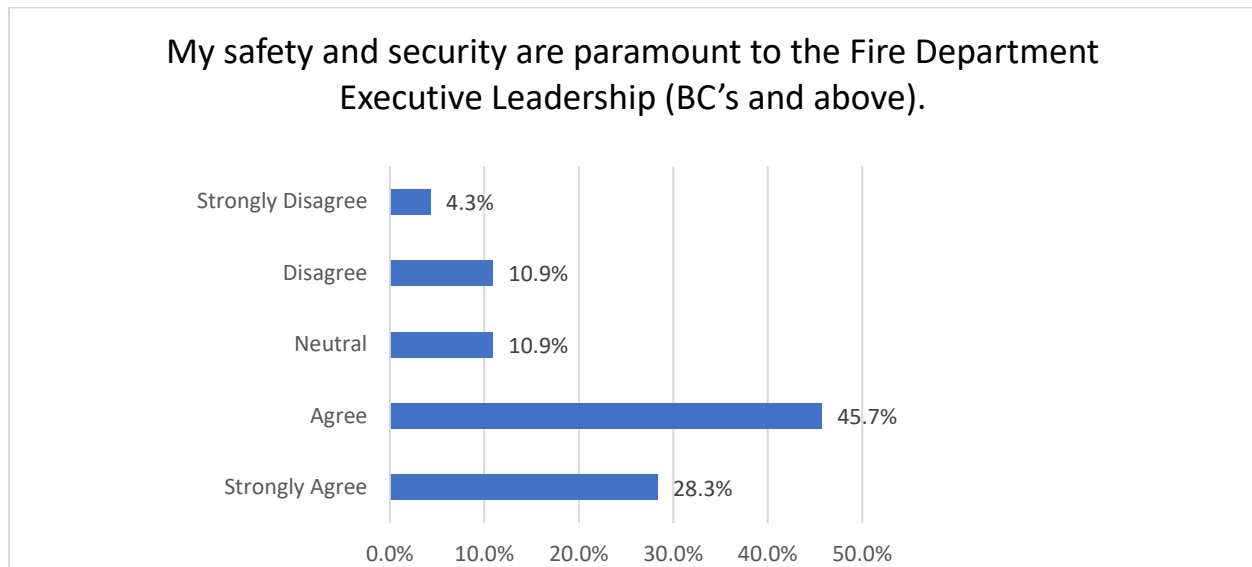


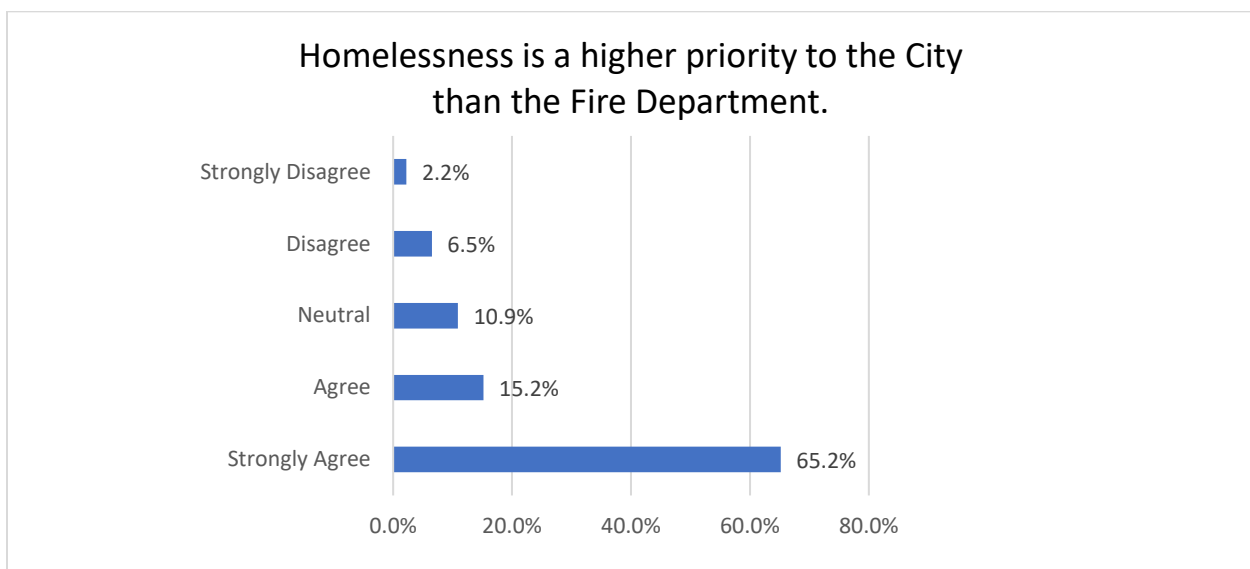
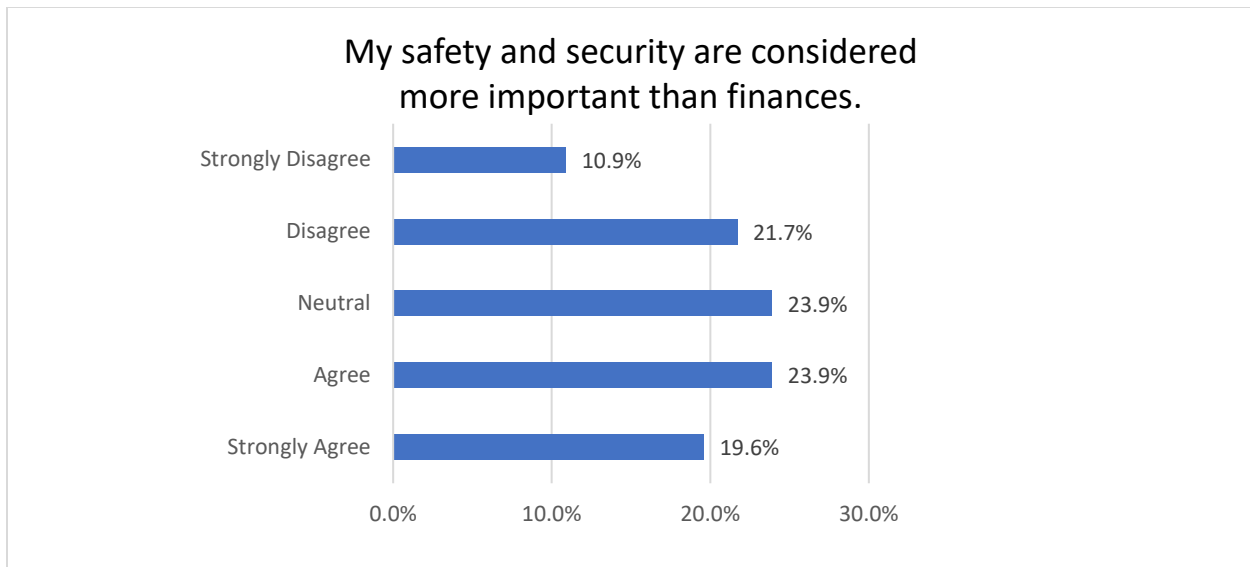
Shawnee Fire Workplace Culture: Employees

Employee culture is crucial because it directly impacts the overall success and well-being of an organization. A positive and strong employee culture fosters a sense of belonging, collaboration, and engagement among the workforces. It creates a supportive and inclusive environment where employees feel valued, motivated, and empowered to contribute their best efforts. A healthy culture encourages teamwork, innovation, and creativity, leading to increased productivity and higher levels of job satisfaction. Additionally, a positive employee culture helps attract and retain top talent, as it enhances the organization's reputation and makes it an attractive place to work. A strong employee culture contributes to a harmonious and thriving work environment, enabling organizations to achieve their goals and stay competitive in today's dynamic public safety employment landscape.

Employee Safety as a Priority

During the site visit, employees identified the growing safety concerns associated with an increase in the homeless population. When asked if safety and security was paramount to the Fire Department Leadership, 74% (Strongly Agree/Agree) identified this as being a high priority to the FD Leadership. 44% (Strongly Agree/Agree) felt their personal safety and security were more important than finances, with 33% (Disagree/Strongly Disagree) feeling finances were a higher priority than their safety. Subsequently, 80% (65% Strongly Agree and 15% Agree) feel that the city prioritizes homelessness over the Fire Department.





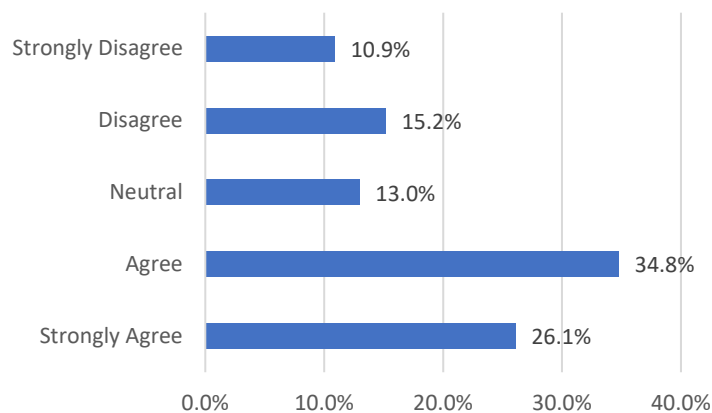
Employee Worth

In a competitive job market, one of the most crucial factors related to turnover intention is how valued the employee feels. One of the major themes identified during the site visit by ESCI personnel was that employees did not feel valued for many reasons. When given the statement, “The amount I am paid translates to how much I am valued,” 61% (Strongly Agree/Agree) felt their pay is a direct reflection of their worth to their employer. Moreover, 54% of respondents identified having a second job outside of the Shawnee Fire Department. Those that responded “Yes” were then asked why they have outside employment, with 23 of 26 employees noting additional income as the primary factor. Some responses were: “Additional income to support family and special needs child,” “Below market wage,” “Cost of living is too high to live on current salary,” “I have to have a second job to

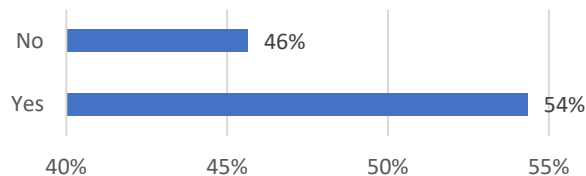
support my family because I do not make enough money as a fireman,” and “My current salary does not provide enough funds to support my family well enough to not work a second job.”

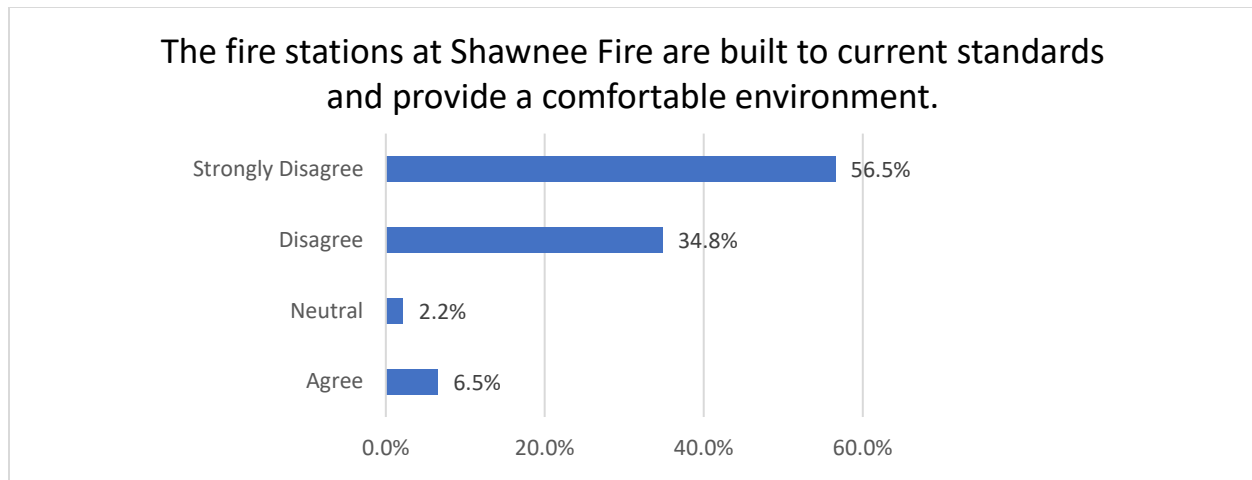
In the fire service, firefighters often live at the fire station for 24 hours or more, making the station comparable to a second home. When the living conditions are not safe and comfortable, firefighters feel as though their safety and comfort are not a priority. In the case of SFD, 91% (56% Strongly Agree and 35% Agree) feel their current fire stations are not built to current standards and do not provide a comfortable environment. One firefighter identified the station conditions with the following statement, “Equipment and stations are a big issue here. The city has the money to remodel the stations but they’re putting toward the parks in town for the homeless. We need security fences around Station 1, so our stuff doesn’t get stolen.”

The amount I am paid translates to how much I am valued.



Do you currently have a job outside the Shawnee Fire Department?





Opportunity for Advancement

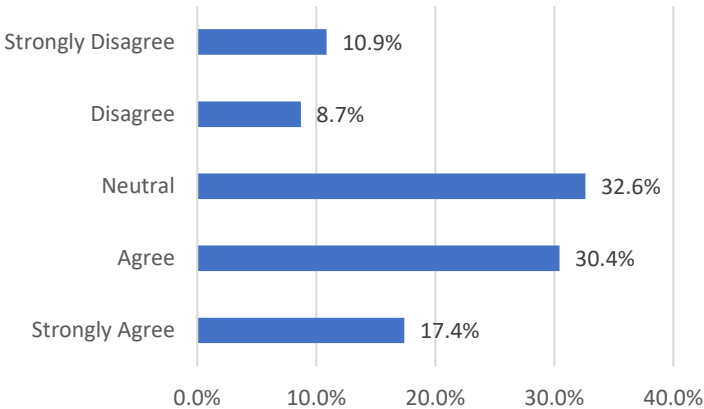
A fire department promotional exam is a standardized assessment conducted to evaluate and promote eligible firefighters to higher ranks within the fire service. The exam is designed to measure the candidate's knowledge, skills, and abilities related to fire department operations, leadership, and management. Promotional exams provide firefighters with an opportunity to advance their careers and assume higher-ranking positions within the department. It is essential for candidates to thoroughly prepare for the promotional test by studying relevant materials, gaining practical experience, and developing strong leadership and decision-making skills. This preparation requires a considerable amount of time by the learner, and the exam is supposed to be objective and relevant to the position.

Less than half of the members of the SFD stated that the organization helps them advance their promotional goals, with 48% indicating they receive appropriate support. On the other hand, 20% of the respondents indicated that they do not feel supported by SFD to advance their careers.

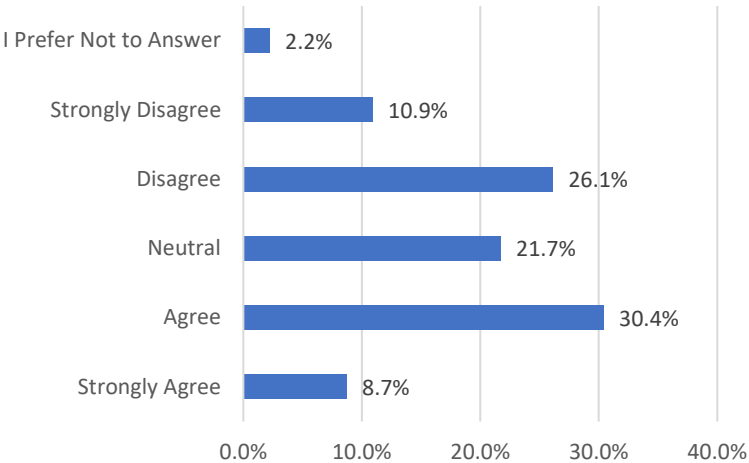
Based on comments made during the interview and supported by survey findings, promotional exams are not objective and do not always produce the appropriate candidate. Additionally, 52% of personnel surveyed felt the current promotional process does not emphasize and produce good leaders. This is contrasted by only 24%, who stated that the process will produce the intended results. Of the 24%, less than 7% strongly agreed with the statement.

When asked about the fairness of examinations, the department is divided on process objectivity. Survey results show that 37% suggested knowing the "right people" will influence the exam outcome, while 28% stated that it would not impact the outcome. In addition, 39% of those surveyed indicated that the process is fair and transparent, with 37% in opposition. These results suggest approximately 1/3 of the organization has faith in the current promotional processes, while a similar number do not trust the process.

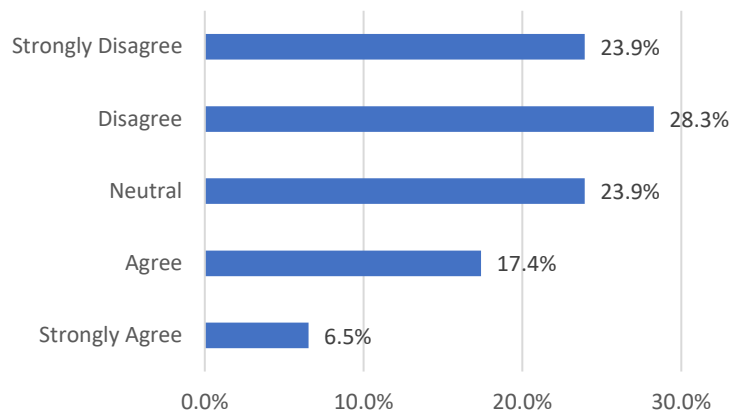
Shawnee Fire supports my career advancement.



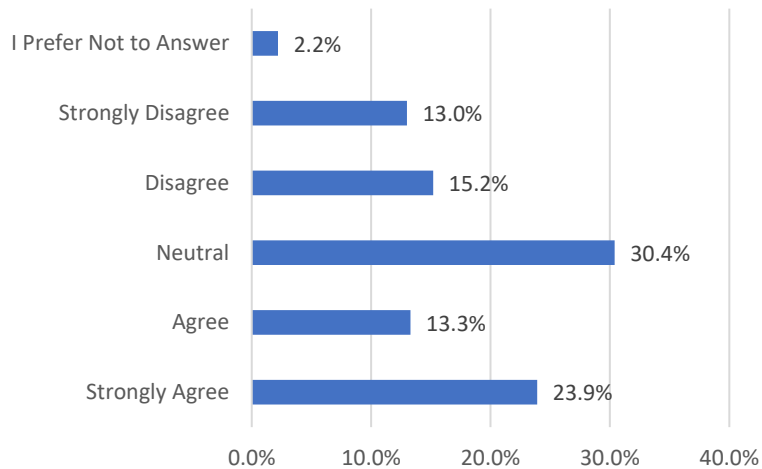
Promotional exams are fair and transparent.



Promotional exams in SFD emphasize, and produce, good leaders.



Who you know will impact how well you do on a promotional exam.



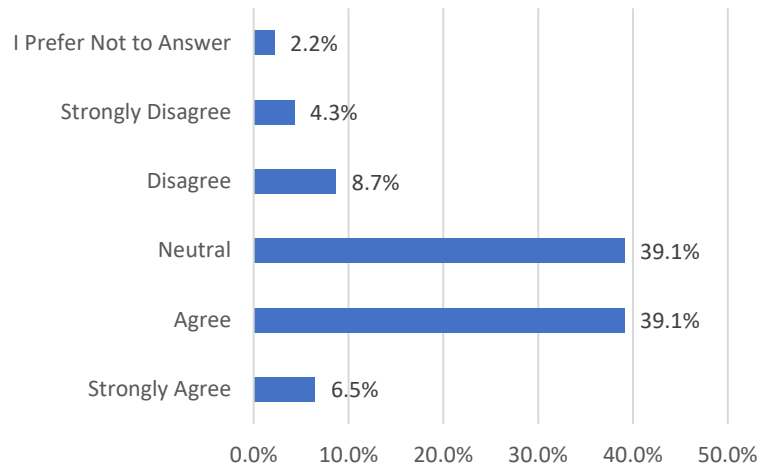
Diversity, Equity, and Inclusion

Diversity, equity, and inclusion (DEI) are essential because they promote fairness and equal opportunities for all individuals, regardless of their race, gender, ethnicity, sexual orientation, or other characteristics. In the fire service, where teamwork and trust are paramount, creating an inclusive environment ensures that every firefighter feels valued, respected, and supported. This, in turn, fosters stronger bonds within the team and enhances overall performance and effectiveness.

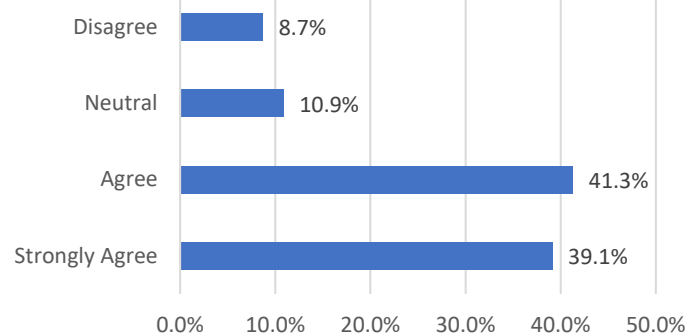
Of those surveyed, 46% (Strongly Agree/Agree) felt that DEI was important to the Shawnee Fire Department, with 80% (Strongly Agree/Agree) identifying the hiring process as being fair and equitable. However, 48% (Disagree/Strongly Disagree) felt that managers and leaders within the

department were not accepting of people with opinions that differed from their own, while 39% (Strongly Agree/Agree) of the responses stated managers and leaders were accepting of people with differing views. There is also a highly divided opinion on how equitably people are treated by the Executive Team (BC's and above), with 43% (Strongly Agree/Agree) feeling that people are treated equally and 44% (Disagree/Strongly Disagree) contending that there is some level of disparate treatment.

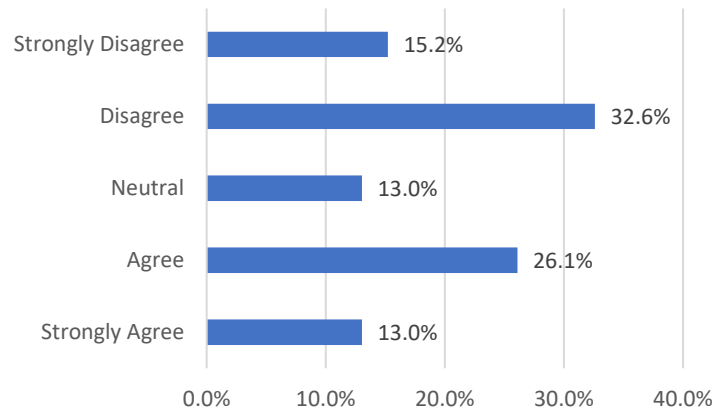
I feel diversity, equity, and inclusion are important to Shawnee Fire Department.



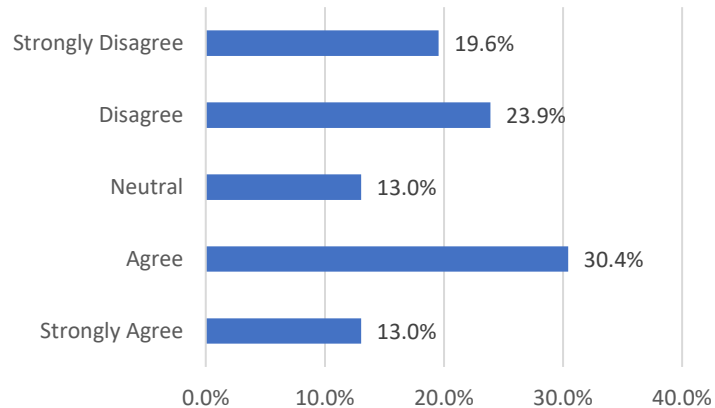
The hiring process at SFD is fair and equitable for all races and genders.



Managers and leaders within Shawnee Fire are accepting of people with different opinions from their own.

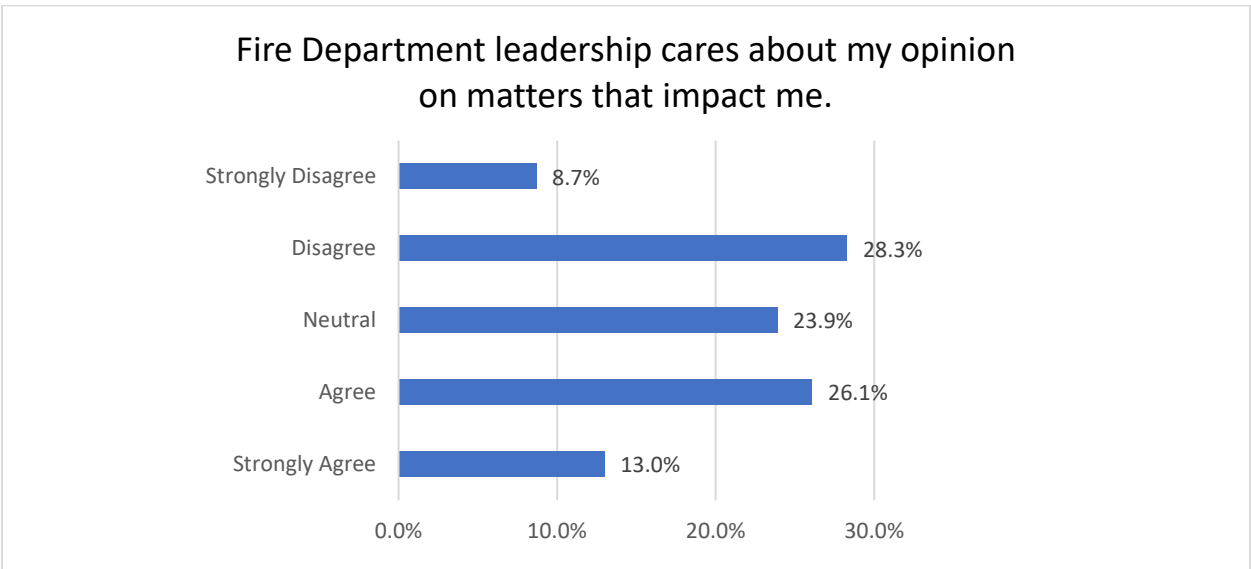


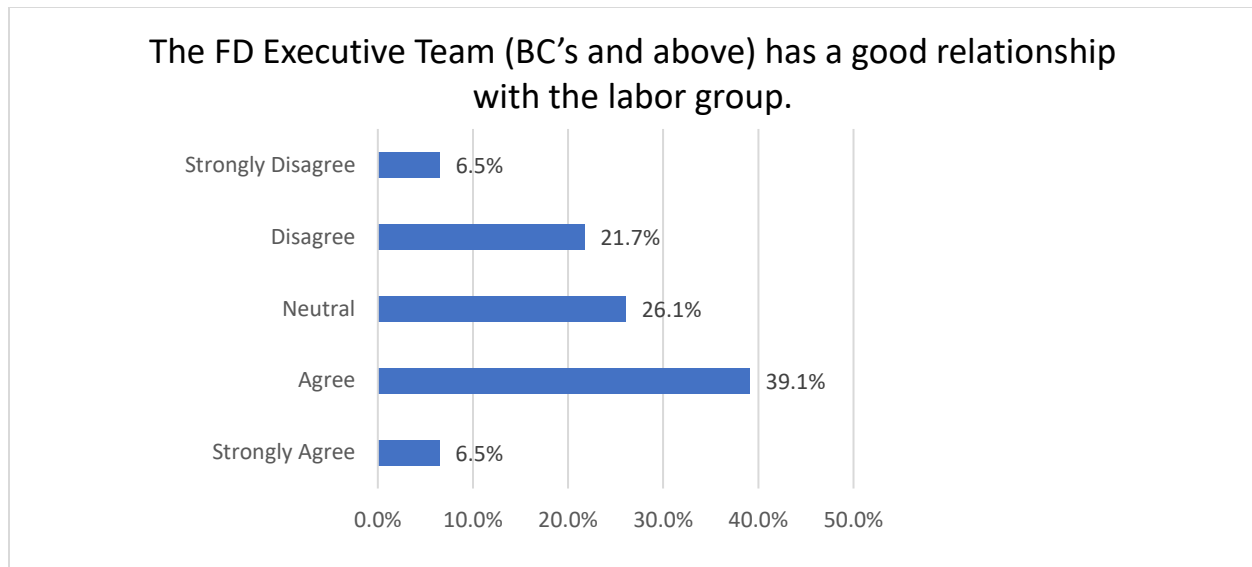
I feel the Executive Team (BC's and above) treats everyone equally.



Leadership and The Employee

Employee engagement refers to the emotional commitment and level of involvement that employees have in their work and the organization. A component of this connection is how the leadership of the organization associates to the employee. In this survey, 43% (Strongly Agree/Agree) felt that the Fire Department leadership is trying to improve their work experience, while respondents are divided (39% Strongly Agree/Agree vs. 37% Disagree/Strongly Disagree) on how much the department leadership cares about their opinion on important matters. Additionally, 46% (Strongly Agree/Agree) felt there is a good relationship between the Executive Leadership and the Fire Union, while 28% (Disagree/Strongly Disagree) stated that there is not a good relationship.



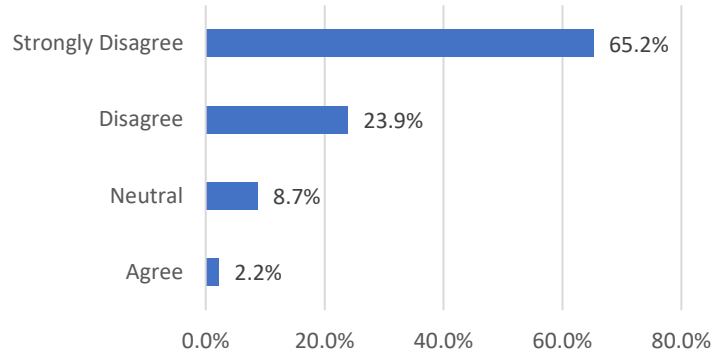


The City and The Fire Department

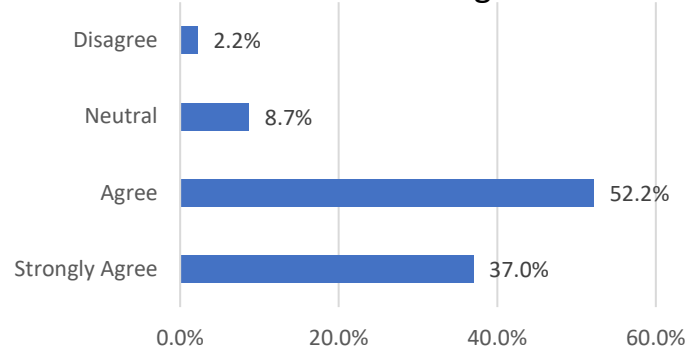
This section investigates the connection between the fire department and the community. The first statement is based on questions that were asked during the interviews and focus groups, which identified that many of those interviewed felt that the City Commissioners do not thoroughly understand how the department operates or what unique needs it has. When asked what was needed to make SFD a better place, one firefighter wrote, “For the City Commission to hear and understand that we are struggling.” Another firefighter stated, “As an employee, the city leadership, City Manager, Council, and Mayor make it clear we are not a huge priority.” The survey identified that 89% (Strongly Disagree 65% and Disagree 24%) felt the Commissioners do not have a thorough understanding of the needs of the department. This assessment does not translate to the value felt from the public, where 89% (Strongly Agree/Agree) felt that the residents of Shawnee value their firefighters. Also, 96% (Strongly Agree/Agree) of those surveyed also felt that they receive a high level of support from the community. Even with such support from the community, 48% (Strongly Agree/Agree) suggested that they should be more engaged and active in the community.

A firefighter summarized these findings with the following statement, “I feel that I am strongly valued by the community and the department, but not so much the City Council or the City Manager.”

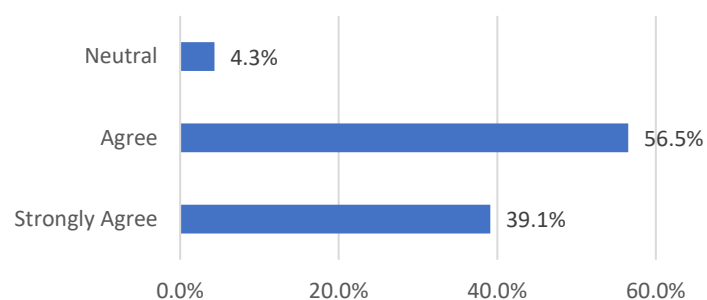
**City Commissioners have a thorough understanding
of the needs of the SFD.**

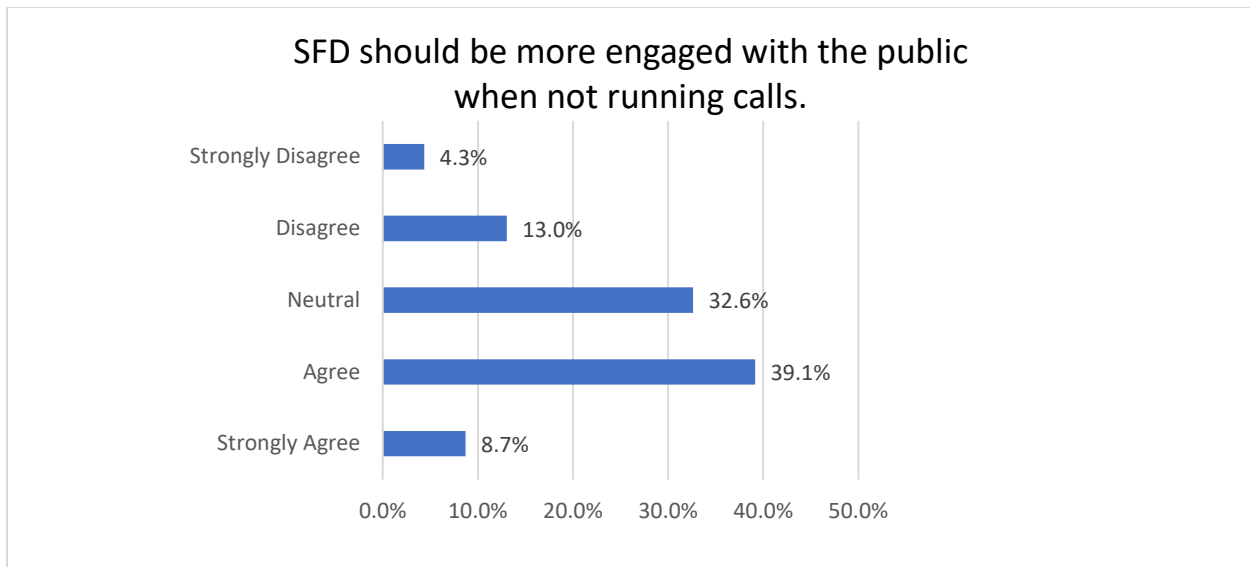


**The residents of Shawnee value their fire department
and their firefighters.**



There is a high level of support by the community for SFD.



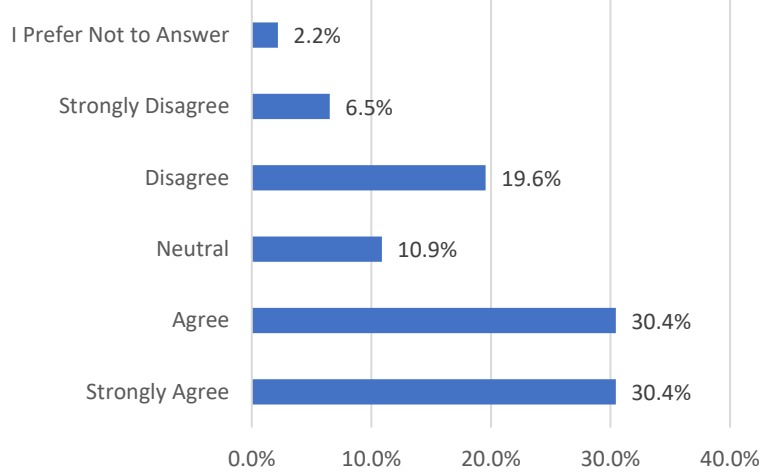


Turnover Intention

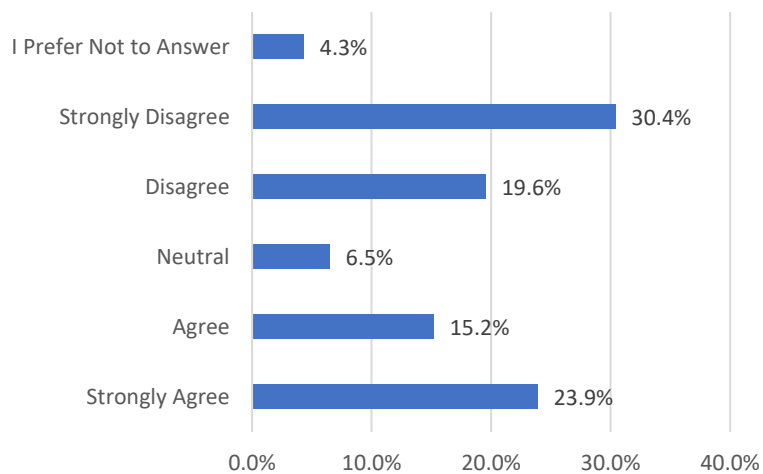
Turnover intention in the workplace can be caused by a variety of factors. Some common contributors include job dissatisfaction, lack of career advancement opportunities, inadequate compensation and benefits, poor work-life balance, limited recognition and appreciation, ineffective leadership, and a toxic or negative work environment. When employees experience these challenges and feel unfulfilled or undervalued, they may develop a desire to leave the organization. When employees perceive a misalignment between their expectations and the realities of their job or workplace, they may start contemplating leaving, leading to turnover intention.

In the case of SFD employees, 61% (Strongly Agree/Agree) have seriously considered applying for another fire department, and 39% of respondents (Strongly Agree/Agree) have already done so. Conversely, 26% (Disagree/Strongly Disagree) have not seriously considered leaving, and 50% (20% Disagree and 30% Strongly Disagree) have not applied elsewhere.

I have seriously considered applying for another fire department.



I have applied for another fire department.



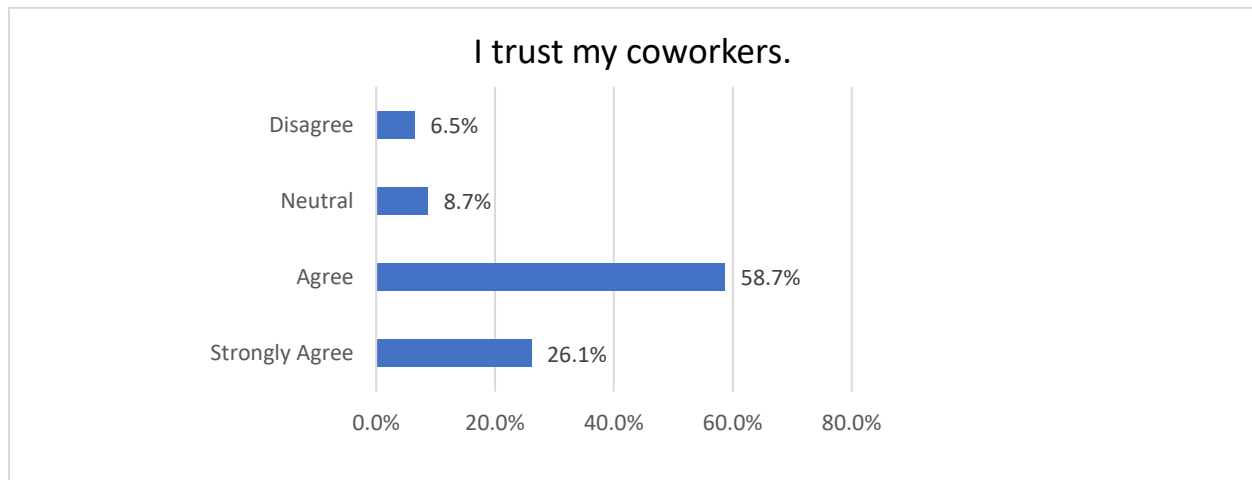
Shawnee Fire Workplace Culture: Trust

Trust is a key factor because it forms the foundation for effective teamwork, communication, and collaboration. It fosters a sense of psychological safety, where individuals feel comfortable speaking up, sharing ideas, and seeking help when needed. When trust is present within a fire department, it strengthens the bond between team members, enhances morale, and contributes to a cohesive and resilient group.

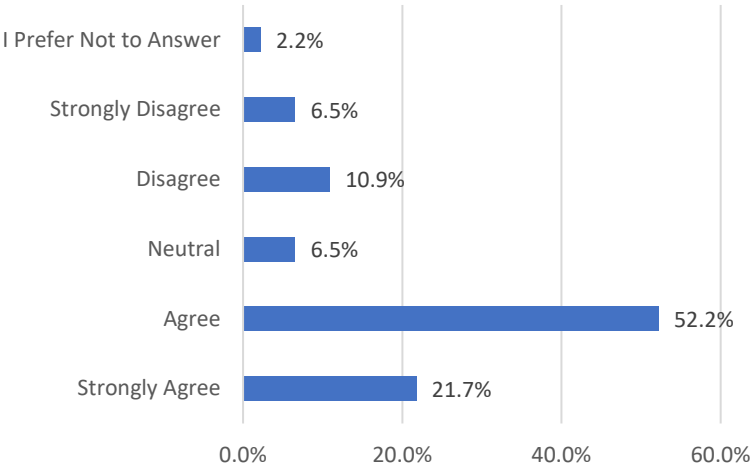
Trust Among Rank-and-File

The group has confidence in each other, with 85% (Strongly Agree/Agree) expressing trust in their coworkers. Additionally, 74% (Strongly Agree/Agree) felt that someone will help them if a personal problem arises. This was indicated during the interviews, where several members highlighted this characteristic as something they enjoyed most about working for SFD. One firefighter phrased it this way, “We have a great group of firefighters that will come together to get the job done. I take pride in being a servant for the community and having the opportunity to help others.”

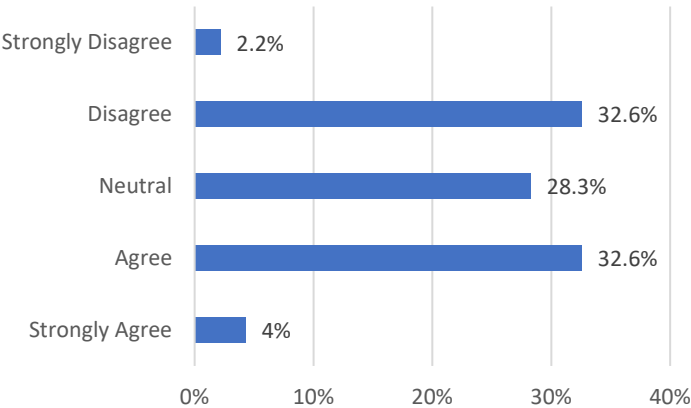
Based on the high level of trust noted in the questions above, it was surprising to see that, when posed the statement, “People inside SFD will always do the right thing,” nearly an equal percentage agreed (37%) as disagreed (35%). Also, over half of those surveyed (52% Disagree/Strongly Disagree) were sure that sensitive information will not remain confidential.



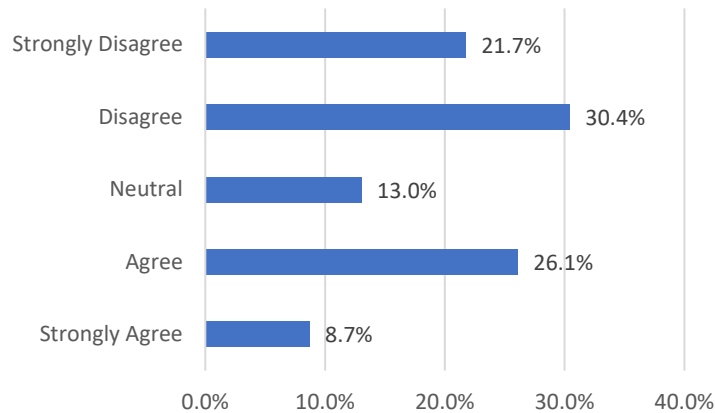
If a personal problem arises, I trust someone from the department will come to my aid.



People inside SFD will always do the right thing.



Confidential information will remain confidential inside SFD.



Trust in Leadership

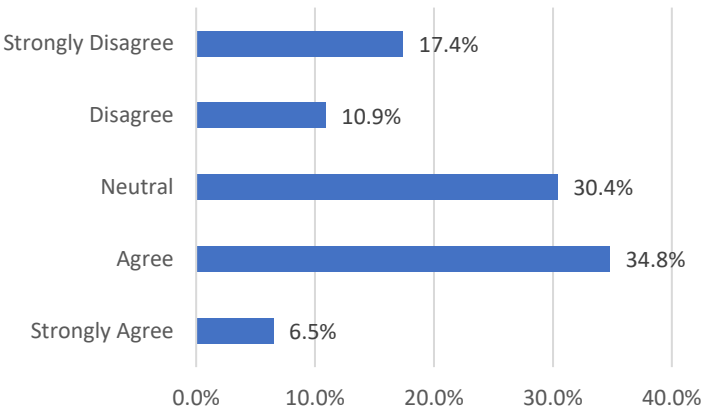
Trust in leadership fosters loyalty, engagement, and commitment among employees, leading to higher levels of productivity and job satisfaction. Trusted leadership is seen as credible and reliable, inspiring confidence and motivation in their team.

Of those who responded to the survey, 42% (Strongly Agree/Agree) trusted the words and actions of SFD leadership, while 28% (Disagree/Strongly Disagree) did not share this trust.

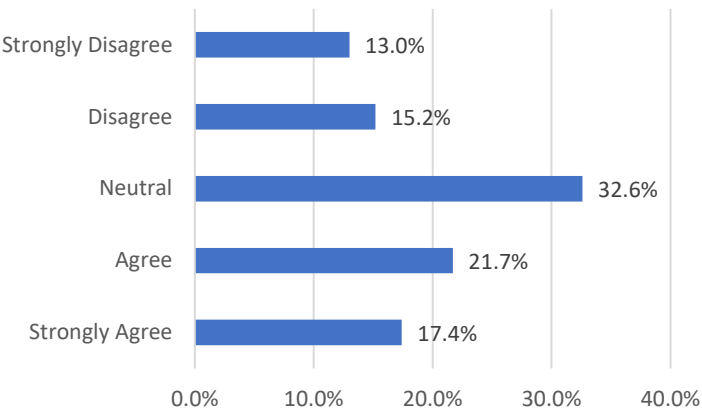
When asked to respond to the statement, “Fire Department leadership is looking out for my best interest,” 39% (Strongly Agree/Agree) responded in the affirmative, while 28% (Disagree/Strongly Disagree) felt that the leadership of the organization is not prioritizing their interest. This is a very contentious topic as brought up during the interviews, focus groups, and in the survey's short-answer component.

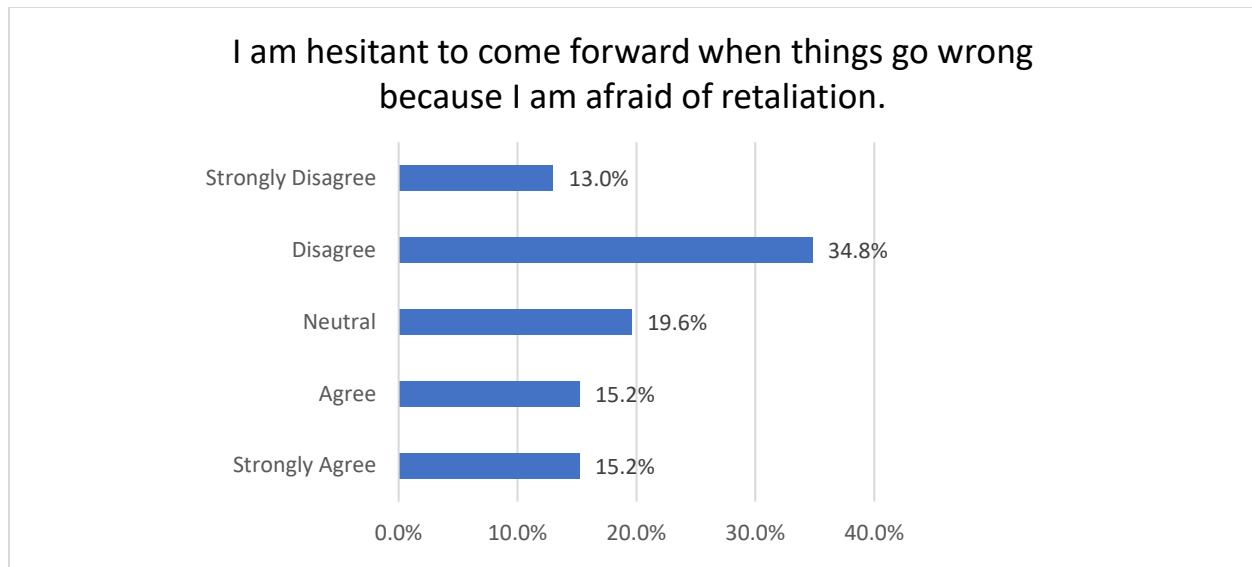
Additionally, employees were asked to respond to the statement, “I am hesitant to come forward when things go wrong out of fear of retaliation.” Nearly half of the respondents (48% Disagree/Strongly Disagree) felt comfortable coming forward when something goes wrong. Conversely, 30% (Strongly Agree/Agree) stated that they were concerned about retaliation.

I trust what Department leadership says and does.



Fire Department leadership is looking out for my best interest.

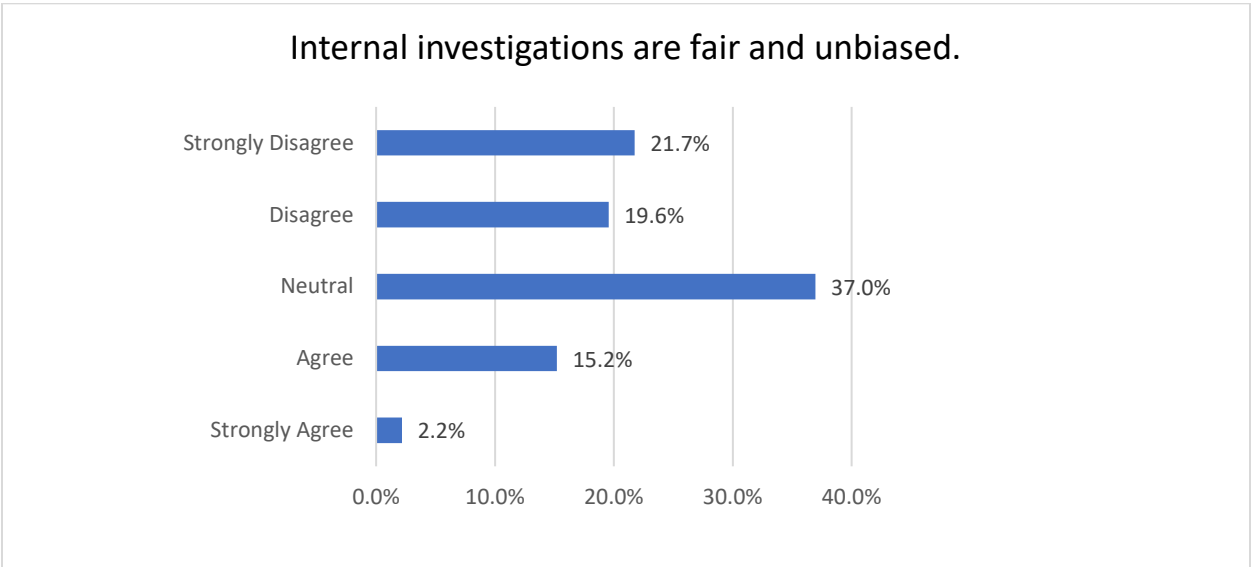
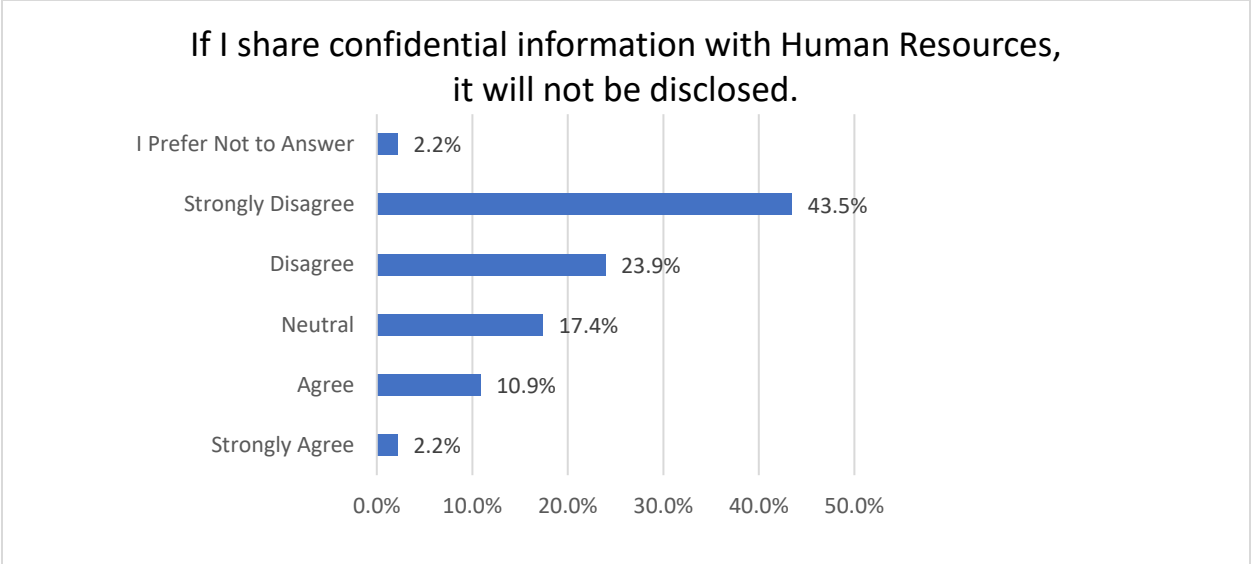




Trust in Human Resources

Human Resources in the public sector is important because they ensure compliance with relevant laws, regulations, and policies, while fostering a positive work environment that values employee well-being and engagement. Human Resources is the department responsible for cultivating a culture of accountability and ethical behavior, ensuring that employees uphold high standards of integrity and professionalism in their work.

One of the recurring themes identified during the interviews and focus groups was a concern related to how the conduct of Human Resources staff influenced Fire Department personnel. When one firefighter was asked, “What would make Shawnee Fire a better place to work?” the response was, “The backing of the city would help tremendously as well as confidentiality and trust from our HR Department.” The survey results confirmed related comments made during the interviews, with 68% (24% Disagree and 44% Strongly Disagree) lacking trust in their Human Resources Department to keep sensitive information confidential. This is highly telling compared to the 13% (2% Strongly Agree and 11% Agree) expressing their trust in Human Resources to maintain confidentiality. When presented with a statement that “Internal investigations are fair and unbiased,” 43% (Disagree/Strongly Disagree) did not believe these investigations measured up.

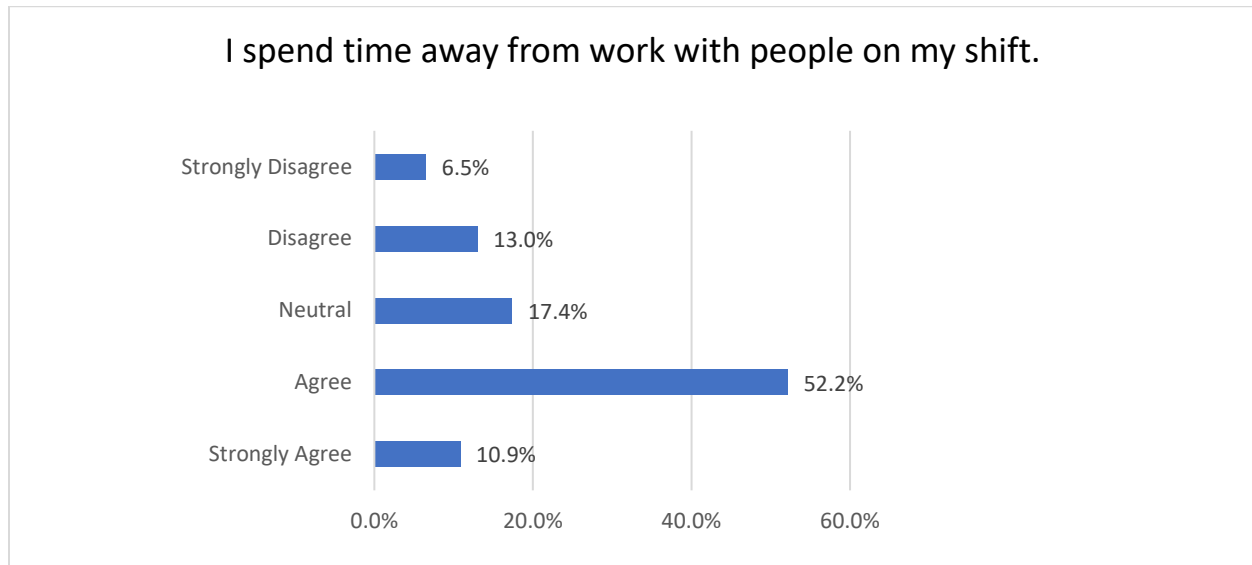


Shawnee Fire Workplace Culture: Relationships

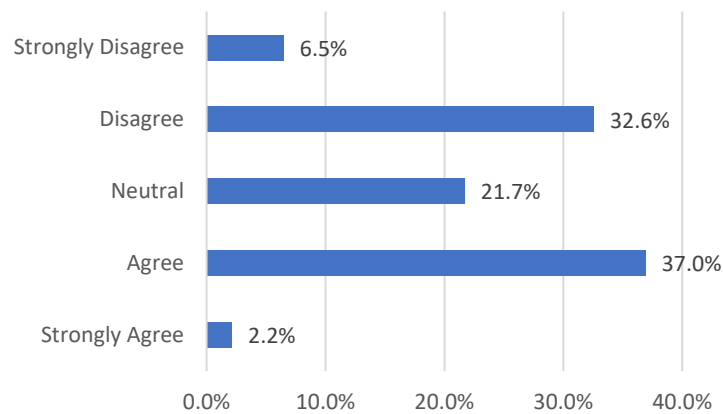
Relationships play a fundamental role in shaping workplace culture. Positive and healthy relationships among employees, between employees and leaders, and across teams contribute to a supportive and collaborative work environment.

Interpersonal Relationships

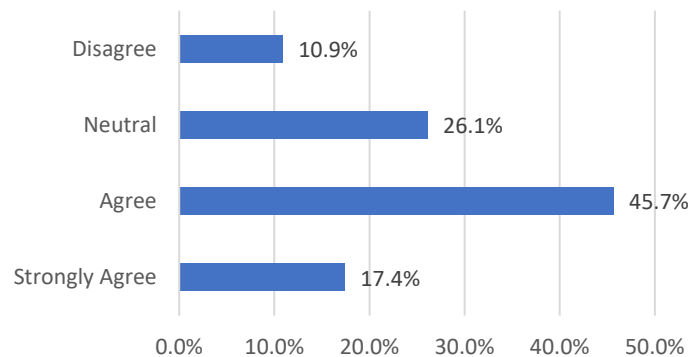
Firefighters spend many hours or days together and develop friendships that extend past the fire station. In Shawnee, employees were surveyed to determine if they spent time outside of work with people on their shift, and 63% (Strongly Agree/Agree) noted that they do. They were also given the ability to share whether they spent time with people from other shifts. This percentage dropped to 39% (Strongly Agree/Agree), indicating that many firefighters are spending time with each other outside of work; however not as many spend time with others from the opposing shifts. When given the statement, “I wish people in the organization would get along better,” 63% (Strongly Agree/Agree) expressed a desire for improved relationships within the organization.



I spend time off duty with people from other shifts.

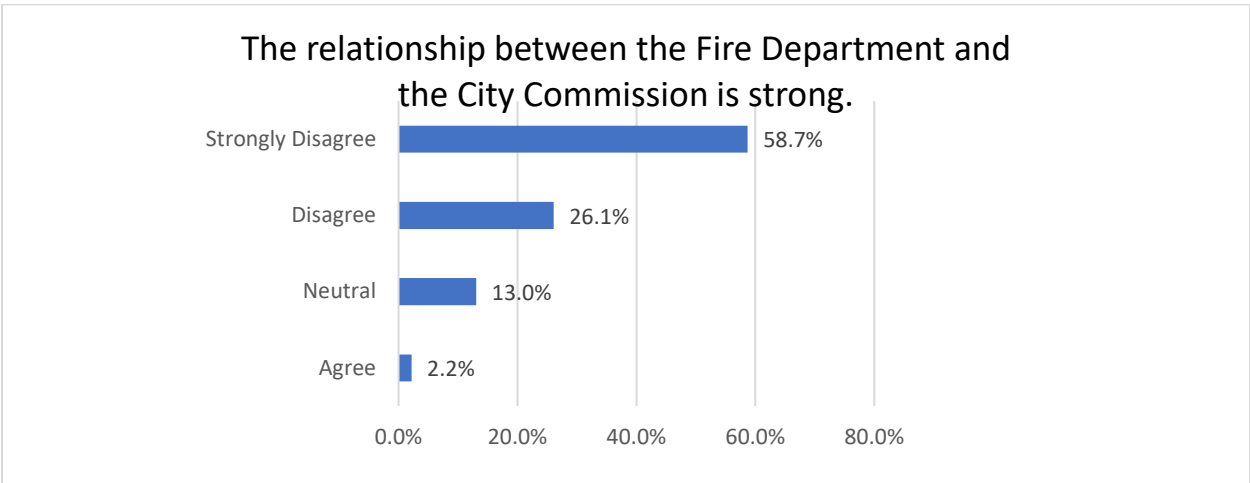
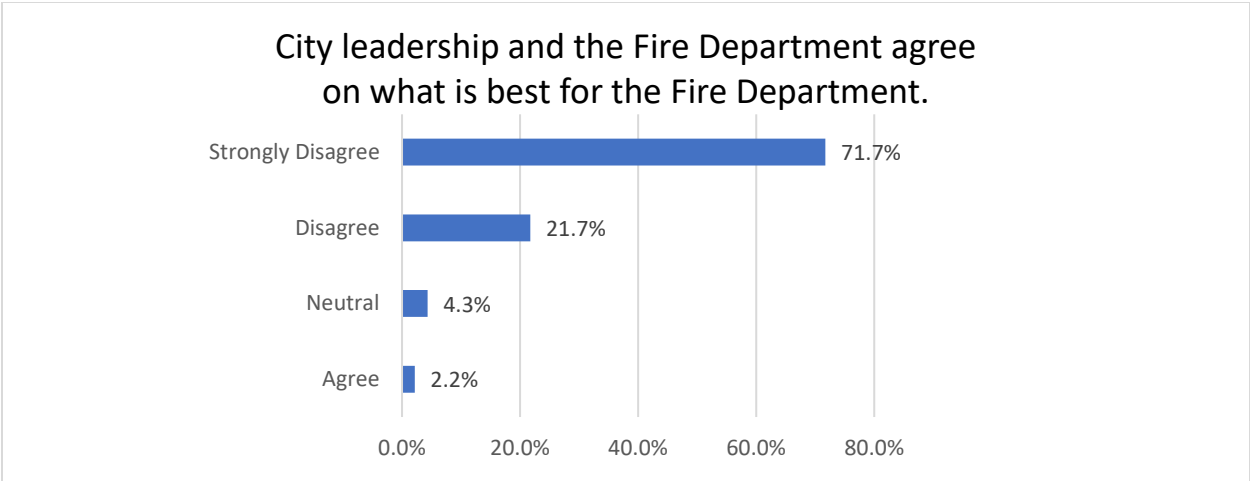


I wish people in the organization would get along better.



The Relationship Between City Leadership and The Fire Department

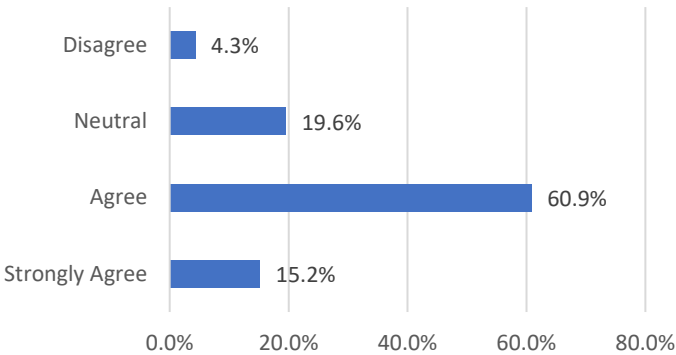
A very prominent theme during interviews and focus groups was the feeling of a disconnect between the City of Shawnee leadership and the Fire Department. The results of the survey strongly supported these comments. When surveyed about the agreement between the Fire Department Leadership and the City Leadership, almost 94% (72% Strongly Disagreed and 22% Disagreed) felt that the City and the Fire Department do not agree on what is best for the Fire Department. They were also given the statement, “The relationship between the Fire Department and the City Commission is strong,” and 85% (Disagree/Strongly Disagree) felt that there is not a strong relationship between the Commission and the department. When asked what would make SFD a better place to work, nearly every response directly, or indirectly, tied back to the relationship with the City Leadership.



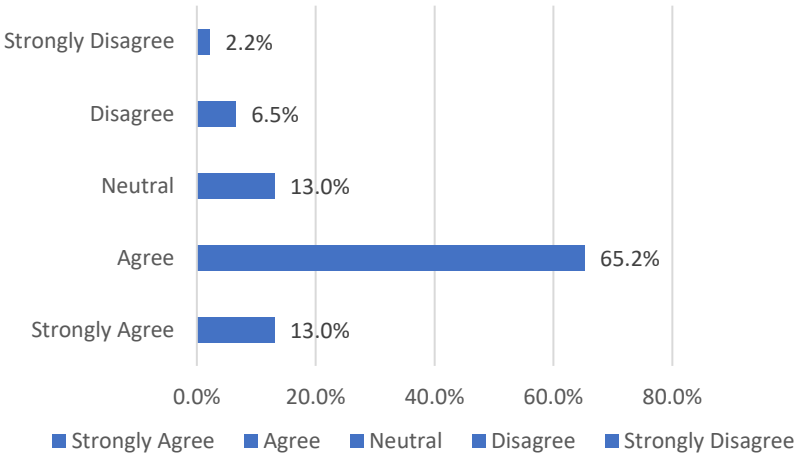
Partnering Relationships

The Shawnee Fire Department has many internal and external partners. For the sake of this survey, the relationship with the Shawnee Police Department and the REACT ambulance service were evaluated. The survey found that 76% (Strongly Agree/Agree) that Police and Fire Departments work well together. When asked about REACT, 78% (Strongly Agree/Agree) felt that they are a good partner to SFD.

Shawnee Fire and Shawnee PD work well together.



REACT is a good partner to SFD.



Cultural Assessment Summary

This detailed assessment explored six cultural components of the City of Shawnee Fire Department: Community, Leadership and Vision, Communication, Employees, Trust, and Relationships.

Each one of these aspects was further investigated to explore how the employees view them related to their employment. The feedback gathered during the site visit interviews and focus group meetings appeared largely aligned with the survey results.

Overall, the assessment identified the following highlights of the Shawnee Fire Department's workplace culture and emphasized what Fire Department members value and consider as important.

1. **Strong connection to the community, with strong support by the community**
 - Fire Department personnel feel a strong connection to the work they do in the community. They are willing to work very hard to provide a high level of service to Shawnee residents. They also feel that their effort is recognized and appreciated by the community.
2. **Overall satisfaction found from working for SFD**
 - Employees generally feel satisfied with their work at SFD. There are several members of the organization that are multi-generational firefighters for the city and are proud of this heritage. Their respective shifts and crews were called out as a large contributor to this high level of satisfaction.
3. **There is a feeling of “family” and cohesiveness amongst individual shifts on- and off-duty**
 - The word “family” was used throughout this study to identify one of the prominent highlights of working for SFD. Employees emphasized the importance of being able to work well with their counterparts. There are many firefighters who also spend time together outside of work, developing strong bonds and friendships.
4. **Pride associated with being able to perform a variety of exciting aspects of the profession coupled with a strong work ethic**
 - The firefighters in Shawnee repeatedly mentioned their ability to “do the job,” meaning their call volume and call type allow them to experience all aspects of the profession. The response area is large and varied, which allows the firefighters to engage in various emergency situations. The limited staffing in SFD also provides an opportunity for the firefighters to conduct various operations within a single incident. This is a benefit to many at SFD because of a generally strong work ethic. They are committed to providing a high level of service to the community and are not afraid of the significant physical and mental effort that is expended.
5. **Confidence in the operational and administrative abilities of supervisors**
 - Overall, the employees are confident in the capabilities of their supervisors. The call volume allows for supervisors to put training into action and, when this happens successfully, trust is established in subordinates. With years of experience and exposure to significant emergencies, the front-line supervisors become well-seasoned in their ability to handle unexpected situations.

6. Appropriate and adequate levels of training in most areas

- The firefighters feel that the training they receive is adequate to prepare them for the emergency situations they face. The training program is still evolving; however, many stated they are satisfied with the current structure and quantity of training they receive. A fire department training program will never fully prepare a firefighter for all the potential situations they may face, but it intends to give them a set of tools that can be modified to adapt to as many situations as possible. Several positive comments were issued regarding the quality of training being provided by the “Major” rank.

7. Personnel have a strong correlation to the Department Mission

- The workforce of SFD believe in the mission, which is contained in five words: Prevent Harm. Survive. Be Nice. A strong correlation to the mission of the organization is important, and it serves as a foundational framework for engagement and job satisfaction. This mission statement directs the employee to be proactive in preventing harm to the community. It leads to placing a priority on training to increase the likelihood of being prepared for difficult situations. It also emphasizes the need to consider the feelings of others and to provide good customer service.

In addition to these positive associations, the cultural assessment uncovered issues that could inhibit a more engaging, cooperative, and productive workplace.

1. Strongly divided opinions of current Fire Department Leadership

- The results of the survey identified polarized views of the existing leadership within the organization, and extremely passionate sentiments of support and disapproval have left the organization significantly fractured. These feelings have bled into how the shifts interact with each other.

2. Differing views on the direction of the Department

- There is a lack of a clearly articulated vision created with input from all levels. This has led to questions on why certain decisions are made, making it difficult for personnel to “buy-in” because they do not feel considered.
- There are no clearly defined values for the organization. Core values are the fundamental beliefs and principles that guide organizational behavior. They represent what the department stands for. Without them, there is no moral and ethical compass to ensure acceptable decision making.

3. Need for better communication

- More effective communication is needed, moving down and up the chain of command, to include the solicitation of feedback from affected personnel. SFD has experienced breakdowns in communication - both ways within the chain of command. This has led to many questions about why decisions have been made and is also a perceived devaluation of employees.

- There is a significant need to improve communication with City Leadership regarding important Fire Department issues. The communication of needs, wants, and whys needs to be discussed more frequently. Many of the personnel feel that City Leadership's lack of understanding of Fire Department operations leads to decisions that are not in their best interest. Improved communication between City Leadership and Fire Department leaders will be helpful to ensure mutual information sharing.

4. Employee value needs to be emphasized

- The survey revealed a surprising number of full-time professional firefighters that have outside employment. Nearly all cited the need for additional compensation as the reason for the second job. It was noted during the interviews and focus groups that employees can make more money at surrounding agencies, and many stated they were considering leaving to make more money and work less.
- Fire station conditions are not equivalent to a typical work location. Firefighters will spend at least one-third of their careers living in a fire station. When these stations have not been renovated or remodeled, there is an adverse impact to morale, and the employee is left feeling as if their comfort and well-being is not a priority.
- Staffing is an issue mentioned repeatedly throughout the study. The firefighters feel as if they are not being provided with adequate resources to effectively serve the community.
- 60% of those that have responded to the survey have expressed legitimate turnover intention. This is a very telling piece of data. When employees are considering exiting their employer, they are not fully engaged.

5. There is an overall lack of confidence in promotional exams

- The current processes are perceived as not producing the most qualified candidates, and the method by which the promotional exams are being conducted is thought to be subjective.

6. City and Fire relationship needs improvement

- This sentiment was repeated throughout the interviews and focus groups, with additional support provided in the survey. Several comments were made addressing this relationship and how tension impacts them collectively and personally.

7. Fire Department personnel lack confidence in the investigative process and the ability for sensitive information to remain confidential

- A decline in the trust of the Human Resources department has an impact on the security felt by employees. When they are faced with a difficult situation within their department, they need to have an impartial advocate. SFD employees do not maintain a significant amount of trust in the City of Shawnee Human Resources Department.

RECOMMENDATIONS

The following recommendations encompass building on identified strengths while also changing areas that hinder improvement. These suggestions will require a deliberate planning process and will require significant dedication - at all levels of the organization - to affect meaningful cultural change.

1. **Conduct a formal Master Plan effort that fosters capital and staffing resources**
 - Compile a Fire Department-specific Capital Improvement Plan.
 - Develop a personnel staffing and response plan.
 - Implement a formal succession plan and mentorship program.
2. **Implement a Strategic Plan and Standard of Cover**
 - Begin outlining goals and benchmarks to serve as a road map for decision making. The resulting Fire Department-specific Strategic Plan should include significant input from stakeholders and be primarily driven from the “bottom up.”
 - Establish a set of Core Values as part of the strategic planning process, including expectations of employee conduct. This needs to be agreed upon and then implemented at all levels of the organization.
 - Develop a complete database of all high risk/high impact facilities in the SFD service area.
 - Develop response plans for all non-facility risks (human-caused and natural disasters) that are high impact risks.
 - Undertake a Standard of Cover study to evaluate the deployment model and determine what needs exist to adequately provide service to all areas of the response district.
3. **Construct a 4th Fire Station north of Interstate 40.**
 - Closely monitor residential and commercial developments and associated service delivery.
 - Identify potentially suitable locations for a 4th station.
 - Secure funding for the station’s future construction.
 - Consider the square footage needed to move administrative offices from Station #1, if those have not already been incorporated in the new training facility.
4. **Rebuild relationships and unity throughout the organization**
 - Significant division exists within the organization, and meaningful steps need to be taken to mend these relationships to unite the Department under a common vision.
 - Trust is a fundamental building block for relationships and needs to be improved at all levels in SFD. Lack of trust in leadership is problematic in any organization, and active steps will need to be initiated by SFD leadership to regain the trust of the dissenting portion of the membership. This also requires the membership to be an active participant in the rebuilding and to introspectively remove any barriers that will prohibit progress in this area.
5. **Implement a Unified Executive Management Team concept**
 - Create a Unified Executive Management Team consisting of the Fire Chief, Battalion Chiefs, and City Manager. This team will meet to discuss the needs and priorities of the fire department to analyze and implement the core mission of the department in

conjunction with the city's overall mission. This concept will increase communication between City and Fire Department Leadership and should be centered on improving the relationship.

6. Consider implementing at least a 3-person minimum staffing model for all fire suppression vehicles.

- This recommendation is dependent on financial resources; like many cities in Oklahoma and across the nation, these resources are not present without additional taxing measures.
- Consider redistributing and/or adding resources to effectively manage the operational aspects of the department. This should be standard across all shifts in the department.

7. Implement clear and consistent messaging throughout the organization

- Utilize the chain of command to provide regular communication to the organization and to serve as a conduit for vital information to travel up the organization.
- Identify ways to use electronic and in-person communication, ensuring all information is consistently dispersed.

8. Develop new strategies to address a dedicated training facility.

- A new training facility would keep firefighters in or near the response area when conducting training.
- This facility could accommodate the needed square footage to move administrative offices from Station 1.
- Involve the firefighters in the facility planning.

9. Revise the promotional exam process

- Evaluate existing promotional exams and identify ways to make the process fair and consistent.
- Consider a committee to review the process to increase transparency and buy-in.

10. Identify ways to make employees feel more valued

- This study identified several areas that have led SFD employees to feel undervalued. ESCI recommends that the Unified Executive Management Team meet with personnel to expand on the issues identified. This process will also lead to an increased understanding of the employee and employer perspectives, thus improving their relationship.
- The workload and call volume were cited as being one area where employees do not feel recognized. By initiating the UEMT and Strategic Plan development, the employees will understand what is being done to address their concerns.
- Pay and benefits for this group represent the value assigned to them by the employer. It is recommended the city conducts a classification and compensation study to determine SFD compensation compared to other organizations.
- Implement a formal employee/member recognition program.
- Consider distributing periodic employee surveys.

- 11. Develop the annual training calendar and include skills testing for all personnel commensurate with their position within the department**
 - The cultural assessment showed an organization-wide desire for skills training.
- 12. Research and develop alternative approaches to apparatus maintenance.**
 - Currently, department personnel are shuttling apparatus to a maintenance facility outside of the SFD response area.

Conclusion

The City of Shawnee has undergone significant changes over the last several years, including turnover in key leadership positions in the city and the department. Changes in supervisory roles come with substantial changes in the cultural “norm.” Changes of this magnitude can become an opportunity to evaluate obsolete cultural aspects and make necessary changes.

The observations and recommendations gathered in this report are aimed at helping the Shawnee Fire Department continue to build upon the strengths exhibited, to develop processes that will improve the workplace culture, and to enhance the Fire Department’s delivery of services to the community.

Investing in focused planning and relationship building as discussed in this document, will provide clear pathways forward for the Shawnee Fire Department. Investing in current and new department facilities will enhance the safety and morale of the Shawnee firefighters.



Community Development Department
16 W 9th Street
Shawnee, OK 74801
shawneeok.org

Date: September 18, 2023
To: Board of City Commissioners
From: Rian Harkins, Community Development Director
Subject: Discussion regarding amending Chapter 8 of the Shawnee Municipal Code by creating a new Article XI of Chapter 8, prohibiting feeding operations in the downtown area.

Background: To end homelessness, a community-wide coordinated approach is needed. Since the association between homelessness and food is so strong, most organizations and individuals focus their efforts on feeding those who are experiencing homelessness.

Unregulated feeding operations on public property may create situations which exceed the City of Shawnee's capacity to provide adequate security, sanitation, and waste disposal. Furthermore, unregulated feeding operations may harm public health; create noise, congestion, and other nuisances; and interfere with the inhabitants' peaceful enjoyment of their homes, businesses, and property.

It is the intent of the proposed Municipal Code amendments to regulate feeding operations in order to prevent such issues. City staff from multiple departments will be available to discuss both the pros and cons of the current language proposal.

Financial Impact: None

Attachments: DRAFT Feeding Operations Ordinance

Staff Recommendation: For information only

ORDINANCE NO. _____

AN ORDINANCE AMENDING CHAPTER 8 OF THE SHAWNEE MUNICIPAL CODE BY CREATING A NEW ARTICLE XI OF CHAPTER 8, PROHIBITING FEEDING OPERATIONS IN THE DOWNTOWN AREA; PROVIDING FOR REPEAL; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR CODIFICATION.

BE IT ORDAINED BY THE COMMISSIONERS OF THE CITY OF SHAWNEE:

SECTION 1. That Article XI of Chapter 8 of the Shawnee Municipal Code is hereby created to read as follows:

§8-600. PURPOSE

The City finds that unregulated special events such as feeding operations may pose a threat to the health, safety, welfare, and environment of the community. Unregulated special events like feeding operations may attract large numbers of patrons. Their belongings, vehicles, or bicycles can prevent passage of emergency vehicles, obstruct entrances to homes and businesses, and impede the inhabitants' use of streets and sidewalks. Unregulated special events can create situations that exceed the City's capacity to provide adequate security, public safety, health, sanitation, parking, water, medical care, lodging, and waste disposal. Further, unregulated special events can harm public health and create noise, congestion, and other nuisances which interfere with the inhabitants' peaceful enjoyment of their homes, businesses, and properties. It is the intent of this article to regulate feeding operations as a type of special event. Therefore, the City Commission adopts an ordinance to regulate feeding operations and mitigate any adverse effects they may cause.

§8-601. DEFINITIONS

The following words, terms, and phrases, when used in this article shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning.

Operator means an individual, group of individuals, association, partnership, corporation, firm, company, or property owner who conducts or sponsors a special event. An operator of an event may or may not include the City.

Feeding area or site means any outdoor place which will be maintained, used, or operated for a special event or feeding operation.

Feeding Operation shall mean an organized and deliberate preparation and/or serving of food to individuals for free.

Park shall mean a city-owned park or recreational facility.

Public Building shall mean a structure designed and used in a manner for the the public's benefit, including but not limited to convention centers, libraries, police and fire stations, utilities stations, City facilities where the public is allowed use for educational or training sessions, and City office facilities where City staff regularly interact with members of the public.

Downtown shall mean the area whose boundaries are 10th Street, 7th Street, Harrison, and Beard Street.

§8-602. PROHIBITED AND ALLOWED OPERATIONS

- A. All Feeding Operations within Downtown, including parks, public right of way, or other publicly owned facilities, are prohibited.
- B. All Feeding Operations outside of the Downtown shall only be held as part of a valid Park and/or Special Event Permit.
- C. This ordinance shall in no way prohibit:
 - 1. Feeding Operations held indoors or on private property; or
 - 2. Feeding Operations held in conjunction with a declared emergency or similar event.

§8-603. OFFENSE AND PENALTY

- A. An Operator, or any person or persons participating with the Operator, commits an offense if the Operator violates the terms of the issued permit, closes a street without a permit, damages or destroys any City property, or violates any provisions of this article of the City Code.
- B. The first offense under this section is a punishable \$250 fine.
- C. Each subsequent offense shall be a \$500 fine.

- D. An Operator, or any person or persons participating with the Operator, found to be in violation of the terms of a permit issued under this chapter, or to be found holding a Feeding Operation without a special event permit, may not apply for or receive a permit for one (1) year after the date of revocation or violation.

SECTION 2. REPEALER. All sections, subsections, clauses, and sentences of existing law in conflict with this ordinance, are repealed.

SECTION 3. SEVERABILITY. The provisions of this ordinance are severable, and if any sentence, provision, or other part of this Ordinance shall be held invalid, the decision of the courts so holding shall not affect or impair any of the remaining parts or provisions of this ordinance.

SECTION 4. CODIFICATION. This Ordinance shall be codified in the Shawnee Municipal Code, and the codifier is authorized to set out the ordinance as appropriate.

PASSED AND APPROVED this ____ day of September, 2023.

ATTEST:
(SEAL)

ED BOLT, MAYOR

LISA LASYONE, CMC, CITY CLERK

Approved as to form and legality this ____ day of September, 2023.

JOSEPH M. VORNDRAN
CITY ATTORNEY



Engineering Department
222 N. Broadway Ave.
Shawnee, OK 74801
ShawneeOK.org

Date: September 18, 2023
To: Board of City Commissioners
From: Seth Barkhimer, Director of Engineering
Subject: Consideration of an agreement with the Oklahoma Water Resources Board for High Hazard Potential Dam (HHPD) Grant.

Background: In September 2022, the City Commission approved the Shawnee's application to the Oklahoma Water Resources Board (OWRB) for a High Hazard Potential Dam Grant (HHPD). This grant was sought to initiate field exploration and inspection services on Twin Lake Dam #1, which had received a "poor" overall rating in the 2021 inspection.

The initial investigation unveiled issues that require further attention and analysis. At the August Commission meeting, the City Commission therefore approved a supplemental scope of work to complete the needed additional investigation. This expanded scope also requires increased funding.

City staff reached out to the Oklahoma Water Resources Board (OWRB) to explore the possibility of expanding the 2022 HHPD Grant to encompass these additional efforts. The proposed agreement would secure an additional \$99,745.30 in federal funds, supplementing the previously awarded \$65,000, for a total funding allocation of \$164,745.30 through OWRB.

These additional funds would ensure the comprehensive investigation of the dam, positioning the City for future grant opportunities to support necessary construction work at a later stage.

Financial Impact: Potential revenue of \$99,745.30, 501-41020 - Shawnee Municipal Authority Fund - State Grant Revenue

Attachments: 2020 HHPD Grant Agreement Shawnee

Staff Recommendation: Approval of the Item

OKLAHOMA WATER RESOURCES BOARD

REHABILITATION OF HIGH HAZARD POTENTIAL DAMS GRANT AGREEMENT Between the City of Shawnee, OK, Pottawatomie County and Oklahoma Water Resources Board

This Agreement, dated as of the date of the last signature herein but to be effective as provided below, by and between the City of Shawnee, OK, Pottawatomie County (UEI: Q6AFVBMA4M95) (hereinafter “Subrecipient”), and the Oklahoma Water Resources Board (hereinafter “the Board”), an agency of the State of Oklahoma and State Administrative Agency of the Federal Emergency Management Agency’s (hereinafter “FEMA”) Rehabilitation of High Hazard Potential Dams (hereinafter “HHPD”) Grant Program.

The Board is a Recipient of a Federal grant award from the FEMA, Federal Award Identification Number DHS-2022-GR-00116-S01 Catalog of Federal Domestic Assistance Number 97.041, National Dam Safety Program. The award was received on September 1, 2020. This agreement is a contract from the Board to Subrecipient, of said federal grant funds and is for non-research related activities. No indirect costs are allowed under this award, however, Management & Administration (M&A) costs are available and up to five percent (5%) of expenditures can be used for this purpose if identified as an eligible expense in the approved Scope of Work (Attachment 2). The Period of Performance of this award is from this _____ day of _____, 20____ to August 31, 2024.

In accepting said grant, Subrecipient duly acknowledges and agrees that in all regards and respects, Subrecipient must and shall comply with the requirements of all applicable federal and state statutory provisions and all Board rules, regulations, and the HHPD Grant Program applicable policies. Without limiting the generality of the foregoing, Subrecipient agrees as follows:

1. **Description of Approved Project** This grant has been approved by the Board for Subrecipient's project which shall consist of the Shawnee City Lake No. 1 Rehabilitation Study Extension; the scoping narrative for the project is attached hereto as Attachment 2. The Subrecipient shall provide the services to the Board set forth in the Agreement documents and, specifically, as defined in the Scope of Work and Milestones. All deliverables shall conform to accepted standards and practices.
2. **Determination of Amount of Grant** The amount of this grant shall not exceed sixty-five percent (65%) of the eligible activity costs or the amount of \$99,745.30 whichever is less. Cost share will be required as described in Paragraph 10.
3. **Creation and Maintenance of Separate Accounting** As a prerequisite to receiving grant funds from the Board, Subrecipient shall establish and maintain, to the satisfaction of the Board staff, separate accounting for said HHPD funds. Prior to the Board's release of any grant funds, Subrecipient shall file a Vendor/Payee form with the State of Oklahoma identifying the method by which funds will be administered, in accordance with 2 CFR 200.305.
4. **Award Compensation** The Board shall release the grant award to the Subrecipient on a cost-reimbursement basis upon receipt and approval of the Subrecipient’s programmatic and/or fiscal reports, as required by this Agreement. Matching funds must be reported and expended in proportion to federal fund expenditures. The Board is under no obligation to reimburse work performed prior to the commencement or after the expiration of the contracted time of performance. The Board reserves the right to withhold a minimum of fifteen percent (15%) of the Subrecipient’s total grant allocation until the final grant report and all services, reports and deliverable are received and approved by the Board. Acceptance of work completed under this Agreement shall be decided at the sole discretion of the Board and shall be final.
5. **Requests for Reimbursement** To receive reimbursement funding, Subrecipient shall submit to the Board a FEMA Rehabilitation of High Hazard Potential Dams Grant Reimbursement Form (Attachment 3), an expenditure report, including proof of payment, detailing the project activities to be funded, and the total cost of those activities. Once the Board has deemed the proposed activities listed in the reimbursement request are eligible for HHPD Grant Program funding and are within the approved scope of work, the Board shall reimburse up to sixty-five percent (65%) of the total eligible activity cost as defined above in Section 2. Subrecipient shall then expend funds from the account only as permitted in this Agreement, Board rules, FEMA Guidelines, and all

applicable Federal award regulations. The remaining thirty-five percent (35%) of the eligible activity costs shall be considered matching fund expenditures to be paid by Subrecipient. Matching fund expenditures or in-kind contributions must be directly related to the project or statement of work for eligible activities.

6. **Expenditure of Funds in Grant Account only for Authorized Project Purposes** Subrecipient shall disburse or expend funds from the HHPD Grant Account only toward reimbursement of eligible and authorized purposes for the project approved by the Board. Authorized project costs include technical, planning, design, other pre-construction activities. The Board shall deny reimbursement of any costs not directly related to the award project or approved Scope of Work (Attachment 2). Any amount of grant funds expended from the HHPD Grant Account for unauthorized purposes shall be repaid by Subrecipient to the Board, together with payment of interest accrued from the date of the expenditure at the maximum rate allowed by law, no later than thirty (30) days after the date of written demand from Board staff.
7. **Subrecipient Reporting** The Board shall report awards in the Federal Funding Accountability and Transparency Act (FFATA) Subaward Reporting System (FSRS). The FFATA requires Recipients to report Subrecipient awards of \$30,000.00 or more in the FSRS by the end of the month, following the month the subaward or obligation was made.

Subrecipient shall maintain proper books, records, and supporting documentation (such as invoices, billing statements, and canceled checks drawn on the HHPD Grant Account) showing to the satisfaction of the Board staff the amounts and purposes of all expenditures from the HHPD Grant Account and shall make the same available for inspection and examination by the Board. Any disbursement of grant funds without adequate supporting documentation shall be deemed to be an unauthorized expenditure of grant funds which Subrecipient shall repay to the Board with interest as provided above. Subrecipient shall direct to the Board staff any and all questions regarding whether an expenditure is authorized prior to making the expenditure.

The Subrecipient shall provide the Board with quarterly reports and a final report, on Performance and Financial Progress, detailing the progress of work set forth in the Agreement documents. Reporting quarters shall be defined by the attached HHPD Quarterly Milestone Workplan Table (Attachment 3b). Incomplete or inaccurate reports may result in reimbursement delays. These reports shall be certified by an authorized agent of the Subrecipient as being true and accurate to the best of the Subrecipient's knowledge, as indicated by their signature on Attachment 3.

Each report, due on the 15th day following the close of the quarter, shall contain the following:

1. **A Succinct Narrative** - Describe the progress fulfilling the Scope of Work and activities for each deliverable. Provide a financial narrative with itemized details of expenditures, and
2. **An Updated Quarterly Milestones Workplan Table** Provide target and actual completion dates by quarter for each project activity defined in the Scope of Work. The Quarterly Milestone Workplan Table (Attachment 3b) shall be provided by the Board. Reporting quarters are defined as follows:
January-March
April-June
July-September
October-December

The final report, due within thirty (30) days after the Agreement termination date, shall summarize all major project accomplishments and challenges, as well as expenditures and matching contributions during the period after the project began through the completion of all required work. Deliverable in the approved Board Construction Permit and photographs taken before, during, and after project implementation should be included in the final report. The final reimbursement request must be submitted with the final report and the Board will not reimburse any requests received thirty (30) days after the Agreement termination date.

8. **Time Limit to File for Reimbursement; Expiration of Approval** Reimbursements for eligible activities are only applicable for approved activities to be completed after the finalization of this agreement. Any costs incurred prior to this agreement date are not allowable. All reimbursement requests for eligible project activities must be received by the Board by July 31, 2024. If the project is unable to be completed by July 31, 2024, the Subrecipient

shall submit a request for a project extension. If the extension is determined by the Board to be necessary and appropriate, the Board or its staff may permit additional time, but no later than July 31, 2024, to file an acceptable reimbursement request. The approval of this grant shall not extend past July 31, 2024 without prior approval from the grantor (FEMA). If an acceptable reimbursement is not received on or before July 31, 2024, then the approval of this grant shall expire and no grant funds will be released to Subrecipient, unless authorized by the grantor.

9. **Return of unexpended grant funds** Subrecipient shall return to the Board any unexpended grant funds, including any unexpended contingencies funds, within thirty (30) days after completion of the construction of the project or within thirty (30) days from Subrecipient's receipt of all invoices, whichever is later.
10. **Subrecipient Cost Share** Subrecipient will provide documentation to the Board showing the appropriate amount of subrecipient cost share is available for the grant, prior to approval. Subrecipient shall provide match of thirty-five percent (35%) of eligible project costs under this award. To receive the full award amount described in Paragraph 2, the minimum Subrecipient matching funds in the amount of \$53,709.01 are required.
11. **Additional Requirements** Subrecipient may be subject to additional requirements as may be directed by the Board in accordance with the HHPD Grant Program and associated procedures for implementing the program. The Board may require additional documentation or information as needed to meet any of the requirements of the HHPD Grant Program.
12. **Retention of Records** All documents, books, records related to the sub-award must be retained and made available to the federal awarding agency, Department of Homeland Security Office of the Inspector General, Recipient, and state auditors for a minimum period of three years from the date of the Board's final financial report. The final date of records retention will be communicated through a closeout letter from the Board to the Subrecipient.
13. **Regulatory** All Federal funds awarded are subject to the provisions of 2 CFR 200 Uniform Administrative Requirement, Cost Principles, and Audit Requirements for Federal Awards. Additionally, Subrecipient must and shall comply with the requirements of all applicable federal, state, and local statutory provisions; all Board rules, regulations, and grant program guidance; HHPD Grant Program applicable policies and HHPD Notice of Funding Opportunity provisions and policies.
14. **Hazard Mitigation Plan** All activities relating to the public in the area around the dam will be performed in accordance with the hazard mitigation plan. Subrecipient has been granted use by FEMA of the *Mitigation Plan Extraordinary Circumstances* request to fulfill the Hazard Mitigation Plan (HMP) requirements of this award. Confirmation of approval of the HHPD amendment to the Pottawatomie County Multi-Jurisdiction Hazard Mitigation Plan was received from FEMA to Subrecipient on 02/22/2023.
15. **EHP Requirements** Subrecipient must comply with Federal Environment Planning and Historic Preservation (EHP) regulations and submit to the Board, summary reports/studies conducted as part of this project.
16. **Floodplain Management Plan** Subrecipient must have in place (or develop not later than 2 years after the date of execution of the dam rehabilitation project and implement not later than 2 years after the date of completion of the project) a floodplain management plan to reduce the impacts of future flood events in the area impacted by the project.

Programmatic Terms and Conditions

17. **Assistance** The Board agrees, upon request of the Subrecipient, to furnish, or otherwise make available to the Subrecipient, copies of existing non-proprietary materials in the possession of the Board that are reasonably associated with this project. This includes materials that are necessary to Subrecipient for completion of its performance under this agreement.
18. **Financial Records Availability** The Subrecipient agrees to retain all books, records and other documents relative to this agreement for three years after final payment. The Board, its authorized agents, and/or state auditors shall have full access to, and the right to examine any of, said materials during said period.

19. **Food and Refreshments** Not applicable to this award.
20. **Federal Employee Costs** The Subrecipient understands that the funds for this project may not be used to pay for the travel of federal employees, or for other costs associated with federal participation in this project unless the federal agency is performing special technical assistance to the Subrecipient as allowed under the provisions of the Intergovernmental Cooperation Act.
21. **Termination and Breach** Either party may terminate this agreement upon 30 days written notice to the other party. The Board may terminate this Agreement for any reason necessary to support its current policy and financial status, including the need to redirect funds to another program. The Board may also terminate this agreement for failure of Subrecipient to make sufficient progress so as to reasonably ensure completion of the project within the project period. Sufficient progress will be measured by examining the performance required under the scope of work (Attachment 2) and milestones, the time remaining for performance within the project period, and/or the availability of funds necessary to complete the project.

It is understood and agreed between the parties, herein, that the Board shall be bound, hereunder, only to the extent of the funds available or which may hereafter become available for the purpose of this Agreement.

In the event of breach by the Subrecipient of this Agreement, the Board shall provide written notice to the Subrecipient specifying the manner in which the Agreement has been breached. If a notice of breach is given and the Subrecipient has not substantially corrected the breach within sixty (60) days of receipt of the written notice, the Board shall have the right to terminate the Agreement. The Subrecipient shall not be paid for services rendered nor expenses incurred after receipt of the notice of termination, except such fees and expenses incurred prior to the effective date of termination as are necessary for curtailment of its work under this Agreement.

22. **Indemnification** (Not Applicable)
23. **Labor Concerns** As a condition of award, Subrecipient will certify compliance with 42 U.S.C. § 5196 - U.S. Code - Unannotated Title 42. The Public Health and Welfare § 5196. Detailed functions of administration, Item (j)(9) as a condition of grant acceptance. The applicable section is as follows:
- a. All laborers and mechanics employed by contractors or subcontractors in the performance of construction work financed with the assistance of any contribution of Federal funds made by the Administrator under this subsection shall be paid wages at rates not less than those prevailing on similar construction in the locality as determined by the Secretary of Labor in accordance with sections 3141 - 3144 , 3146 , and 3147 of Title 40 , and every such employee shall receive compensation at a rate not less than one and one-half times the basic rate of pay of the employee for all hours worked in any workweek in excess of eight hours in any workday or forty (40) hours in the work week, as the case may be. The Administrator shall make no contribution of Federal funds without first obtaining adequate assurance that these labor standards will be maintained upon the construction work. The Secretary of Labor shall have, with respect to the labor standards specified in this subsection, the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (5 U.S.C. App.) and section 3145 of Title 40.
 - b. As a condition of award, Subrecipient will certify compliance with 40 U.S.C. Chapter 11; Selection of Architects and Engineers. The language can be viewed at: <https://uscode.house.gov/view.xhtml?path=/prelim@title40/subtitle1/chapter11&edition=prelim>
24. **Management Fees** The Subrecipient agrees that management fees or similar charges in excess of the direct costs and approved indirect rates (if applicable) are not allowable. The term "management fees or similar charges" refers to expenses added to the direct costs in order to accumulate and reserve funds for ongoing business expenses, unforeseen liabilities, or for other similar costs which are not allowable under this Agreement.

Management fees or similar charges may not be used to improve or expand the project funded under this agreement, except to the extent authorized as a direct cost of carrying out the scope of work (Attachment 2). Management and Administration (M&A) costs up to five percent (5%) of this subaward is allowable for direct costs of management and administration of this award (i.e. employee salary and fringe costs for preparation and submission of reports, requests for reimbursements, preparation and submission of award closeout reports). M&A costs must be listed in the subrecipient's approved application and budget to be eligible for reimbursement.

FEDERAL PUBLIC POLICY REQUIREMENTS

25. **Whistleblower** Congress has enacted the whistleblower protection statute 41 U.S.C. §4712 to encourage employees to report fraud, waste, and abuse without repercussions. This statute applies to all employees working for contractors, Subrecipients, subcontractors, and sub Subrecipients in accordance with this Agreement. All contractors, Subrecipients, sub Subrecipients, and subcontractors for federal grants and contracts are required to:
 1. Inform their employees in writing of the whistleblower protections under 41 U.S.C. §4712 in the predominant native language of the workforce, to include the specific requirements of the statute, and
 2. Include this term and condition in any agreement made with a subcontractor or sub Subrecipient. The employees' rights under 41 U.S.C. §4712 shall survive termination of this Contract.
26. **Buy American Act** Subrecipient warrants that the purchase of supplies, equipment, and construction materials for the project with grant funds shall comply to the greatest extent practicable, with the Buy American Act requirement or 43 CFR 12, Subpart E., unless DCR allows an exception specified in 43 CFR 12.710(d) and (e) and 43 CFR 12.715.
27. **Non-Discrimination** In its performance of this Agreement, Subrecipient warrants that it will not discriminate against any employee or applicant for employment on account of race, color, sex, religion, age, disability, or national origin. Subrecipient agrees to post in conspicuous places, available to employees and applicants for employment notices setting forth the provision of this non-discrimination clause.

Subrecipient must comply with Title VI of the Civil Rights Act of 1964 including providing meaningful access to LEP individuals, Section 504 of the Rehabilitation Act of 1973, The Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972 if conducting an education program under this award, if applicable, Section 13 of the Federal Water Pollution Control Act Amendments of 1972 and Title IX obligations 40 CFR Part 5.
28. **Smoke-Free Environment** Public Law 103-277, also known as the Pro-Children Act of 1994, requires that smoking not be permitted in any portion of any indoor facility owned or leased or contracted for by an entity and used routinely or regularly for the provision of health, day care, early childhood development services, education or library services to children under the age of eighteen (18), if the services are funded by Federal programs either directly or through State or local governments by Federal grant, contract, loan or loan guarantee. Failure to comply with the provisions or the law may result in the imposition of a civil monetary penalty of up to \$1000 for each violation and/or the imposition of an administrative compliance order on the responsible entity.
29. **Hotel-Motel Fire Safety Act** Pursuant to 15 USC § 2225a, the Subrecipient agrees to ensure that all space for conferences, meetings, conventions or training seminars funded in whole or in part with federal funds complies with the protection and control guidelines of the Hotel and Motel Fire Safety Act (PL 101 - 391 as amended). Recipients may search the Hotel-Motel National Master list at <https://apps.usfa.fema.gov/hotel/femaIDSearch> to see if a property is in compliance.
30. **Recycled Paper** When directed to provide paper documents the Subrecipient agrees to use recycled paper and double-sided printing for all reports which are prepared as a part of this agreement and delivered to the Board. This requirement does not apply to reports prepared on forms supplied by the Board.
31. **Resource Conservation and Recovery Act** Consistent with goals of section 6002 of RCRA (42 U.S.C. 6962),

State and local institutions or higher education hospitals and non-profit organization recipients agree to give preference in procurement programs to the purchase of specific products containing recycled materials, as identified in 40 CFR Part 247. Consistent with section 6002 of RCRA (42 U.S.C. 6962) and 2 CFR 200.322. State agencies or agencies of a political subdivision of a State and its contractors are required to purchase certain items made from recycled materials, as identified in 40 CFR Part 247. when the purchase price exceeds \$10,000 during the course of a fiscal year or where the quantity of such items acquired in the course of the preceding fiscal year was \$10,000 or more. Pursuant to 40 CFR 247.2 (d), the Subrecipient may decide not to procure such items if they are not reasonably available in a reasonable period of time: fail to meet reasonable performance standards; or are only available at an unreasonable price.

32. **Trafficking Victims Protection Act** To implement the requirements of Section 106 of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 U.S.C. 7104(g)), the Subrecipient must abide by the Prohibition Statement below. The Subrecipient must inform the Board immediately of any information you received from any source alleging a violation of the Prohibition Statement below. FEMA and the associated federal funding agency have the right to unilaterally terminate this Agreement without penalty, if the Subrecipient or an employee is determined to have violated an applicable prohibition in the Prohibition Statement.

- i. **Prohibition Statement** The Board as the recipient, its employees, sub-recipients under this Agreement, and sub-recipients' employees may not engage in severe forms of trafficking in persons during the period of time that the Agreement is in effect; procure a commercial sex act during the period of time that the Agreement is in effect; or use forced labor in the performance of the Agreement or sub-awards under the Agreement.

33. **Quality Assurance/Quality Control Project Plans (if applicable)** Within 60 days of the effective date of this Agreement and if required in Attachment 3 of this Agreement, the Subrecipient will submit to the Board, for review and approval, a Quality Assurance/Quality Control Project Plan.

34. **Reporting and Tracking Information Management Systems** In accepting these funds, the Subrecipient agrees to the sharing of all deliverable and related information through state and/or federal channels (including Internet use) and, wherever possible, to provide with deliverable in a format that can be made available to other partners and the public, as appropriate.

35. **Electronic and Information Technology Accessibility** Subrecipients are subject to the program accessibility provisions of Section 504 of the Rehabilitation Act, codified in 40 CFR Part 7, which includes an obligation to provide individuals with disabilities reasonable accommodations and an equal and effective opportunity to benefit from or participate in a program, including those offered through electronic and information technology.

36. **Creation of Intellectual Property** In accordance with 2 CFR 200.315, U.S. Department of Homeland Security (DHS) has the right to reproduce, publish, use and authorize others to reproduce publish and use copyrighted works or other data developed under this agreement for Federal purposes. The Board hereby grants to the Subrecipient a license to use any such material for public, non-commercial purposes within the territory of the project. Subrecipient hereby grants to the Board a license to use any such material for public, non-commercial purposes within the territory of the project.

A copyright notice shall be placed in an appropriate location on any copyrightable material being distributed or published. Such notice shall include (1) either the symbol "©", the word "Copyright" or the abbreviation "Copr." (2) the year of first publication, and (3) the name of the copyright owner (the State of Oklahoma). This information shall be followed by the words, "all rights reserved."

37. **Documents** The Subrecipient may retain any reports, studies, photographs, negatives or other documents prepared in the performance of their obligations under this Agreement and not required to be delivered to the Board shall have certain rights to use any such materials as specified above. Where necessary for its enjoyment of its rights and other rights referenced in this Agreement, the Subrecipient shall provide a clear, reproducible copy of such materials (machine readable upon request, if readily available to, the Subrecipient in such form) to the Board.

38. **Disclaimer** For reports or papers produced for public distribution (including the final product), the following sentence must be added to the end of the above credit: *The views expressed herein are those of the author(s) and do not necessarily reflect the views of U.S. Department of Homeland Security (DHS) and the State of Oklahoma.*
39. **Acknowledgements** The role of the Board, U.S. Department of Homeland Security (DHS) and the State of Oklahoma must be clearly stated in all press releases, news articles, requests for proposals, bid solicitations and other documents describing this project, whether funded in whole or in part.

Acknowledgment of financial assistance, with the use of the Board, U.S. Department of Homeland Security (DHS) and City of Lawton logos, as appropriate, must be printed on the cover of all reports, studies, web sites, map products, or other products supported by this award or any sub-award. The Subrecipient is responsible for contacting staff in adequate time to obtain the required logos in camera-ready or digital form. Prior to production, the Board's project management staff must approve the final draft. The acknowledgment should read:

This project was funded wholly or in part by the U.S. Department of Homeland Security (DHS) to support protecting the lives of Americans and their property from the risks associated with dams. The Rehabilitation of High Hazard Potential Dams Grant Program (HHPD), administered in connection with the National Dam Safety Program provides technical, planning, design, and construction assistance in the form of grants to states for non-Federal governmental organizations or nonprofit organizations for rehabilitation of eligible high hazard potential dams. For FY2022, the HHPD Grant Program will provide assistance for technical, planning, design and other pre-construction activities through DHS-22-MT-041-00-01. The contents of this document/report etc. do not necessarily reflect the views and policies of DHS nor does DHS endorse trade names or recommend the use of commercial products mentioned in this document."

40. **Assurances** By entering into this Agreement, the Subrecipient certifies that it has the legal authority to apply for federal assistance, and it has the institutional, managerial and financial capability (including funds sufficient to pay for subjects costs until reimbursement or pay for the non-federal share of project costs) to ensure proper planning, management and completion of the project description.
41. **Suspension and debarment** Non-Federal entities are subject to the non-procurement debarment and suspension regulations implementing Executive Orders 12549 and 12689, 2 CFR part 180. The regulations in 2 CFR part 180 restrict awards, subawards, and contracts with certain parties that are debarred, suspended, or otherwise excluded from or ineligible for participation in Federal assistance programs or activities.
42. **Prohibition on certain telecommunications and video surveillance services or equipment**
- a. Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:
 1. Procure or obtain,
 2. Extend or renew a contract to procure or obtain; or
 - i. Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
 - ii. For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
 - iii. Telecommunications or video surveillance services provided by such entities or using such equipment.
 - iv. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

- b. In implementing the prohibition under Public Law 115–232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.
- c. See Public Law 115–232, section 889 for additional information.
- d. See also § 200.471.

43. **Appendix II to Part 200 – Contract provision for Non-federal entity contracts under Federal awards**

In addition to other provisions required by the Federal agency or non-Federal entity, all contracts made by the non-Federal entity under the Federal award must contain provisions covering the following, as applicable.

- a. Contracts for more than the simplified acquisition threshold, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.
- b. All contracts in excess of \$10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be effected and the basis for settlement.
- c. Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of “federally assisted construction contract” in 41 CFR Part 60–1.3 must include the equal opportunity clause provided under 41 CFR 60–1.4(b), in accordance with Executive Order 11246, “Equal Employment Opportunity” (30 FR 12319, 12935, 3 CFR Part, 1964–1965 Comp., p. 339), as amended by Executive Order 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and implementing regulations at 41 CFR part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.”
- d. Davis-Bacon Act, as amended (40 U.S.C. 3141–3148). When required by Federal program legislation, all prime construction contracts in excess of \$2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141–3144, and 3146–3148) as supplemented by Department of Labor regulations (29 CFR Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland “Anti-Kickback” Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.
- e. Contract Work Hours and Safety Standards Act (40 U.S.C. 3701–3708). Where applicable, all contracts awarded by the non-Federal entity in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

- f. Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of “funding agreement” under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.
- g. Clean Air Act (42 U.S.C. 7401–7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251–1387), as amended—Contracts and subgrants of amounts in excess of \$150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401–7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251–1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).
- h. Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.
- i. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award exceeding \$100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.
- j. See § 200.323.
- k. See § 200.216.
- l. See § 200.322.

In consideration of Subrecipient’s agreement to these terms and conditions, Subrecipient has entered and signed this HHPD Grant Agreement this _____ day of _____, 20____.

OKLAHOMA WATER RESOURCES BOARD

ATTEST:

Jennifer Castillo, Chairman

Suzanne Landess, Secretary

(BOARD SEAL)

* * * * *

Reviewed by:

Yohanes Sugeng, Chief
Engineering and Planning Division

City of Shawnee, Pottawatomie County Oklahoma

Attest:

By: _____

Title: _____

Andrea Weckmueller-Behringer, City Manager

Date: _____

Attachment 1
FEDERAL AWARD IDENTIFICATION INFORMATION

2 C.F.R. §§ 200.332(a)(1)(i)-(xiv)
Requirements for pass-through entities

Pass-through entity, and contact information for awarding official of the Pass-through entity

Oklahoma Water Resources Board

Cleve Pierce, CFO

405-530-8800

Cleve.Pierce@owrb.ok.gov

- (i) Subrecipient name
City of Shawnee, OK
- (ii) Subrecipient's unique entity identifier (UEI)
Q6AFVBMA4M95
- (iii) Federal Award Identification Number (FAIN)
EMW-2020-GR-00186
- (iv) Federal Award Date
09/01/2020
- (v) Subaward Period of Performance Start and End Date
09/01/2020 – 8/31/2024*
*amended PoP by approved extension request, original PoP: 9/1/2020 – 8/31/2023
- (vi) Subaward Budget Period Start and End Date
10/17/2022 – 8/31/2024
- (vii) Amount of Federal Funds Obligated by this action by the pass-through entity to the subrecipient
\$99,745.30
- (viii) Total Amount of Federal Funds Obligated to the subrecipient by the pass-through entity including the current financial obligation
Total Pass-through Federal Funds: \$164,745.30
FY 2021 HHPD
Shawnee City Lake No. 1 Rehabilitation Study:
\$65,000.00
FY 2020 HHPD
Shawnee City Lake No. 1 Rehabilitation Study Extension:
\$99,745.30
- (ix) Total Amount of the Federal Award committed to the subrecipient by the pass-through entity
\$0

- (x) Federal award project description, as required to be responsive to the Federal Funding Accountability and Transparency Act (FFATA)
Shawnee City Lake No. 1 Rehabilitation Study Extension
- (xi) Name of Federal awarding agency
Federal Emergency Management Administration
- (xii) Assistance listings number and title; the pass-through entity must identify the dollar amount made available under each Federal award and the Assistance Listings Number at time of disbursement
 - a. 97.041-National Dam Safety Program DHS-21-[MT]-[041]-[00]-[01]
 - i. \$65,000.00
 - b. 97.041-National Dam Safety Program DHS-20-[MT]-[041]-[00]-[01]
 - i. \$99,745.30
- (xiii) Identification of whether the award is Research and Development (R&D)
R&D is not allowed under this agreement
- (xiv) Indirect cost rate for the Federal award (including if the de minimis rate is charged) per 2 CFR § 200.414
Indirect costs are not allowed under this agreement

ATTACHMENT 2

Scope of Work

FEMA HHPD Grant Application OWRB Submission

Scope of Work

By City of Shawnee, Seth Barkhimer, PE, Director of Engineering
[Following pages]

ATTACHMENT 3

Reporting Guidelines & Forms

[Following pages]



City Manager Department
16 W. 9th St.
Shawnee, OK 74801
ShawneeOK.org

Date: September 18, 2023
To: Board of City Commissioners
From: Andrea Weckmueller-Behringer, City Manager
Subject: Consideration of a Memorandum of Understanding between the City of Shawnee and Pottawatomie Go related to a collaborative partnership.

Background: Starting in 2017, local leaders, volunteers, and organizations throughout Pottawatomie County have worked to inspire community members to improve their health and well-being. In June 2020, the Avedis Foundation and Blue Zones LLC announced that Pottawatomie County had achieved the "Certified Blue Zones Community" status. In June 2022, the Blue Zones Project evolved from a largely nationwide model into a locally driven, county-wide collaborative with a new name - Pottawatomie Go, or "Pogo."

After more than a year of preparatory time, Pogo staff and local entities have outlined core values, essential functions, as well as roles and responsibilities for Pogo staff and Pogo partners. With clear objectives in hand, Pogo is now ready to undertake the official signing of a Memorandum of Understanding (MOU) with each of the local partner entities that have come to the table to participate in this collaborative to "measurably improve health and well-being of Pottawatomie County."

It is important to note that the proposed MOU does not obligate the City of Shawnee to expend staffing resources or funds. It will assist the City in ongoing as well as future efforts and projects, including but not limited to built-environment grant applications, sidewalk and trail construction, small-scale park improvements, and more.

Financial Impact: None

Attachments: Pogo Leadership Team MOU 2023_COS

Staff Recommendation: Approval of the item

MEMORANDUM OF UNDERSTANDING

Between Pottawatomie Go and Pogo Collaborative Leadership Team

I. PURPOSE & SCOPE

This Memorandum of Understanding (MOU) confirms the intent of members of the Leadership Team to work together collaboratively to lead and advance the work of Pottawatomie Go (Pogo). This MOU is intended to establish the roles and responsibilities of Pogo and the Pogo Partners serving in a leadership role to guide and support coordinated activities as well as steward in-kind and financial resources for projects to implement Pogo's mission and vision to advance health and well-being in Pottawatomie County.

II. BACKGROUND

In June 2020, the Avedis Foundation and Blue Zones LLC announced that Pottawatomie County had achieved the Certified Blue Zones Community® status. After two years of deepening community relationships and developing a long-term, local impact plan, Blue Zones Project evolved into Pottawatomie Go, or "Pogo." As a certified Blue Zones Community, Shawnee remains part of the national network of communities committed to making healthy choices easier. As a result of the commitment Avedis Foundation has to our area's health, wellness, and quality of life, the Foundation serves as the parent company and underwriting partner with oversight and governance of budgets, physical assets, and personnel.

Pottawatomie Go is a county-wide collaborative supported by public and private partner agencies, organizations, and individuals to advance our county's health and well-being. Pottawatomie Go serves Shawnee and neighboring county communities by facilitating collaborative partnerships and fostering engagement in healthy initiatives to measurably improve the health and well-being of Pottawatomie County.

III. CORE VALUES

1. Collaboration: Accomplish great things together
2. Inclusion: Advocate for access to healthy choices for all
3. Empowerment: Inspire confidence and support action
4. Courage: Challenge the status quo to realize the possible
5. Vitality: Proliferate energy, enthusiasm, and fun
6. Innovation: Grow and adapt as we evolve
7. Accountability: Guide our work with measurable data

IV. POTTAWATOMIE GO FUNCTION

Pottawatomie Go will:

- a. Engage a broad spectrum of stakeholders in community initiatives to improve health and enrich the collective understanding of local health issues and solutions.
- b. Create a shared vision for community health improvement through a unified Community Health Assessment process and create Community Health Improvement plans including shared stakeholder priorities and social determinants of health.
- c. Drive work progress, policy advocacy, and coordinated projects in the mission priority areas of mental well-being, fruit and vegetable consumption, built environment, active lifestyles, and social connectedness.
- d. Pottawatomie Go will act as a platform for partner organizations and provide marketing support, collaborative opportunities to share successes, needs, and resources with the community in relation to community health improvement, as well as a system for monitoring and evaluating progress over time.
- e. Pottawatomie Go will collect local community health data through a unified Community Health Needs Assessment every three years.

V. POTTAWATOMIE GO STAFF

Pottawatomie Go staff will:

- a. Provide structure, staffing, reporting, and organize regular meetings of the Pogo Collaborative Leadership Team, Working Committees, and Pogo Partner Convenings.
- b. Support through staff time, project implementation, and assistance with applicable grant submissions for community health projects, programs, and initiatives consistent with Pottawatomie Go's mission, programming, and goals.
- c. Convene and help facilitate a unified Community Health Needs Assessment and support Community Health Improvement Plan(s).
- d. Create Program, Policy, and Engagement Action Plans with community stakeholders.
- e. Develop and execute community challenges, awareness campaigns, and programming aligned with CHNA and mission priority areas.
- f. Maintain the Pottawatomie Go website and social media: posting newsletters and relevant articles; announcements of meetings, community trainings, and events; agendas and notes of meetings, engagement opportunities, local health and well-being projects; and links to Community Health Needs Assessment information.

VI. POGO COLLABORATIVE LEADERSHIP TEAM

1. Membership
 - a. The Leadership Team membership shall consist of two Co-Chairs from all Pogo Collaborative Committees and the two Pogo Co-Chairs.
2. Terms of Service
 - a. The term of service the Leadership Team members shall be concurrent with coalition or committee Co-Chair service.
 - b. The Co-Chairs are appointed for two-year, staggered terms.
 - c. The term of office shall be from July 1 to June 30 unless otherwise determined by partner coalition or committee bylaws predating Pogo.
 - d. Each Co-Chair may be appointed for up to three (3) consecutive terms.

3. Duties of Pogo Leadership Team Co-Chairs
 - a. The Leadership Team shall have two (2) Co-Chairs
 - b. Lead all Pogo Collaborative Leadership Team meetings and activities
 - c. Oversee the work of all the committees, coalitions, and workgroups formed or affiliated with the Collaborative
 - d. Work with Pogo staff to set meetings, prepare written agendas, and share the work of the appointed committee
 - e. Notify the Collaborative of meetings one week before meetings
 - f. Appoint Ad Hoc Committees as needed
 - g. Act as the spokesperson for the Collaborative as required
 - h. Become knowledgeable about the Collaborative and the issues surrounding well-being in Pottawatomie County
 - i. Attend Pogo Partner Convenings
 - j. Serve as an ambassador of Pogo to the community.
 - k. Lead the ongoing process of recruitment of new Collaborative members and community partners.
4. Duties of Leadership Team Members
 - a. Attend monthly leadership team meetings
 - b. Lead committee meetings
 - c. Work with Pogo staff to set meetings, prepare written agendas, and share the work of the appointed committee
 - d. Act as the spokesperson for the appointed committee as required
 - e. Attend Pogo Partner Convenings
 - f. Serve as an ambassador of Pogo to the community
 - g. Lead the ongoing process of recruitment of new Collaborative members and community partners.

VII. Duration

This MOU is at will and may be modified by mutual consent of authorized officials from the partnered organizations. This MOU shall become effective as of the date of the last signature by the authorized officials and will remain in effect for the term of service.

VIII. Modifications to this MOU:

This MOU may be modified with a two-thirds majority vote of the Pogo leadership team and endorsement by the Avedis Foundation Pogo Committee.

SIGNATURE AND DATE

The Parties hereby agree to the terms and conditions outlined in this Agreement, and such is demonstrated throughout by their signatures below:

Contact Information

City of Shawnee
Andrea Weckmueller-Behringer
City Manager
16 W. 9th Street, Shawnee, OK 74801
405-878-1601
CityManager@shawneeok.org

Contact Information

Pottawatomie Go
John Bobb-Semple
Executive Director
420 E. Main, Shawnee, OK 74801
405-698-1308
info@gopogo.org

Name: Andrea Weckmueller-Behringer

Signature: _____

Date: _____

Name: John Bobb-Semple

Signature: _____

Date: _____



Engineering Department
222 N. Broadway Ave.
Shawnee, OK 74801
ShawneeOK.org

Date: September 18, 2023
To: Board of City Commissioners
From: Seth Barkhimer, Director of Engineering
Subject: Independence Avenue Waterline Project (Award)

Background: In November of 2022, the City of Shawnee entered into a Professional Services Agreement with Cowan Group Engineering, LLC (Cowan) for the final design of the Independence Avenue Waterline project. With design complete, the project was advertised, and staff opened bids at the August 21, 2023, City Commission meeting.

City staff and the Cowan design team have reviewed the bid proposals. Four (4) bids were received, and Base Bids ranged from \$1,291,791.00 (low) to \$2,116,425.00 (high). The design estimate for the Base Bid, prior to the bid opening, was \$1,794,726.00. There were also two bidding alternates, with Alternate 1 bids ranging from \$255,951.00 (low) to \$461,718.00 (high) and Alternate 2 bids ranging from \$236,020.00 (low) to \$546,488.00 (high). The design estimate for the alternates, prior to bid opening, was \$477,090.00 and \$476,436.00, respectively.

Staff recommends awarding the contract to Circle B Underground, who submitted the lowest bid:

- Base Bid: \$1,291,791.00
- Alternate 1: \$255,951.00
- Alternate 2: \$236,020.00

Total: Base Bid + Alternates = \$1,783,762.00

Staff is requesting approval to award the Base Bid and Alternates 1 and 2, for a total of \$1,783,762.00.

Financial Impact: \$1,783,762, funded from account 304-5-1040-54200 - American Rescue Plan Fund, Water Distribution, Capital Outlay-Bldgs & Improvements; Project No. C-23-02 - Independence Water Line Replacement

Attachments: Bid Tabulation - Shawnee Independence Avenue Waterline 230821, Advertisement for Bidders_Independence, Independence Avenue Waterline Plan Holder List, Shawnee Independence Ave Waterline Specs FINAL, Shawnee_ARPA_WL230358_Plans, Recommendation of Award - Shawnee Independence Avenue Waterline 230906

Staff Recommendation: Award of the Contract



COWAN GROUP ENGINEERING, LLC
7100 N Classen, Suite 500
OKLAHOMA CITY, OK 73116
405.463.3369 O

City of Shawnee

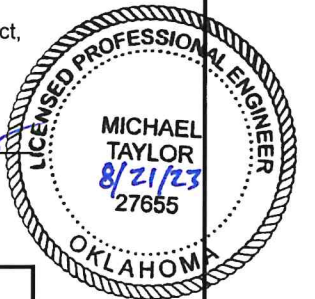
Independence Avenue Waterline Project

BID NO. ARP-23-0092-G

DATE August 21, 2023

I do solemnly swear that the below amount is correct,
reasonable and just.

Michael Taylor, P.E.



BASE BID	BID: SHAWNEE INDEPENDENCE AVENUE WATERLINE										
ITEM NUMBER	DESCRIPTION	QTY	UNIT	CIRCLE B UNDERGROUND		ORR CONSTRUCTION		MARSAU ENTERPRISES		DOWNEY CONTRACTORS	
1	MOBILIZATION	1	LS	\$ 31,500.00	\$ 31,500.00	\$ 30,000.00	\$ 30,000.00	\$ 156,400.00	\$ 156,400.00	\$ 50,000.00	\$ 50,000.00
2	CLEARING AND GRUBBING	1	LS	\$ 12,600.00	\$ 12,600.00	\$ 5,000.00	\$ 5,000.00	\$ 7,600.00	\$ 7,600.00	\$ 8,800.00	\$ 8,800.00
3	SOLID SLAB SOD	310	SY	\$ 12.00	\$ 3,720.00	\$ 10.00	\$ 3,100.00	\$ 11.30	\$ 3,503.00	\$ 10.00	\$ 3,100.00
4	STORMWATER POLLUTION PREVENTION PLAN	1	LS	\$ 13,519.00	\$ 13,519.00	\$ 2,000.00	\$ 2,000.00	\$ 2,500.00	\$ 2,500.00	\$ 1,500.00	\$ 1,500.00
5	16" STEEL CASING (BORE)	114	LF	\$ 326.00	\$ 37,164.00	\$ 325.00	\$ 37,050.00	\$ 226.00	\$ 25,764.00	\$ 662.00	\$ 75,468.00
6	8" HDPE DR-11 WATERLINE (BORE)	201	LF	\$ 84.00	\$ 16,884.00	\$ 150.00	\$ 30,150.00	\$ 190.00	\$ 38,190.00	\$ 265.00	\$ 53,265.00
7	12" HDPE DR-11 WATERLINE (HDD)	3,799	LF	\$ 134.00	\$ 509,066.00	\$ 210.00	\$ 797,790.00	\$ 262.00	\$ 995,338.00	\$ 314.00	\$ 1,192,886.00
8	6" HDPE DR-11 WATERLINE (TRENCHING)	21	LF	\$ 89.00	\$ 1,869.00	\$ 65.00	\$ 1,365.00	\$ 154.00	\$ 3,234.00	\$ 280.00	\$ 5,880.00
9	8" HDPE DR-11 WATERLINE (TRENCHING)	118	LF	\$ 84.00	\$ 9,912.00	\$ 70.00	\$ 8,260.00	\$ 100.00	\$ 11,800.00	\$ 95.00	\$ 11,210.00
10	12" HDPE DR-11 WATERLINE (TRENCHING)	146	LF	\$ 124.00	\$ 18,104.00	\$ 90.00	\$ 13,140.00	\$ 102.50	\$ 14,965.00	\$ 121.00	\$ 17,666.00
11	6" GATE VALVE & BOX	11	EA	\$ 3,050.00	\$ 33,550.00	\$ 3,000.00	\$ 33,000.00	\$ 2,240.00	\$ 24,640.00	\$ 2,750.00	\$ 30,250.00
12	8" GATE VALVE & BOX	4	EA	\$ 4,611.00	\$ 18,444.00	\$ 3,400.00	\$ 13,600.00	\$ 2,900.00	\$ 11,600.00	\$ 3,500.00	\$ 14,000.00
13	12" GATE VALVE & BOX	12	EA	\$ 8,173.00	\$ 98,076.00	\$ 5,000.00	\$ 60,000.00	\$ 4,660.00	\$ 55,920.00	\$ 7,350.00	\$ 88,200.00
14	1" AIR RELIEF VALVE	4	EA	\$ 7,764.00	\$ 31,056.00	\$ 3,500.00	\$ 14,000.00	\$ 3,125.00	\$ 12,500.00	\$ 2,800.00	\$ 11,200.00
15	6"X6" TAPPING SLEEVE & VALVE W/ BOX	9	EA	\$ 8,262.00	\$ 74,358.00	\$ 6,500.00	\$ 58,500.00	\$ 5,690.00	\$ 51,210.00	\$ 5,300.00	\$ 47,700.00
16	8"X8" TAPPING SLEEVE & VALVE W/ BOX	1	EA	\$ 10,583.00	\$ 10,583.00	\$ 8,500.00	\$ 8,500.00	\$ 7,000.00	\$ 7,000.00	\$ 7,900.00	\$ 7,900.00
17	12"X12" TAPPING SLEEVE & VALVE W/ BOX	1	EA	\$ 19,012.00	\$ 19,012.00	\$ 10,000.00	\$ 10,000.00	\$ 10,275.00	\$ 10,275.00	\$ 15,000.00	\$ 15,000.00
18	HDPE WALL ANCHOR	10	EA	\$ 1,076.00	\$ 10,760.00	\$ 3,500.00	\$ 35,000.00	\$ 8,910.00	\$ 89,100.00	\$ 4,800.00	\$ 48,000.00
19	FIRE HYDRANT ASSEMBLY	10	EA	\$ 9,382.00	\$ 93,820.00	\$ 2,500.00	\$ 25,000.00	\$ 6,130.00	\$ 61,300.00	\$ 6,900.00	\$ 69,000.00
20	12"X8" TEE	10	EA	\$ 1,968.00	\$ 19,680.00	\$ 1,800.00	\$ 18,000.00	\$ 1,570.00	\$ 15,700.00	\$ 2,200.00	\$ 22,000.00
21	12"X6" TEE	10	EA	\$ 1,875.00	\$ 18,750.00	\$ 1,700.00	\$ 17,000.00	\$ 1,720.00	\$ 17,200.00	\$ 1,300.00	\$ 13,000.00
22	12"X22 1/2" BEND	12	EA	\$ 568.00	\$ 6,816.00	\$ 1,200.00	\$ 14,400.00	\$ 1,385.00	\$ 16,620.00	\$ 700.00	\$ 8,400.00
23	12"X45° BEND	2	EA	\$ 1,479.00	\$ 2,958.00	\$ 1,200.00	\$ 2,400.00	\$ 1,650.00	\$ 3,300.00	\$ 700.00	\$ 1,400.00
24	12"X90° BEND	1	EA	\$ 1,439.00	\$ 1,439.00	\$ 1,250.00	\$ 1,250.00	\$ 1,660.00	\$ 1,660.00	\$ 1,000.00	\$ 1,000.00
25	12"X8" REDUCER	1	EA	\$ 899.00	\$ 899.00	\$ 1,000.00	\$ 1,000.00	\$ 1,340.00	\$ 1,340.00	\$ 800.00	\$ 800.00
26	12" CUT & PLUG	2	EA	\$ 1,629.00	\$ 3,258.00	\$ 2,000.00	\$ 4,000.00	\$ 3,550.00	\$ 7,100.00	\$ 1,500.00	\$ 3,000.00
27	8"X6" TEE	4	EA	\$ 1,284.00	\$ 5,136.00	\$ 1,000.00	\$ 4,000.00	\$ 1,450.00	\$ 5,800.00	\$ 1,000.00	\$ 4,000.00
28	8"X90° BEND	1	EA	\$ 591.00	\$ 591.00	\$ 900.00	\$ 900.00	\$ 1,240.00	\$ 1,240.00	\$ 350.00	\$ 350.00
29	8"X6" REDUCER	6	EA	\$ 502.00	\$ 3,012.00	\$ 900.00	\$ 5,400.00	\$ 1,460.00	\$ 8,760.00	\$ 300.00	\$ 1,800.00
30	8" CAP	4	EA	\$ 573.00	\$ 2,292.00	\$ 900.00	\$ 3,600.00	\$ 1,300.00	\$ 5,200.00	\$ 550.00	\$ 2,200.00
31	6"X90° BEND	6	EA	\$ 413.00	\$ 2,478.00	\$ 750.00	\$ 4,500.00	\$ 1,175.00	\$ 7,050.00	\$ 150.00	\$ 900.00
32	6" CUT & PLUG	12	EA	\$ 728.00	\$ 8,736.00	\$ 1,200.00	\$ 14,400.00	\$ 3,315.00	\$ 39,780.00	\$ 1,000.00	\$ 12,000.00
33	WATER SERVICE RECONNECTION (SHORT)	11	EA	\$ 1,506.00	\$ 16,566.00	\$ 1,000.00	\$ 11,000.00	\$ 3,320.00	\$ 36,520.00	\$ 3,800.00	\$ 41,800.00
34	WATER SERVICE RECONNECTION (LONG)	11	EA	\$ 2,473.00	\$ 27,203.00	\$ 2,500.00	\$ 27,500.00	\$ 4,330.00	\$ 47,630.00	\$ 8,200.00	\$ 90,200.00
35	LEAD SERVICE REPLACEMENT (SHORT)	1	EA	\$ 1,662.00	\$ 1,662.00	\$ 2,500.00	\$ 2,500.00	\$ 4,070.00	\$ 4,070.00	\$ 5,500.00	\$ 5,500.00
36	LEAD SERVICE REPLACEMENT (LONG)	1	EA	\$ 2,607.00	\$ 2,607.00	\$ 4,000.00	\$ 4,000.00	\$ 5,075.00	\$ 5,075.00	\$ 10,000.00	\$ 10,000.00
37	REMOVE & REPLACE CONCRETE PAVEMENT	10	SY	\$ 79.00	\$ 790.00	\$ 350.00	\$ 3,500.00	\$ 350.00	\$ 3,500.00	\$ 250.00	\$ 2,500.00
38	REMOVE & REPLACE CONCRETE DRIVE	60	SY	\$ 84.00	\$ 5,040.00	\$ 250.00	\$ 15,000.00	\$ 300.00	\$ 18,000.00	\$ 250.00	\$ 15,000.00
39	REMOVE & REPLACE ASPHALT PAVEMENT	100	SY	\$ 95.00	\$ 9,500.00	\$ 250.00	\$ 25,000.00	\$ 275.00	\$ 27,500.00	\$ 250.00	\$ 25,000.00
40	REMOVE & REPLACE CONCRETE SIDEWALK	145	SY	\$ 74.00	\$ 10,730.00	\$ 165.00	\$ 23,925.00	\$ 240.00	\$ 34,800.00	\$ 250.00	\$ 36,250.00
41	REMOVE & REPLACE INLET STRUCTURE	1	EA	\$ 5,250.00	\$ 5,250.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 18,000.00	\$ 18,000.00
42	REMOVE EXISTING FIRE HYDRANT	9	EA	\$ 2,625.00	\$ 23,625.00	\$ 2,000.00	\$ 18,000.00	\$ 900.00	\$ 8,100.00	\$ 1,700.00	\$ 15,300.00
43	CONSTRUCTION SIGNING AND TRAFFIC CONTROL	1	LS	\$ 31,500.00	\$ 31,500.00	\$ 7,500.00	\$ 7,500.00	\$ 15,600.00	\$ 15,600.00	\$ 15,000.00	\$ 15,000.00
44	TEMPORARY EROSION AND SEDIMENT CONTROL	1	LS	\$ 15,094.00	\$ 15,094.00	\$ 3,000.00	\$ 3,000.00	\$ 6,500.00	\$ 6,500.00	\$ 7,500.00	\$ 7,500.00
45	PRESSURE AND LEAKAGE TESTING	1	LS	\$ 11,813.00	\$ 11,813.00	\$ 4,000.00	\$ 4,000.00	\$ 3,500.00	\$ 3,500.00	\$ 5,000.00	\$ 5,000.00
46	DISINFECTION AND TESTING	1	LS	\$ 10,369.00	\$ 10,369.00	\$ 3,500.00	\$ 3,500.00	\$ 3,825.00	\$ 3,825.00	\$ 7,500.00	\$ 7,500.00
BASE BID TOTAL					\$ 1,291,791.00		\$ 1,439,730.00		\$ 1,943,209.00		\$ 2,116,425.00

ADD ALTERNATE ONE INDEPENDENCE AVENUE WATERLINE PROJECT

ALT. ONE	BID: SHAWNEE INDEPENDENCE AVENUE WATERLINE										
ITEM NUMBER	DESCRIPTION	QTY	UNIT	CIRCLE B UNDERGROUND		ORR CONSTRUCTION		MARSAU ENTERPRISES		DOWNEY CONTRACTORS	
1	MOBILIZATION	1	LS	\$	12,600.00	\$	12,600.00	\$	5,000.00	\$	5,000.00
2	CLEARING AND GRUBBING	1	LS	\$	6,300.00	\$	6,300.00	\$	1,500.00	\$	1,500.00
3	SOLID SLAB SOD	130	SY	\$	12.00	\$	1,560.00	\$	15.00	\$	1,950.00
4	STORMWATER POLLUTION PREVENTION PLAN	1	LS	\$	3,806.00	\$	3,806.00	\$	1,000.00	\$	1,000.00
5	8" HDPE DR-11 WATERLINE (BORE)	108	LF	\$	85.00	\$	9,180.00	\$	150.00	\$	16,200.00
6	12" HDPE DR-11 WATERLINE (HDD)	947	LF	\$	136.00	\$	128,792.00	\$	210.00	\$	198,870.00
7	8" HDPE DR-11 WATERLINE (TRENCHING)	92	LF	\$	89.00	\$	8,188.00	\$	65.00	\$	5,980.00
8	12" HDPE DR-11 WATERLINE (TRENCHING)	27	LF	\$	123.00	\$	3,321.00	\$	90.00	\$	2,430.00
9	6" GATE VALVE & BOX	1	EA	\$	3,044.00	\$	3,044.00	\$	3,000.00	\$	3,000.00
10	8" GATE VALVE & BOX	1	EA	\$	4,664.00	\$	4,664.00	\$	3,400.00	\$	3,400.00
11	12" GATE VALVE & BOX	2	EA	\$	8,225.00	\$	16,450.00	\$	5,000.00	\$	10,000.00
12	8"X8" TAPPING SLEEVE & VALVE W/ BOX	1	EA	\$	10,583.00	\$	10,583.00	\$	8,500.00	\$	8,500.00
13	HDPE WALL ANCHOR	4	EA	\$	1,076.00	\$	4,304.00	\$	3,500.00	\$	14,000.00
14	FIRE HYDRANT ASSEMBLY	1	EA	\$	9,382.00	\$	9,382.00	\$	2,500.00	\$	2,500.00
15	12"X22 1/2° BEND	2	EA	\$	988.00	\$	1,976.00	\$	1,200.00	\$	2,400.00
16	8" X90° BEND	1	EA	\$	591.00	\$	591.00	\$	900.00	\$	900.00
17	REMOVE & REPLACE ASPHALT PAVEMENT	61	SY	\$	95.00	\$	5,795.00	\$	250.00	\$	15,250.00
18	REMOVE & REPLACE CONCRETE SIDEWALK	10	SY	\$	74.00	\$	740.00	\$	165.00	\$	1,650.00
19	REMOVE EXISTING FIRE HYDRANT	1	EA	\$	2,625.00	\$	2,625.00	\$	2,000.00	\$	2,000.00
20	CONSTRUCTION SIGNING AND TRAFFIC CONTROL	1	LS	\$	8,400.00	\$	8,400.00	\$	4,000.00	\$	4,000.00
21	TEMPORARY EROSION AND SEDIMENT CONTROL	1	LS	\$	4,856.00	\$	4,856.00	\$	2,000.00	\$	2,000.00
22	PRESSURE AND LEAKAGE TESTING	1	LS	\$	3,806.00	\$	3,806.00	\$	3,500.00	\$	3,500.00
23	DISINFECTION AND TESTING	1	SY	\$	4,988.00	\$	4,988.00	\$	2,500.00	\$	2,500.00
ALTERNATE ONE BID TOTAL						\$	255,951.00		\$	308,530.00	

ADD ALTERNATE TWO INDEPENDENCE AVENUE WATERLINE PROJECT

ALT. TWO	BID: SHAWNEE INDEPENDENCE AVENUE WATERLINE										
ITEM NUMBER	DESCRIPTION	QTY	UNIT	CIRCLE B UNDERGROUND		ORR CONSTRUCTION		MARSAU ENTERPRISES		DOWNEY CONTRACTORS	
1	MOBILIZATION	1	LS	\$	12,600.00	\$	12,600.00	\$	5,000.00	\$	5,000.00
2	CLEARING AND GRUBBING	1	LS	\$	6,300.00	\$	6,300.00	\$	1,500.00	\$	1,500.00
3	SOLID SLAB SOD	30	SY	\$	12.00	\$	360.00	\$	25.00	\$	750.00
4	STORMWATER POLLUTION PREVENTION PLAN	1	LS	\$	3,806.00	\$	3,806.00	\$	1,000.00	\$	1,000.00
5	8" HDPE DR-11 WATERLINE (HDD)	1,161	LF	\$	84.00	\$	97,524.00	\$	150.00	\$	174,150.00
6	6" HDPE DR-11 WATERLINE (TRENCHING)	19	LF	\$	93.00	\$	1,767.00	\$	65.00	\$	1,235.00
7	6" GATE VALVE & BOX	2	EA	\$	1,813.00	\$	3,626.00	\$	3,000.00	\$	6,000.00
8	8" GATE VALVE & BOX	2	EA	\$	2,564.00	\$	5,128.00	\$	3,400.00	\$	6,800.00
9	12"x8" TAPPING SLEEVE & VALVE W/BOX	1	EA	\$	5,906.00	\$	5,906.00	\$	8,500.00	\$	8,500.00
10	HDPE WALL ANCHOR	4	EA	\$	577.00	\$	2,308.00	\$	3,500.00	\$	14,000.00
11	FIRE HYDRANT ASSEMBLY	2	EA	\$	5,182.00	\$	10,364.00	\$	2,500.00	\$	5,000.00
12	8" X 11 1/4° BEND	6	EA	\$	171.00	\$	1,026.00	\$	900.00	\$	5,400.00
13	8"X22 1/2° BEND	1	EA	\$	171.00	\$	171.00	\$	1,000.00	\$	1,000.00
14	6' CUT & PLUG	1	EA	\$	728.00	\$	728.00	\$	1,500.00	\$	1,500.00
15	WATER SERVICE RECONNECTION (SHORT)	15	EA	\$	1,506.00	\$	22,590.00	\$	1,000.00	\$	15,000.00
16	WATER SERVICE RECONNECTION (LONG)	12	EA	\$	2,473.00	\$	29,676.00	\$	2,500.00	\$	30,000.00
17	REMOVE & REPLACE CONCRETE PAVEMENT	40	SY	\$	79.00	\$	3,160.00	\$	350.00	\$	14,000.00
18	REMOVE & REPLACE CONCRETE DRIVE	20	SY	\$	84.00	\$	1,680.00	\$	250.00	\$	5,000.00
19	REMOVE EXISTING FIRE HYDRANT	2	EA	\$	2,625.00	\$	5,250.00	\$	2,000.00	\$	4,000.00
20	CONSTRUCTION SIGNING AND TRAFFIC CONTROL	1	LS	\$	8,400.00	\$	8,400.00	\$	4,000.00	\$	4,000.00
21	TEMPORARY EROSION AND SEDIMENT CONTROL	1	LS	\$	4,856.00	\$	4,856.00	\$	2,000.00	\$	2,000.00
22	PRESSURE AND LEAKAGE TESTING	1	LS	\$	3,806.00	\$	3,806.00	\$	2,500.00	\$	2,500.00
23	DISINFECTION AND TESTING	1	LS	\$	4,988.00	\$	4,988.00	\$	2,000.00	\$	2,000.00
ALTERNATE TWO BID TOTAL						\$	236,020.00		\$	310,335.00	

BASE BID PLUS ALTERNATE ONE AND TWO TOTAL						\$	1,783,762.00		\$	2,058,595.00	
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Advertisement for Bids

Notice is hereby given that the City of Shawnee (hereinafter called the "Owner") will receive sealed bids at the City Clerk's Office, 16 W. 9th Street, Shawnee, OK 74802-1448 until 4pm the 21st day of August, 2023 for the Independence Avenue Waterline project.

Funding for this project is provided through American Rescue Plan Act (ARPA) grant program. As such, compliance with Labor Standards Contract Provisions is mandatory. Compliance with the Davis Bacon Act is mandatory **if the total project cost exceeds \$10,000,000 (ten million dollars)**.

All bids received at said time will be opened at the city commission meeting at 6pm and evaluated for completeness and correctness. All work shall be performed, and all construction and materials used and furnished shall be in accordance with the Plans and Specifications prepared by Cowan Group Engineering, and on file in the office of the City Clerk, 16 W. 9th Street, Shawnee, OK 74802-1448.

The Bid Packet and Contract Documents for this project may be examined at the following locations:

1. The City Clerk's Office, 16 W. 9th Street, Shawnee, OK 74802-1448.
2. Cowan Group Engineering, 7100 N. Classen, Suite 500, Oklahoma City, OK 73116

Hard copy plans and specifications may be obtained by the prospective bidders at these locations for \$100.00. No documents will be mailed until payment is received in full.

Complete digital project bidding documents are available for a non-refundable fee of \$50.00 by going to www.cowangroup.co, navigating to the Bid Documents page, and by entering Quest Project #8514939 on the website's project search page. Please contact QuestCDN.com at 952.233.1632 or info@questcdn.com for assistance in free membership registration, downloading and working with this digital project information.

Each bidder shall accompany his original bid, filed with the City Clerk's Office with a certified or Cashier's Check on a solvent bank located in Oklahoma, or a Bidder's Bond, in the amount of five (5) percent of the amount bid, as a guarantee of his ability to perform the contract bid upon, and that he will enter into a written contract with the Owner to perform said work and/or furnish said materials in accordance with said Plans and Specifications and furnish the required bonds according to the Public Competitive Bidding Act of 1974.

The Owner will retain the deposit for liquidated damages in case the successful bidder fails to enter in said contract and furnish the required bonds provided for in the specifications within the time required. Deposit of the unsuccessful bidders will be returned upon the execution of the Contract and required bonds.

Each bidder shall accompany his bid with a sworn statement in writing that the bidder has not directly or indirectly entered into an agreement, expressed or implied, with any other bidder concerning the price or amount of such bid or any bids, the limiting of the bids or bidders, the paying to anyone any money for promotion expenses, the parceling or farming out to any bidder or bidders or other persons of any part of the contract or any part of the subject matter of the bid or of the profits thereof.

Construction, Maintenance and Statutory Payment Bonds in the amount of 100% of the contract price are required for this project. These bonds must be obtained from a Corporate Surety licensed in Oklahoma and approved by the Owner and Consulting Engineer. The bidder shall state in the proposal the name and address of the Surety or Sureties who will sign this bond in case the contract is awarded. The Maintenance Bond required will guarantee the repair of all damage due to improper materials or workmanship for a period of one (1) year after the acceptance of the work by the Owner.

This project is to be financed by the ARPA grant program managed by the Oklahoma Water Resources Board (OWRB) and shall be referred to as Project No. ARP-23-0026-G. The following requirements and regulations must be complied with:

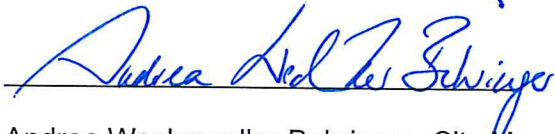
- A. "Equal Opportunity in Employment: All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age or physical handicap. Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended."
- B. "Each bidder must fully comply with the requirements, terms and conditions of the Environmental Protection Agency's Disadvantaged Business Enterprise Requirements, which have been adopted for the OWRB ARPA program, and include employing the six (6) good faith efforts and soliciting disadvantaged business enterprises during the performance of this contract. Requirements are contained in OWRB's Guidance and Procedures, ARP-267. The bidder commits itself to following the good faith efforts to solicit disadvantaged business enterprises contained herein and all other requirements, terms, and conditions of these bid conditions by submitting a properly signed bid."
- C. **If the total project cost exceeds \$10,000,000 (ten million dollars)** "Davis Bacon Act wage rules shall apply. All laborers and mechanics employed by contractors and sub- contractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of Chapter 31 of Title 40, United States Code and 29 CFR parts 1,3, and 5. The Department of Labor provides all pertinent information related to compliance with labor standards, including prevailing wage rates and instructions for reporting. More information is available at <http://www.sam.gov/>" and <https://www.dol.gov/agencies/whd/government-contracts/construction>
- D. System for Award Management (SAM) registration is required for all Applicants and Awardees (Entities, Prime Contractors, Subcontractors, Vendors) in order to receive funds from the ARPA program. SAM replaced the Central Contractor Registration/Federal Agency Registration, Online Representations and Certifications Application, and Excluded Parties List System. Applicants and awardees are required to complete a one-time free registration to provide basic information relevant to procurement and financial transactions. On April 4, 2022, the unique entity identifier used across the federal government changed from the DUNS Number to the Unique Entity ID (generated by SAM.gov). Registrants must retain an active status to be eligible for ARPA funding. Applicants and Awardees can go to SAM.gov to complete the registration process.

The bids filed with the City Clerk's Office will be opened and considered by the Owner, at a meeting to be held in The City of Shawnee Commission Chambers, 16 W. 9th Street, Shawnee, OK 74802-1448 Pottawatomie County on the 21st day of August 2023 at 6 pm. Bids received past 4pm on the stated date of Bid Opening will be returned.

The contract is to be awarded to the lowest, responsive, responsible bidder. The Owner reserves the right to correct any non-material clerical errors in the bidding as allowed under Oklahoma Law. The Owner reserves the right to reject any and all bids in accordance with the Oklahoma Public Competitive Bidding Act of 1974. Conditional bids shall not be accepted.

A pre-bid conference will be held on this project at: City of Shawnee, Commission Chambers on the 10th day of August, 2023 at 10 am.

Approved on this 18 day of July, 2023

A handwritten signature in blue ink, appearing to read "Andrea Weckmueller-Behringer", written over a horizontal line.

Andrea Weckmueller-Behringer, City Manager

Independence Avenue Waterline

Quest eBidDoc™ Number: 8514939

Closing Date: Mon, 08/21/2023 04:00 PM CDT **Posting Type:** Construction Project **Owner Name:** City of Shawnee **Solicitor Name:** Cowan Group Engineering, LLC **Contact:** Michael Taylor **Phone:** 4054633369 **Email:** michael@cowangroup.co

<u>Company Name & Address</u>	<u>Contact Name/Email Address</u>	<u>Phone/Fax</u>	<u>Bus. Cert</u>	<u>Bus. Desig</u>	<u>Entry Date</u>	<u>Doc Type</u>	<u>Comments</u>
Cowan Group Engineering, LLC 7100 N. Classen, Suite 500, Oklahoma City, OK-73116	Cainan Anthony cainan@cowangroup.co	4054633369 4054633381		A/E Consultant	07/27/2023	eBidDoc	
Dodge Data & Analytics 2860 S State Hwy 161, Grand Prairie, TX-75052	Daedri Cavuoto daedri.cavuoto@construction.com	513.666.3354 800-768-5594		Plan Room	07/27/2023	eBidDoc	
bnb Industries 24565 N Pvt Dr 3293, Wynnewood, OK-73098	Jace Brown jace@go-bnb.com	4052076506		Prime Bidder	07/28/2023	eBidDoc	
Cruz Utility Construction 679 Eagle Lake Ln, Newcastle, OK-73065	Mike King mikeking0216@yahoo.com	405-549-0720		Prime Bidder	07/28/2023	eBidDoc	
ConstructConnect 3825 Edwards Rd, Cincinnati, OH-45209	Eric Mills content@constructconnect.com	800-364-2059 866-570-8187		Plan Room	07/31/2023	eBidDoc	
Horizontal Boring & Tunneling Co. 505 S. River Ave., Exeter, NE-68351	Brent L. Moore horizontalboring@hbtrenchless.com	402-266-5347 402-266-5591		Subcontractor	07/31/2023	eBidDoc	
ePlan 1400 Forum Blvd Ste 7B, Columbia, MO-65203	Eplan Reporter eplan@eplanbidding.com	5734477130 573-355-5404		Plan Room	07/31/2023	eBidDoc	
Orr Construction, Inc. 510 North Broadway, Davenport, OK-74026	Orr Staff projects@orrconstructionok.com	918-377-4362		Prime Bidder	08/01/2023	eBidDoc	
Okie Construction 600 W Commerce St, Clinton, OK-73601	Julie Rigsby julie@okieconstruction.com	5806508136	DBE	Construction Manager	08/01/2023	eBidDoc	
Southwest Water Works 201 NW 132nd St, Oklahoma City, OK-73114	Jackson Matthews jackson@swwaterworks.com	405-550-1621 405-463-5665		Prime Bidder	08/01/2023	eBidDoc	

<u>Company Name & Address</u>	<u>Contact Name/Email Address</u>	<u>Phone/Fax</u>	<u>Bus. Cert</u>	<u>Bus. Desig</u>	<u>Entry Date</u>	<u>Doc Type</u>	<u>Comments</u>
UTILITY TECHNOLOGY SERVICES 9636 west reno, oklahoma city, OK-73127	DAVID MOORE domoore@utssupply.com	4054398549		Supplier	08/03/2023	eBidDoc	
Marsau Enterprises 1209 N. 30th St., Enid, OK-73701	Terry Alexander terry.alexander@marsauenterprises.com	580-233-3910 580-233-5063		Prime Bidder	08/03/2023	eBidDoc	
JAG Underground 3880 Tiffany Circle, Newcastle, OK-73065	Todd Guffey Tguffey.jag@gmail.com	405-863-3573		Prime Bidder	08/07/2023	eBidDoc	
Downey Contracting, L.L.C. 3217 Northeast 63rd Street, Oklahoma City, OK-73121	Brandon Downey bids@downeycontracting.com	4054785277 405-478-5269		Prime Bidder	08/08/2023	eBidDoc	
Circle B Underground LLC PO Box 868, Bristow, OK-74010	Darin Dean ddean@cbruok.com	918-367-8881 918-367-8882		Prime Bidder	08/08/2023	eBidDoc	
pinney dozer 2000 w Rogers Blvd, skiatook, OK-74070	jon pinney pinneydozer@yahoo.com	918-857-6522	WOSB	Other	08/10/2023	eBidDoc	



CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

INDEPENDENCE AVENUE WATERLINE

PROJECT NUMBER: 22-223

ARPA Grant Project Number: ARP-23-0026-G

BID DATE: August 21, 2023

By:

Cowan Group Engineering, LLC
7100 N Classen, Suite 500
Oklahoma City, OK 73116
Phone: 405-463-3369
CA # 6414 Expires 6/30/24

July 2023

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Responsible Registrant

Cowan Group Engineering, LLC
CA No. 6414 (Expires 6/30/24)



Michael Taylor
Michael Taylor, PE
Project Manager
OK PE 27655

Advertisement for Bids

Notice is hereby given that the City of Shawnee (hereinafter called the "Owner") will receive sealed bids at the City Clerk's Office, 16 W. 9th Street, Shawnee, OK 74802-1448 until the 21st day of August, 2023 for the Independence Avenue Waterline project.

Funding for this project is provided through American Rescue Plan Act (ARPA) grant program. As such, compliance with Labor Standards Contract Provisions is mandatory. Compliance with the Davis Bacon Act is mandatory **if the total project cost exceeds \$10,000,000 (ten million dollars)**.

All bids received at said time will be opened and evaluated for completeness and correctness. All work shall be performed, and all construction and materials used and furnished shall be in accordance with the Plans and Specifications prepared by Cowan Group Engineering, and on file in the office of the City Clerk, 16 W. 9th Street, Shawnee, OK 74802-1448.

The Bid Packet and Contract Documents for this project may be examined at the following locations:

1. The City Clerk's Office, 16 W. 9th Street, Shawnee, OK 74802-1448.
2. Cowan Group Engineering, 7100 N. Classen, Suite 500, Oklahoma City, OK 73116

Hard copy plans and specifications may be obtained by the prospective bidders at these locations for \$100.00. No documents will be mailed until payment is received in full.

Complete digital project bidding documents are available for a non-refundable fee of \$50.00 by going to www.cowangroup.co, navigating to the Bid Documents page, and by entering Quest Project #8514939 on the website's project search page. Please contact QuestCDN.com at 952.233.1632 or info@questcdn.com for assistance in free membership registration, downloading and working with this digital project information.

Each bidder shall accompany his original bid, filed with the City Clerk's Office with a certified or Cashier's Check on a solvent bank located in Oklahoma, or a Bidder's Bond, in the amount of five (5) percent of the amount bid, as a guarantee of his ability to perform the contract bid upon, and that he will enter into a written contract with the Owner to perform said work and/or furnish said materials in accordance with said Plans and Specifications and furnish the required bonds according to the Public Competitive Bidding Act of 1974.

The Owner will retain the deposit for liquidated damages in case the successful bidder fails to enter in said contract and furnish the required bonds provided for in the specifications within the time required. Deposit of the unsuccessful bidders will be returned upon the execution of the Contract and required bonds.

Each bidder shall accompany his bid with a sworn statement in writing that the bidder has not directly or indirectly entered into an agreement, expressed or implied, with any other bidder concerning the price or amount of such bid or any bids, the limiting of the bids or bidders, the paying to anyone any money for promotion expenses, the parceling or farming out to any bidder or bidders or other persons of any part of the contract or any part of the subject matter of the bid or of the profits thereof.

Construction, Maintenance and Statutory Payment Bonds in the amount of 100% of the contract price are required for this project. These bonds must be obtained from a Corporate Surety licensed in Oklahoma and approved by the Owner and Consulting Engineer. The bidder shall state in the proposal the name and address of the Surety or Sureties who will sign this bond in case the contract is awarded. The Maintenance Bond required will guarantee the repair of all damage due to improper materials or workmanship for a period of one (1) year after the acceptance of the work by the Owner.

This project is to be financed by the ARPA grant program managed by the Oklahoma Water Resources Board (OWRB) and shall be referred to as Project No. ARP-23-0026-G. The following requirements and regulations must be complied with:

- A. "Equal Opportunity in Employment: All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age or physical handicap. Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended."
- B. "Each bidder must fully comply with the requirements, terms and conditions of the Environmental Protection Agency's Disadvantaged Business Enterprise Requirements, which have been adopted for the OWRB ARPA program, and include employing the six (6) good faith efforts and soliciting disadvantaged business enterprises during the performance of this contract. Requirements are contained in OWRB's Guidance and Procedures, ARP-267. The bidder commits itself to following the good faith efforts to solicit disadvantaged business enterprises contained herein and all other requirements, terms, and conditions of these bid conditions by submitting a properly signed bid."
- C. **If the total project cost exceeds \$10,000,000 (ten million dollars)** "Davis Bacon Act wage rules shall apply. All laborers and mechanics employed by contractors and sub- contractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of Chapter 31 of Title 40, United States Code and 29 CFR parts 1,3, and 5. The Department of Labor provides all pertinent information related to compliance with labor standards, including prevailing wage rates and instructions for reporting. More information is available at <http://www.sam.gov/>" and <https://www.dol.gov/agencies/whd/government-contracts/construction>
- D. System for Award Management (SAM) registration is required for all Applicants and Awardees (Entities, Prime Contractors, Subcontractors, Vendors) in order to receive funds from the ARPA program. SAM replaced the Central Contractor Registration/Federal Agency Registration, Online Representations and Certifications Application, and Excluded Parties List System. Applicants and awardees are required to complete a one-time free registration to provide basic information relevant to procurement and financial transactions. On April 4, 2022, the unique entity identifier used across the federal government changed from the DUNS Number to the Unique Entity ID (generated by SAM.gov). Registrants must retain an active status to be eligible for ARPA funding. Applicants and Awardees can go to SAM.gov to complete the registration process.

The bids filed with the City Clerk's Office will be opened and considered by the Owner, at a meeting to be held in The City of Shawnee County Clerk's Office, 16 W. 9th Street, Shawnee, OK 74802-1448 Pottawatomie County on the 21st day of August 2023. Bids received more than ninety-six (96) hours prior to the Bid Opening will be returned.

The contract is to be awarded to the lowest, responsive, responsible bidder. The Owner reserves the right to correct any non-material clerical errors in the bidding as allowed under Oklahoma Law. The Owner reserves the right to reject any and all bids in accordance with the Oklahoma Public Competitive Bidding Act of 1974. Conditional bids shall not be accepted.

A pre-bid conference will be held on this project at: City of Shawnee, County Clerk's Office on the 10th day of August, 2023.

Approved on this ____ day of _____, 20____

Andrea Weckmueller-Behringer, City Manager

Information for Bidders

Notice is hereby given that the City of Shawnee (hereinafter called the "Owner") will receive sealed bids at the City Clerk's Office, 16 W. 9th Street, Shawnee, Pottawatomie County, Oklahoma until the 10th day of August , 2023, for the Independence Avenue Waterline.

This project is to be financed by the ARPA grant program managed by the Oklahoma Water Resources Board (OWRB) and shall be referred to as Project No. ARP-23-0026-G. The following requirements and regulations must be complied with:

- A. "Equal Opportunity in Employment: All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age or physical handicap Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended."
- B. " Each bidder must fully comply with the requirements, terms, and conditions of the Environmental Protection Agency's Disadvantaged Business Enterprise Requirements, which have been adopted for the OWRB ARPA program, and include employing the six (6) good faith efforts and soliciting disadvantaged business enterprises during the performance of this contract. Requirements are contained in OWRB's Guidance and Procedures, ARP-267. The bidder commits itself to following the good faith efforts to solicit disadvantaged business enterprises contained herein and all other requirements, terms, and conditions of these bid conditions by submitting a properly signed bid."
- C. **If the total project cost exceeds \$10,000,000 (ten million dollars)** "Davis Bacon Act wage rules shall apply. All borers and mechanics employed by contractors and sub-contractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of Chapter 31 of Title 40, United States Code and 29 CFR parts 1,3, and 5. The Department of Labor provides all pertinent information related to compliance with labor standards, including prevailing wage rates and instructions for reporting. More information is available at <https://www.dol.gov/agencies/whd/government-contracts/construction> and <http://www.sam.gov/>"
- D. System for Award Management (SAM) registration is required for all Applicants and Awardees (Entities, Prime Contractors, Subcontractors, Vendors) in order to receive funds from the ARPA program. SAM replaced the Central Contractor Registration/Federal Agency Registration, Online Representations and Certifications Application, and Excluded Parties List System. Applicants and awardees are required to complete a one-time free registration to provide basic information relevant to procurement and financial transactions. On April 4, 2022, the unique entity identifier used across the federal government changed from the DUNS Number to the Unique Entity ID (generated by SAM.gov). Registrants must retain an active status to be eligible for ARPA funding. Applicants and Awardees can go to SAM.gov to complete the registration process.

Each sealed envelope containing a bid must be plainly marked on the outside as "Bid for Independence Avenue Waterline", and the envelope should bear on the outside the bidder's name, address, and license number (if applicable). If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to the Owner at: City of Shawnee, City Clerk's Office, P.O. Box 1448, Shawnee, OK 74802-1448.

All bids must be made on the required bid form, where all blank spaces for bid prices must be filled in, in ink or typewritten. The bid form must be fully completed and executed when submitted. Only one copy of the bid form is required. The Owner may waive any informalities or minor defects or reject any and all bids as allowed under Oklahoma Law. Any bid may be withdrawn prior to the above scheduled time for bid opening, or authorized postponement thereof. Bids received more than ninety-six (96) hours before the time specified, or those received after the time set for bid opening will not be considered and will be returned unopened. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the Owner and the bidders.

Bidders must satisfy themselves of the accuracy of estimated quantities in the bid proposal by review of the Plans and Specifications, including any existing addenda, and by examination of the project site. Once a bid is submitted, the bidder shall not assert that there was a misunderstanding concerning the quantities or the nature of work to be performed. The failure or omission of any bidder to do any of the foregoing shall in no way relieve any bidder from any obligation in respect to its bid.

Prior to bidding, the Owner shall provide to the bidders all pertinent information that delineates and describes the land owned and rights-of-way acquired or to be acquired.

The Contract Documents contain the provisions required for the construction of the product. Information obtained from an officer, agent, or employee of the Owner or any other person shall not affect the risks or obligations assumed by the contractor or relieve the contractor from fulfilling any of the conditions of the contract.

Each bid exceeding \$100,000 must be accompanied by a Bid Bond for five percent of the total amount of the bid and payable to the Owner. A certified check may be used in lieu of the Bid Bond. As soon as the bid prices have been compared, the Owner will return the bonds of all except the three lowest responsive, responsible bidders. The bid securities of the successful bidder and the two remaining unsuccessful bidders will be returned upon Owner's approval of the successful bidder's executed certificate of insurance and construction bonds.

Construction bonds (Performance, Statutory, and Maintenance) in the amount of 100 percent with a corporate surety approved by the Owner will be required for the faithful performance of the contract. Attorneys-in-fact who sign bid and construction bonds must file with each bond a certified and effective dated copy of their Power-of-Attorney.

The Owner shall award a contract to the lowest, responsive, responsible bidder or bidders within thirty (30) calendar days after bid opening. The Owner may extend the award period not to exceed fifteen (15) calendar days by formal recorded action and for good cause. The time may be extended further by mutual agreement between the Owner and the bidder per O.S. Title 61 Section 111, Public Competitive Bidding Act of 1974 (PCBA).

The Notice of Award shall be accompanied by the necessary contract, bonds, and insurance. In the event of failure of the bidder to execute the contract, the Owner may consider the bidder in default, in which case the Bid Bond accompanying the proposal shall become the property of the Owner.

The party to whom the contract is awarded will be required to execute the contract and obtain the construction bonds (Performance, Statutory and Maintenance) and certificate of insurance within 30 calendar days (not to exceed 60 days) from the date when the Notice of Award is delivered to the bidder. The time may be extended further by mutual agreement between the Owner and the bidder per O.S. Title 61 Section 113 (PCBA).

With an acceptable contract, bonds and certificate of insurance signed by the party to whom the Contract was awarded, the Owner shall sign the contract and return to such party an executed duplicate. Should the Owner not execute the contract within the agreed upon period, the bidder may by written notice withdraw the signed contract. Such notice of withdrawal shall be effective upon its receipt by the Owner.

The Owner shall issue the Notice to Proceed after the execution of the contract, approval of bonds and certificate of insurance. If the Notice to Proceed has not been issued within the agreed upon period, the contractor may terminate the contract without further liability on the part of either party.

The Owner may make such investigations as deemed necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of such bidders fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

A conditional or qualified bid will not be accepted. Tied bids are non-restrictive, and in order for a tied bid to be accepted it must be lower than the sum of low separate bids.

All applicable laws, ordinances, rules, and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout. The successful bidder will be required to meet all requirements of the Underground Facilities Damage Prevention Act when engaged in work within public rights-of-way.

When using alternate bids, they will be listed in numerical order, with the highest priority being number one, the second highest priority being number two, etc. The lowest bidder will be determined by comparing all bids that contain the selected alternates and computing the total value of the base bid plus the alternates.

All bidders and owners shall comply with the Oklahoma PCBA of 1974.

The awarded bidder shall supply the names and addresses of all subcontractors and material suppliers when required to do so by the Owner.

To avoid bypassing of raw sewage during construction, the contractor shall use the methods and/or schedule(s) described in Section 33 11 00 of these Specifications, or the method(s) and/or schedule(s) described as follows:

The Contractor will be required to begin work within 15 calendar days of the date shown on the Notice to Proceed. The time for completion is 180 calendar days. Liquidated damages will be \$ 500 per calendar day.

In the event of a conflict between the Plans and the Specifications, the Specifications will govern.

The following items, included in this Bid Packet, shall be submitted along with the bid:

- Bid Proposal
- Bid Bond
- Non-Collusion Affidavit
- Business Relationship Affidavit
- Contractor's Statement about Equal Opportunity (ARP-211)
- Contractor's Certificate of Non-Segregated Facilities (ARP-212)
- Sub-Contractor's Certificate of Non-Segregated Facilities (ARP-212a)
- Bidder's/Supplier's List (ARP-249)
- Subcontractor Performance form (ARP-6100-3)
- Subcontractor Utilization form (ARP-6100-4)
- DBE documentation (if applicable)
- Statement of Qualifications

The consulting engineer is Cowan Group Engineering. The consulting engineer's contact person for this project is Michael Taylor, PE, with phone number 405.463.3369 and email michael@cowangroup.co.

BID PROPOSAL FORM

CITY OF SHAWNEE **BID NOTICE: ARP 23-0026-G**

THE UNDERSIGNED BIDDER, having examined the plans, specifications, the locations, arrangements, and conditions of roads, street, utilities and other facilities or appurtenances which affect or may be affected by the proposed work, the actual sites of the proposed improvements and being acquainted with and fully understanding: (1) the extent and character of the work covered by this proposal; (2) the locations and specified requirements of and for the proposed improvements and other items of work appurtenant thereto; and (3) the normal existing and probable construction difficulties, hazards or all other factors or conditions which may or may not be apparent, which may affect or be affected by the specified work.

HEREBY PROPOSES to furnish all required materials, supplies, equipment, tools, and plant; to perform all necessary labor; and to construct, erect, equip, and complete all work stipulated in, required by, and in accordance with the contract documents hereto attached and the specifications referred to therein (as altered, changed, or modified by any and all addenda thereto), for and in connection with the Contract for which this proposal is herein submitted for and in consideration of the prices set out herein.

The undersigned bidder hereby agrees to furnish the required Performance Bond, Statutory Bond, Maintenance Bond, and evidence of insurance and to enter into a contract within fifteen (15) days after the acceptance of this proposal, and further agrees to complete the work in **180** days (stipulated in the Contract Agreement) from the date of the issuance by the City's Engineer of a Work Order authorizing commencement of work.

Attached hereto is a Certified Check, Cashier's Check or Bidder's Surety Bond in the amount of: _____ DOLLARS \$ _____ which the undersigned agrees is to be forfeited to and become the property of the City of Shawnee, as liquidated damages, should this proposal be accepted and the Contract be awarded to him, he fails to enter into a Contract in the form prescribed and to furnish the required bonds and evidence of insurance within fifteen (15) days as above stipulated, but otherwise the proposal guarantee shall be returned to the undersigned upon the signing of the Contract and delivery of the approved bonds and evidence of insurance to the City of Shawnee.

DATED this _____ day of _____ 20 _____.

Signature: _____

Name and Title: _____

Company: _____ Circle One: Corporation Partnership Individual

Address: _____

Phone: _____ Fax: _____

E-mail Address: _____

Federal Tax I.D. _____

Attest: _____

Secretary

Corporate Seal

(if applicable)

INDEPENDENCE AVENUE WATERLINE

BID SCHEDULE: ARP 23-0026-G

BASE BID

ITEM NO.	ITEM	UNIT	QTY	UNIT PRICE	TOTAL COST
1	MOBILIZATION	LS	1		
2	CLEARING AND GRUBBING	LS	1		
3	SOLID SLAB SOD	SY	310		
4	STORMWATER POLLUTION PREVENTION PLAN	LS	1		
5	16" STEEL CASING (BORE)	LF	114		
6	8" HDPE DR-11 WATERLINE (BORE)	LF	201		
7	12" HDPE DR-11 WATERLINE (HDD)	LF	3,799		
8	6" HDPE DR-11 WATERLINE (TRENCHING)	LF	21		
9	8" HDPE DR-11 WATERLINE (TRENCHING)	LF	118		
10	12" HDPE DR-11 WATERLINE (TRENCHING)	LF	146		
11	6" GATE VALVE & BOX	EA	11		
12	8" GATE VALVE & BOX	EA	4		
13	12" GATE VALVE & BOX	EA	12		
14	1" AIR RELIEF VALVE	EA	4		
15	6"X6" TAPPING SLEEVE & VALVE W/ BOX	EA	9		
16	8"X8" TAPPING SLEEVE & VALVE W/ BOX	EA	1		
17	12"X12" TAPPING SLEEVE & VALVE W/ BOX	EA	1		
18	HDPE WALL ANCHOR	EA	10		
19	FIRE HYDRANT ASSEMBLY	EA	10		
20	MECHANICAL JOINT FITTINGS	LB	5,157		
21	WATER SERVICE RECONNECTION (SHORT)	EA	11		
22	WATER SERVICE RECONNECTION (LONG)	EA	11		
23	LEAD SERVICE REPLACEMENT (SHORT)	EA	1		
24	LEAD SERVICE REPLACEMENT (LONG)	EA	1		
25	REMOVE & REPLACE CONCRETE PAVEMENT	SY	10		
26	REMOVE & REPLACE CONCRETE DRIVE	SY	60		
27	REMOVE & REPLACE ASPHALT PAVEMENT	SY	100		
28	REMOVE & REPLACE CONCRETE SIDEWALK	SY	145		
29	REMOVE & REPLACE INLET STRUCTURE	EA	1		
30	REMOVE EXISTING FIRE HYDRANT	EA	9		
31	CONSTRUCTION SIGNING AND TRAFFIC CONTROL	LS	1		
32	TEMPORARY EROSION AND SEDIMENT CONTROL	LS	1		
33	PRESSURE AND LEAKAGE TESTING	LS	1		
34	DISINFECTION AND TESTING	LS	1		
TOTAL					

ADD. ALT. 1

ITEM NO.	ITEM	UNIT	QTY	UNIT PRICE	TOTAL COST
1	MOBILIZATION	LS	1		
2	CLEARING AND GRUBBING	LS	1		
3	SOLID SLAB SOD	SY	20		
4	STORMWATER POLLUTION PREVENTION PLAN	LS	1		
5	12" HDPE DR-11 WATERLINE (HDD)	LF	991		
6	8" HDPE DR-11 WATERLINE (TRENCHING)	LF	3		
7	12" HDPE DR-11 WATERLINE (TRENCHING)	LF	8		
8	6" GATE VALVE & BOX	EA	1		
9	8" GATE VALVE & BOX	EA	1		
10	12" GATE VALVE & BOX	EA	2		
11	8"X8" TAPPING SLEEVE & VALVE W/ BOX	EA	1		
12	HDPE WALL ANCHOR	EA	4		
13	FIRE HYDRANT ASSEMBLY	EA	1		
14	MECHANICAL JOINT FITTINGS	LB	281		
15	REMOVE & REPLACE ASPHALT PAVEMENT	SY	11		
16	REMOVE & REPLACE CONCRETE SIDEWALK	SY	10		
17	REMOVE EXISTING FIRE HYDRANT	EA	1		
18	CONSTRUCTION SIGNING AND TRAFFIC CONTROL	LS	1		
19	TEMPORARY EROSION AND SEDIMENT CONTROL	LS	1		
20	PRESSURE AND LEAKAGE TESTING	LS	1		
21	DISINFECTION AND TESTING	LS	1		
TOTAL					

ADD. ALT. 2

ITEM NO.	ITEM	UNIT	QTY	UNIT PRICE	TOTAL COST
1	MOBILIZATION	LS	1		
2	CLEARING AND GRUBBING	LS	1		
3	SOLID SLAB SOD	SY	30		
4	STORMWATER POLLUTION PREVENTION PLAN	LS	1		
5	12" HDPE DR-11 WATERLINE (HDD)	LF	1,161		
6	8" HDPE DR-11 WATERLINE (TRENCHING)	LF	19		
7	12" HDPE DR-11 WATERLINE (TRENCHING)	EA	2		
8	6" GATE VALVE & BOX	EA	2		
9	8" GATE VALVE & BOX	EA	1		
10	12" GATE VALVE & BOX	EA	4		
11	8"X8" TAPPING SLEEVE & VALVE W/ BOX	EA	2		
12	HDPE WALL ANCHOR	LB	317		
13	FIRE HYDRANT ASSEMBLY	EA	15		
14	MECHANICAL JOINT FITTINGS	EA	12		
15	REMOVE & REPLACE ASPHALT PAVEMENT	SY	40		
16	REMOVE & REPLACE CONCRETE SIDEWALK	SY	20		
17	REMOVE EXISTING FIRE HYDRANT	EA	2		

18	CONSTRUCTION SIGNING AND TRAFFIC CONTROL	LS	1		
19	TEMPORARY EROSION AND SEDIMENT CONTROL	LS	1		
20	PRESSURE AND LEAKAGE TESTING	LS	1		
21	DISINFECTION AND TESTING	LS	1		
TOTAL					

ALL ITEMS TO INCLUDE ALL APPURTENANCES NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM AS DESCRIBED IN THE PLANS AND SPECIFICATIONS.

TOTAL BASE BID \$ _____

TOTAL BASE BID IN WORDS _____

ALT 1.

TOTAL ALT. 1 BID \$ _____

TOTAL ALT. 1 BID IN WORDS _____

ALT 2.

TOTAL ALT. 2 BID \$ _____

TOTAL ALT. 2 BID IN WORDS _____

Bidder's Statement about: Equal Opportunity Clause (ARP-211)

Mark one:

- ☐ I have participated in previous contract(s) or subcontract(s) subject to the equal opportunity clause under Executive Orders 11246 and 11375 or preceding Executive Orders 10925 and 11114. I have filed all reports due under the requirements contained in 40 CFR, Part C, 8.11.
- ☐ I have not participated in previous contract(s) subject to the equal opportunity clause under Executive Orders 11246 and 11375 or preceding Executive Orders 10925 and 11114.

- ☐ I will obtain a similar statement from any proposed subcontractor(s), when appropriate.

Bidder's Statement about: Non-Segregated Facilities (ARP-212 and ARP-212a)

- ☐ I hereby certify that I do not and will not maintain any facilities provided for my employees in a segregated manner or permit my employees to perform their services at any location under my control where segregated facilities are maintained; and that I will obtain a similar certification prior to the award of any subcontract exceeding \$10,000 which is not exempted from the equal opportunity clause.

Bidder's Statement about: Bonds

- ☐ I hereby certify that I will obtain and provide a Bid Bond along with my Bid.
- ☐ I hereby certify that, in the event of being awarded a Contract, I will provide a Performance Bond for 100% of the contract amount.
- ☐ I hereby certify that, in the event of being awarded a Contract, I will provide a Statutory/Payment Bond for 100% of the contract amount.
- ☐ I hereby certify that, in the event of being awarded a Contract, I will provide a Maintenance Bond for at least 1 year after construction completion, and 100% of the contract amount

Bidder's Statement about: sam.gov registration

Mark one:

- ☐ I have registered in SAM.gov and my status is "active".
- ☐ I am not currently registered in SAM.gov, but I will be registered and holding an "active" status prior to the beginning of any construction.

- ☐ I certify that I will actively review the SAM.gov status of all of the subcontractors in this work to verify they are registered and their status is "active".

Bidder's Statement about: Davis Bacon Act

If the total project cost exceeds \$10,000,000 (ten million dollars):

- ☐ I hereby certify that all of my employees will be paid according to the Davis Bacon Act.

Name and Title of Prospective Prime Contractor's Representative

Signature of Prospective Prime Contractor's Representative

Name and address of Prospective Prime Contractor

AFFIDAVITS

State of _____ ss.
County of _____

_____, of lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by the bidder to submit the attached bid.

Non-Collusion

Affiant further states that the bidder has not been a party to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or with any government official or employee as to quantity, quality, or price in the prospective contract, or any other terms of said prospective contract; or in any discussions between bidders and any government official concerning exchange of money or other value for special consideration in the letting of a contract; that the bidder/contractor had not paid, given or donated or agreed to pay, give or donate to any officer or employee of the _____ (or other entity) any money or other thing of value, either directly or indirectly in the procurement of a contract or pursuant to this bid.

Business Relationships

Affiant further states that the nature of any partnership, joint venture, or other business relationship presently in effect or which existed within one (1) year prior to the date of this statement with the architect, engineer, or other party to the project is as follows:

Affiant further states that any such business relationship presently in effect or which existed within one (1) year prior to the date of this statement between any officer or director of the bidding company and any officer or director of the architectural or engineering firm or other party to the project is as follows:

Affiant further states that the names of all persons having any such business relationships and the positions they hold with their respective companies or firms are as follows:

If none of the business relationship herein above mentioned exists, affiant should so state.

Subscribed and sworn to before me this ____ day of _____, 20 ____.

Notary Public Signature

My Commission Expires: _____

ARP-249 BIDDERS/SUPPLIERS LIST

To be completed by Project Owner with documentation from all bidding Prime Contractors & Subcontractors
(List of all firms that bid or quote on Prime Contracts and Subcontracts on the project including Services and Supplies)

Project Name: _____ OWRB Project Number: ARP- ____ - ____ - ____

Company Name:	
Address:	
Contact Name:	
Phone:	
Email:	
Quote/Bid Amount (\$)	
Date:	
Utilized: Yes No	If <u>utilized</u> and >\$10,000 then ARP 212a form is required (from all subcontractors and suppliers).
DBE: Yes No	If <u>yes</u> , MBE or WBE? _____ Check one: Construction _____ Equipment _____ Services _____ Supplies _____ ARP 6100-3 form is <u>required</u> for all DBEs that bid/quote, even if not utilized. <u>Submit with Bidders List</u> . If <u>utilized</u> submit the following with Bidders List: - A copy of the companies MBE or WBE certificate is <u>required</u>. - ARP 6100-4 form is also <u>required</u>.

Company Name:	
Address:	
Contact Name:	
Phone:	
Email:	
Quote/Bid Amount (\$)	
Date:	
Utilized: Yes No	If <u>utilized</u> and >\$10,000 then ARP 212a form is required (from all subcontractors and suppliers).
DBE: Yes No	If <u>yes</u> , MBE or WBE? _____ Check one: Construction _____ Equipment _____ Services _____ Supplies _____ ARP 6100-3 form is <u>required</u> for all DBEs that bid/quote, even if not utilized. <u>Submit with Bidders List</u> . If <u>utilized</u> submit the following with Bidders List: - A copy of the companies MBE or WBE certificate is <u>required</u>. - ARP 6100-4 form is also <u>required</u>.

Company Name:	
Address:	
Contact Name:	
Phone:	
Email:	
Quote/Bid Amount (\$)	
Date:	
Utilized: Yes No	If <u>utilized</u> and >\$10,000 then ARP 212a form is required (from all subcontractors and suppliers).
DBE: Yes No	If <u>yes</u> , MBE or WBE? _____ Check one: Construction _____ Equipment _____ Services _____ Supplies _____ ARP 6100-3 form is <u>required</u> for all DBEs that bid/quote, even if not utilized. <u>Submit with Bidders List</u> . If <u>utilized</u> submit the following with Bidders List: - A copy of the companies MBE or WBE certificate is <u>required</u>. - ARP 6100-4 form is also <u>required</u>.

STATEMENT OF QUALIFICATIONS:

Bidder

Address

Similar Projects Completed by Bidder:

1. NAME OF PROJECT: _____
OWNER: _____ ADDRESS: _____
DATE STARTED: _____ DATE COMPLETED: _____
APPROX. QUANTITIES OF MAJOR ITEMS: _____

VALUE OF CONTRACT: _____
2. NAME OF PROJECT: _____
OWNER: _____ ADDRESS: _____
DATE STARTED: _____ DATE COMPLETED: _____
APPROX. QUANTITIES OF MAJOR ITEMS: _____

VALUE OF CONTRACT: _____
3. NAME OF PROJECT: _____
OWNER: _____ ADDRESS: _____
DATE STARTED: _____ DATE COMPLETED: _____
APPROX. QUANTITIES OF MAJOR ITEMS: _____

VALUE OF CONTRACT: _____
4. OTHER PROJECT REFERENCES: _____

NOTE: THIS FORM IS TO BE RETURNED WITH THE BID.

BID BOND

We, the undersigned, _____, as Principal, and _____, as Surety, are hereby held and firmly bound unto **City of Shawnee**, as Owner, in the penal sum of _____ for the payment of which, well and truly to be made, hereby jointly and severally bind ourselves, our successors and our assigns.

Signed this _____ day of _____, _____.

The condition of the above obligation is such that, whereas the Principal has submitted to **City of Shawnee**, a certain bid, attached hereto and hereby made a part hereof, to enter into a contract, in writing, for the **Independence Avenue Waterline**;

NOW, THEREFORE, if said bid shall be rejected or if said bid shall be accepted and the Principal shall execute and deliver a contract in the form of the contract attached hereto (properly completed in accordance with said bid) and shall furnish a bond for faithful performance of said contract and for the payment of all persons performing labor or furnishing materials in connection therewith and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void; otherwise, the same shall remain in force and effect, it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bonds shall in no way be impaired or affected by any extension of the time within which the Owner may accept such bid and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers the day and year first set forth above.

Principal

Surety

By:_____

ATTEST: (if by corporation)

Type Name & Title

Corporate Seal

NOTE: THIS FORM IS TO BE RETURNED WITH THE BID.

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____,
hereinafter called the Principal, and the _____
of, _____, a corporation duly organized under the laws of the State
of _____, hereinafter called the Surety, as Surety, are held and firmly bound unto the City of
Shawnee, hereinafter call the Obligee, in the sum of _____
Dollars (\$_____), for the payment of which sum well and truly to be made, the said Principal
and the said Surety, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and
severally, firmly by these presents.

WHEREAS, said Principal entered into a written Contract with said Obligee dated _____,
for Independence Avenue Waterline, all in compliance with the plans and specifications therefore, made a part of
said Contract and on file in the office of Cowan Group Engineering, LLC, 7100 N. Classen Blvd., Suite 500, Oklahoma
City, OK 73116.

WHEREAS, this bond is given in compliance with Title 61, Oklahoma Statutes 2001, Section 113(B)(3).

NOW THEREFORE, if said Principal shall pay or cause to be paid to Obligee all damage, loss, and expense which
may result by reason of defective materials and/or workmanship in connection with said work, occurring within a
period of one (1) year after acceptance of said project by Obligee; and if Principal shall pay or cause to be paid all
labor and materials, including the prime contractor and all subcontractors; and if Principal shall save and hold Obligee
harmless from all damages, loss, and expense occasioned by, or resulting from, any failure whatsoever of said
Principal, then this obligation shall be null and void, otherwise to be and remain in full force and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alternations in said Contract
and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or
any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, this instrument is executed in 4 counterparts, each of which shall be deemed an original,
this ____ day of _____, 2023.

WITNESS AS TO PRINCIPAL ((PRINCIPAL
BY: _____

WITNESS AS TO SURETY ((SURETY
BY: _____
ATTORNEY-IN-FACT

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list
(Circular 570 as amended) and be authorized to transact business in the State of Oklahoma. Attach a certified Copy
of the Power of Attorney.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____,
hereinafter called the Principal, and the _____
of, _____, a corporation duly organized under the laws of the State
of _____, hereinafter called the Surety, as Surety, are held and firmly bound unto the City of
Shawnee, hereinafter call the Obligee, in the sum of _____
Dollars (\$_____), for the payment of which sum well and truly to be made, the said Principal
and the said Surety, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and
severally, firmly by these presents.

WHEREAS, said Principal entered into a written Contract with said Obligee dated _____,
for Independence Avenue Waterline, all in compliance with the plans and specifications therefore, made a part of
said Contract and on file in the office of Cowan Group Engineering, 7100 N. Classen Blvd., Suite 500, Oklahoma
City, OK 73116.

WHEREAS, this bond is given in compliance with Title 61, Oklahoma Statutes 2001, Section 113(B)(2).

NOW THEREFORE, if said Principal shall, in all particulars, well, truly and faithfully perform and abide by said
Contract and each and every covenant, condition, and part thereof, and shall fulfill all obligations resting upon said
Principal by the terms of said Contract and said specifications, and if said Principal shall protect and save harmless
said Obligee from any pecuniary loss resulting from the breach of any of the items, covenants and conditions of said
Contract resting upon said Principal, the this obligation shall be null and void, otherwise to be and remain in full force
and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alternations in said Contract
and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or
any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, this instrument is executed in 4 counterparts, each of which shall be deemed an original,
this ____ day of _____, 2023.

_____	(	_____
	(	PRINCIPAL
WITNESS AS TO PRINCIPAL	(	
	BY: _____	
_____	(	_____
	(	SURETY
WITNESS AS TO SURETY	(	
	(	BY: _____
	(	ATTORNEY-IN-FACT

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list
(Circular 570 as amended) and be authorized to transact business in the State of Oklahoma. Attach a certified Copy
of the Power of Attorney.

STATUTORY BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____,
hereinafter called the Principal, and the _____
of, _____, a corporation duly organized under the laws of the State
of _____, hereinafter called the Surety, as Surety, are held and firmly bound unto the City of
Shawnee, hereinafter call the Obligee, in the sum of _____
Dollars (\$_____), for the payment of which sum well and truly to be made, the said Principal
and the said Surety, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and
severally, firmly by these presents.

WHEREAS, said Principal entered into a written Contract with said Obligee dated _____,
for Independence Avenue Waterline, all in compliance with the plans and specifications therefore, made a part of
said Contract and on file in the office of Cowan Group Engineering, LLC, 7100 N. Classen Blvd., Oklahoma City, OK
73116.

WHEREAS, this bond is given in compliance with Title 61, Oklahoma Statutes 2001, Sections 1 and 113(B)(1).
NOW THEREFORE, if said Principal shall fail or neglect to pay all indebtedness incurred by said Principal or
subcontractors of said Principal who perform work in the performance of such contract, for labor and materials and
repairs to and parts for equipment used and consumed in the performance of said contract after the same becomes
due and payable the person, firm, or corporation entitled thereto may sue and recover on this bond, the amount so
due and unpaid.

It is further expressly agreed and understood by the parties hereto that no changes or alternations in said Contract
and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or
any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, this instrument is executed in 4 counterparts, each of which shall be deemed an original,
this ____ day of _____, 2023.

_____	(	_____
WITNESS AS TO PRINCIPAL	(	PRINCIPAL
	(	
	BY:	_____

_____	(	_____
WITNESS AS TO SURETY	(	SURETY
	(	
	BY:	_____
	(	ATTORNEY-IN-FACT

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list
(Circular 570 as amended) and be authorized to transact business in the State of Oklahoma. Attach a certified
Copy of the Power of Attorney

APPLICATION AND CERTIFICATE FOR PAYMENT

PROJECT: INDEPENDENCE AVENUE WATERLINE
TO: (OWNER): CITY OF SHAWNEE

ENGINEER: Cowan Group Engineering, LLC

CONTRACTOR:

CONTRACT FOR:

APPLICATION DATE:

APPLICATION NO:

PERIOD FROM:

TO:

CHANGE ORDER SUMMARY

Application is made for Payment, as shown below, in connection with the Contract. The present status of the account for this Contract is as follows:

Change Orders approved		ADDITIONS \$	DEDUCTIONS \$		
in previous months by				ORIGINAL CONTRACT SUM	\$ _____
Owner					
TOTAL				Net change by Change Orders	\$ _____
Subsequent Change Orders					
No. Approved				CONTRACT SUM TO DATE	\$ _____
(Date)				TOTAL COMPLETED TO DATE	\$ _____
				RETAINAGE _____%	\$ _____
				TOTAL EARNED LESS RETAINAGE	\$ _____
				LESS PREVIOUS CERTIFICATES FOR PAYMENT	\$ _____

TOTALS

Net change by Change Orders \$ _____

CURRENT PAYMENT DUE \$ _____

The undersigned Contractor certifies that the work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by him for work for which previous Certificates for Payment were issued and payments received from the Owner, and that the current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

In accordance with the Contract Documents, based on on-site observations and the data comprising the above application, the Engineer certifies to the Owner that to the best of the Engineer's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED. \$ _____

INSPECTOR:

ENGINEER:

OWNER:

By: _____

By: _____

By: _____

Item No.	Description of Item	Scheduled Quantities	Unit Price	<u>Quantities of Work Completed</u>				
				<u>Previous Applications</u>		<u>This Application</u>		Amount Completed to Date
				Quantities	Amount	Quantities	Amount	

Subtotal or Total

CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION.

TO OWNER: **City of Shawnee**
16 W. 9th Street
Shawnee, OK 74802-1448

PROJECT: Independence Avenue Waterline

CONTRACT DATED: _____

STATE OF: _____

COUNTY OF: _____

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered against any property of the Owner arising in any manner out of the performance of the Contract referenced above:

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

The following supporting documents should be attached hereto if required by Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens.

CONTRACTOR:
(Name and address)

BY: _____
(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn before me on this date:

Notary Public: _____

My Commission Expires: _____

CLAIM OR INVOICE AFFIDAVIT

State of _____ ss.
County of _____

The undersigned (engineer or supervisory official), of lawful age, being first duly sworn, on oath says that this (invoice, claim, or contract) is true and correct. Affiant further states that the (work, services, or materials) as shown by this invoice or claim have been (completed or supplied) in accordance with the plans, specifications, orders, or requests furnished to the affiant. Affiant further states that (s)he has made no payment, given, or donated or agreed to pay, give, or donate, either directly or indirectly, to any elected official, officer, or employee of the State of Oklahoma, of money or any other thing of value to obtain payment or the award of this contract.

Engineer/Supervisory Official signature

Subscribed and sworn to before me this ____ day of _____, 20 ____.

Notary Public signature

My Commission Expires: _____

NOTICE OF AWARD

Date: ____/____/____

Project: _____

Grant#: ARP-____-____-____

The _____ has considered the bid submitted by
Owner
_____ for the above referenced project in response to the
Contractor
Advertisement for Bids dated ____/____/____ and Information for Bidders. You are hereby notified
that your bid has been accepted for items in the amount of \$_____.

You are required per the Information for Bidders to execute the Agreement and furnish the required Contractor's Performance Bond, Statutory Bond, Maintenance Bond, and Certificate of Insurance within ____ calendar days from the date of this Notice. If you fail to provide these in the specified time, the Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

Owner's Authorized Representative signature

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged by _____,
Contractor's Representative name

Authorized Representative of _____
Contractor

Contractor's Authorized Representative signature

____/____/____
Date

AGREEMENT

This Agreement made this ____ day of _____, 20__ between _____
(hereinafter called the Owner) and _____ (hereinafter called the Contractor).

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The Contractor will commence and complete the work for:

_____.

2. The Contractor will furnish all of the materials, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the project described herein.

3. The Contractor will commence the work required by the Contract documents within ____ calendar days after the date of the Notice to Proceed and will complete the same within ____ calendar days unless the period for completion is extended otherwise.

4. The Contractor agrees to perform all the work described in the Contract documents and comply with the terms therein for the sum of \$ _____ or as shown in the Bid Schedule.

5. The term "Contract documents" means and includes the following:

- | | |
|---|-------------------------------------|
| (A) Advertisement for Bids | (I) Standard Requirements |
| (B) Information for Bidders | (J) Statutory Bond |
| (C) Bid Proposal | (K) Performance Bond |
| (D) Bid Schedule | (L) Maintenance Bond |
| (E) Business Relationships Affidavit | (M) Certificate of Insurance |
| (F) Non-collusion Affidavit | (N) Notice of Award |
| (G) Bid Bond | (O) Notice to Proceed |
| (H) Agreement | (P) Change Order |
| (Q) Drawings prepared by _____
Numbers ____ through ____ and dated ____ / ____ / ____. | |
| (R) Specifications prepared by _____, dated ____ / ____ / ____. | |
| (S) ADDENDA: | |
| No. _____, dated ____ / ____ / ____ | No. _____, dated ____ / ____ / ____ |
| No. _____, dated ____ / ____ / ____ | No. _____, dated ____ / ____ / ____ |

6. The Owner will pay to the Contractor in the manner and at such times as set forth in the Standard Requirements such amounts as required by the Contract documents.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

8. It is understood that the following are also required of the Contractor in performance of this contract:

- a. Liquidated damages for failure to complete the work within the time specified shall be assessed at the rate of \$_____ per day for each additional calendar day until the work is completed.
- b. Contractor shall comply with the Underground Facilities Damage Prevention Act (63 O.S. 42.1 et seq.).

IN WITNESS WHEREOF, the parties hereto have executed or caused to be executed by their duly authorized officials, this Agreement in _____ copies each of which shall be deemed an original on the date first above written.

Owner's Authorized Representative	Title	Signature	____/____/____ Date
Attested by	Title	Signature	____/____/____ Date
Contractor's Authorized Representative	Title	Signature	____/____/____ Date
Attested by	Title	Signature	____/____/____ Date

NOTICE TO PROCEED

Date: ____/____/____

Project: _____

Grant#: ARP-____-____-____

Notice is hereby given to _____ to commence work on the above
Contractor
referenced project on or before ____/____/____. In accordance with the Agreement dated
____/____/____, you are to complete the work within ____ consecutive calendar days. The date of
completion of all work is ____/____/____.

Owner's Authorized Representative signature

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by _____,
Contractor's Representative name

Authorized Representative of _____
Contractor

Contractor's Authorized Representative signature

____/____/____
Date

**CERTIFICATE OF APPROVAL OF CONTRACTS AND BONDS BY LOCAL
ATTORNEY**

I, the undersigned _____,
the duly authorized and acting legal representative of the _____,
after careful examination of the Contract between this Entity and
_____, and the surety bonds given by the contractor in
connection with the performance of said contract, do hereby certify that:

1. Each of the aforesaid agreements has been duly executed by the proper parties thereto, acting through their duly authorized representatives.
2. Said representatives have full power and authority to execute said agreements on behalf of the respective parties named therein.
3. The foregoing contract and surety bonds, as applicable, constitute valid and legally binding obligations upon the parties executing the same in accordance with the terms, conditions, and provisions thereof.

Dated this ____ day of _____, 20 ____.

Attorney's signature

Disadvantaged Business Enterprise Program (DBE) Guidance (ARP-267)

Important note: All OWRB ARPA information can be found at: <https://www.owrb.ok.gov/financing/grant/arpa.php>

The OWRB is administering the State of Oklahoma's ARPA funding for various wastewater and water quality projects. The ARPA program is federally funded, and one of the conditions of federal grant awards is for recipients and sub-recipients (i.e., prime contractors and subcontractors) make a good-faith effort to award a fair share of work to DBEs who are small business enterprises (SBEs), minority business enterprises (MBEs) and women's business enterprises (WBEs).

To ensure compliance with federal DBE requirements, both Grant Recipients (Project Owners) and Prime Contractors must undertake the good faith efforts to provide opportunities for DBE firms to participate in contracts. Federal regulations require evidence of the demonstration of the six good faith efforts in trying to achieve the DBE participation goals. The Oklahoma Department of Transportation has a Directory of Certified DBE Firms. This directory can be accessed at <https://okdot.gob2g.com/Default.asp>

Good Faith Efforts: EPA's Good Faith Efforts for the Clean Water State Revolving Fund (CWSRF) will be used for the OWRB ARPA grant program. The following good faith efforts will apply to all procurement categories involving ARPA funds (See Appendices A& B).

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For state and local government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For state and local government recipients, this will include dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the Small Business Administration (SBE) and the Minority Business Development Agency of the Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the above steps.

Please submit all information to:
Financial Assistance Division, OWRB
3800 North Classen Blvd, Oklahoma City, OK 73118
Phone: 405.530.8800, FAX: 405.530.8900
<http://www.owrb.ok.gov>

Disadvantaged Business Enterprise Program (DBE) Guidance

Demonstration of the Six Good Faith Efforts. See Appendices A & B for additional bidding instructions and contract administrative provisions.

A: Project Owners are required to create and maintain a bidders list in accordance with Subpart E of Part 33 of EPA's Disadvantaged Business Enterprise Program rule, (§ 33.501(b)). This requirement will be adopted for projects funded through the OWRB ARPA program. The list must include all firms that bid or quote on prime contracts, or bid or quote subcontracts, on competitively bid ARPA funded projects. The bidders list must only be kept until the project period for the identified grant has ended. The following information must be obtained from all prime and subcontractors and can be provided on Bidders List (ARP-249):

1. Entity's name with point of contact
2. Entity's mailing address, telephone number, and e-mail address
3. The procurement on which the entity bid or quoted, and when; and
4. Entity's status as an MBE/WBE or non-MBE/WBE

B: Project Owners are required to undertake good faith efforts. Steps 1 through 5 can be utilized during the project planning, design and/or pre-bidding phase, to assure that qualified DBE firms have procurement opportunities in construction, equipment, services, and supplies.

To provide procurement opportunities to DBE Firms, the Project Owner should undertake the following:

- Conduct pre-bid meetings to inform potential bidders/contractors about DBE requirements and provide guidance in undertaking the required good faith efforts.
- Use listings of certified DBEs from the U.S. Small Business Administration (SBA), Oklahoma Department of Transportation (ODOT), etc., to solicit DBE firms as prime contractors whenever they are potential candidates. Project Owners should advertise in minority, local and regional newspapers.
- Invite DBE firms, where appropriate, to meetings, conferences etc., to inform them of procurement opportunities and develop, where possible, reasonable contract and delivery schedules that encourage and facilitate participation by DBE's. This includes, whenever possible, a minimum of 30 calendar days for bids or request for proposals.
- Determine if a project can be broken down into smaller components/contracts to allow opportunity for DBE firms to bid both as prime-contractors and as sub-contractors.
- For projects broken down into smaller components (e.g., painting, roofing, excavation, pipe laying, etc.) ensure that the delivery schedules are reasonable.
- Encourage DBE firms, where appropriate, to apply as a consortium of DBEs, when a contract is too large for one of these firms to handle individually.
- Require prime contractor to complete ARP Form 6100-3 & ARP Form 6100-4 and submit with bid proposal to Project Owner.

C: Project Owners must require the prime contractor to undertake steps 1 through 5 of the Good Faith Efforts in providing DBE firms opportunity for sub-contracts.

Project Owner must provide the DBE Guidance (ARP-267) and associated forms to Prime Contractors for utilization of DBEs in the bidding documents.

**APPENDIX A: Project Owner, Prime Contractor and
Sub-Contractor Responsibilities**

EPA's Disadvantaged Business Enterprise Program rule applies to contract procurement actions funded in part by EPA assistance agreements awarded after May 27, 2008. The rule is found at Federal regulation Title 40, Part 33. Specific responsibilities are highlighted below.

Project Owner Responsibilities:

- Include OWRB's DBE guidance (ARP-267) in each contract with a primary contractor.
- Employ the six Good Faith Efforts during prime contractor procurement (§33.301).
- Require prime contractor to comply with the following prime contractor requirements of Title 40 Part 33:
 - a) To employ the six Good Faith Efforts steps in paragraphs (a) through (e) of § 33.301 if the prime contractor awards subcontracts (§ 33.301(f)).
 - b) To provide **ARP form 6100-2 – DBE Subcontractor Participation Form** to all DBE subcontractors (Optional submittal by subcontractors) (§ 33.302(e)).
 - c) To submit **ARP form 6100-3 – DBE Program Subcontractor Performance Form** and **ARP form 6100-4 – DBE Program Subcontractor Utilization Form with bid package or proposal.** (§ 33.302 (f) and (g)).
 - d) To pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the recipient (§ 33.302(a)).
 - e) To notify recipient in writing by its prime contractor prior to any termination of a DBE subcontractor for convenience by the prime contractor (§ 33.302(b)).
 - f) To employ the six good faith efforts described in § 33.301 if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason. (§ 33.302(c)).
 - g) To employ the six good faith efforts described in § 33.301 even if the prime contractor has achieved its fair share objectives under subpart D of Part 33. (§33.302(d)).
 - h) Provide Project Owner DBE participation achievements with bid proposal – this includes all information necessary for the Owner to complete the Bidders List (ARP-249). The Owner may allow the prime contractor to complete the Bidders List (ARP-249); however, the Owner is responsible for review and submittal.
- Maintain records documenting compliance with the requirements of Title 40 Part 33, including Bidders List (ARP-249) and documentation of the good faith efforts (§ 33.301(a)) by the project owner and prime contractor.

Prime Contractor Responsibilities:

- Employ the six Good Faith Efforts steps in paragraphs (a) through (e) of § 33.301 if the prime contractor awards subcontracts (§ 33.301(f)).

- Provide ARP form 6100-2 – *DBE Program Subcontractor Participation Form* and ARP form 6100-3 – *DBE Program Subcontractor Performance Form* to each DBE subcontractor as part of the bid conference and prior to opening of the contractor's bid or proposal (§ 33.302(e) and (f)). Complete ARP form 6100-4 – *DBE Program Subcontractor Utilization Form* (§ 33.302(g)).
- Submit to recipient with bid package or proposal the completed ARP form 6100-4, plus an ARP form 6100-3 for each DBE subcontractor used in the contractor's bid or proposal (§ 33.302(f) and (g)).
- Pay subcontractors for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the Project Owner (§ 33.302(a)).
- Notify the recipient in writing prior to prime contractor termination of a DBE subcontractor for convenience (§ 33.302(b)).
- Employ the six good faith efforts described in (§ 33.301) if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason. (§ 33.302(c)).
- Employ the six good faith efforts described in (§ 33.301) even if the prime contractor has achieved its fair share objectives under subpart D of Part 33. (§33.302(d)).
- Provide Project Owner DBE participation achievements with bid proposal. This includes information necessary for Owner's completion of the Bidders List (ARP-249).
- Maintain records documenting its compliance with the requirements of Title 40 Part 33, including Bidders List (ARP-249) and documentation of the good faith efforts (§ 33.301(a)) by the project owner and prime contractor.

Subcontractor Responsibilities:

- May submit ARP form 6100-2 – *DBE Subcontractor Participation Form* to Debra Bradford, EPA Region 6 DBE Coordinator (§ 33.302(e)). Submitted if concerns with EPA funded project (e.g., termination, late payment, etc.)
- Must complete ARP form 6100-3 – *DBE Program Subcontractor Performance Form* and submit it to the prime contractor soliciting services from the subcontractor prior to the opening of bids for the prime contract.

Summary of ARP Forms

ARP Form	Requirement	Provided By	Completed By	Submitted To
6100-2: DBE Subcontractor Participation Form	Project Owners required to have prime contractors provide form to Subcontractors	Prime Contractors to DBE Subcontractors	DBE Subcontractors if concerns with EPA funded project (e.g., termination, late payment, etc.)	EPA Region 6 DBE Coordinator, Debora Bradford
6100-3: DBE Subcontractor Performance Form	Project Owners required to have prime contractors provide form to Subcontractors	Prime Contractors to DBE Subcontractors	DBE Subcontractors with Prime Contractor's Signature. Completed when bidding on a job.	Project Owners as part of a bid or proposal package
6100-4: DBE Subcontractor Utilization Form	Project Owners required to have prime contractors complete the form	Project Owners to Prime Contractors	Prime Contractors to indicate the utilization of a DBE.	Project Owners as part of bid or proposal

APPENDIX B: TITLE 40 PART 33 SUBPART C—GOOD FAITH EFFORTS

§ 33.102 When do the requirements of this part apply?

The requirements of this part apply to procurement under ARPA Grant program agreements performed entirely within the United States, whether by a Project Owner or its prime contractor, for construction, equipment, services, and supplies.

§ 33.106 What assurances must ARPA Grant program recipients obtain from their contractors?

The recipient must ensure that each procurement contract it awards contains the term and condition specified in Appendix A to this part concerning compliance with the requirements of this part.

§ 33.206 Is there a list of certified MBEs and WBEs?

The Oklahoma Department of Transportation has a Directory of Certified DBE Firms. This database can be found at this website: <https://okdot.gob2g.com/Default.asp>.

§ 33.301 What does this subpart require?

A recipient, including one exempted from applying the fair share objective requirements by § 33.411, is required to make the following good faith efforts whenever procuring construction, equipment, services, and supplies under an ARPA Grant program agreement, even if it has achieved its fair share objectives under subpart D of this part:

- a) Ensure DBEs are made aware of contracting opportunities fully practicable through outreach and recruitment activities. For State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- b) Make information on forthcoming opportunities available to DBE's, arrange periods for contracts, and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- c) Consider in the contracting process whether firms competing for large contracts could subcontract with DBE's. For state and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
- d) Encourage contracting with a consortium of DBE's when a contract is too large for one of these firms to handle individually.
- e) Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
- f) If the prime contractor awards subcontracts, require the prime contractor to take the steps in paragraphs (a) through (e) of this section.

§ 33.302 Are there any additional contract administration requirements?

- a) Project Owners must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the recipient.
- b) Its prime contractor must notify Project Owner in writing prior to any termination of a DBE subcontractor for convenience by the prime contractor.
- c) If a DBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the six good faith efforts described in § 33.301 if soliciting a replacement subcontractor.
- d) A project owner must require its prime contractor to employ the six good faith efforts described in §33.301 even if the prime contractor has achieved its fair share objectives under §33.301 subpart D above.

- e) A recipient must require its prime contractor to provide ARP Form 6100-2—DBE Program Subcontractor Participation Form to all of its DBE subcontractors. ARP Form 6100-2 gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the prime contractor, how much the DBE subcontractor was paid and any other concerns the DBE subcontractor might have, for example reasons why the DBE subcontractor believes it was terminated by the prime contractor. DBE subcontractors may send completed copies of ARP Form 6100-2 directly to the appropriate EPA DBE Coordinator.
- f) A recipient must require its prime contractor to have its DBE subcontractors complete ARP Form 6100-3—DBE Program Subcontractor Performance Form. A recipient must then require its prime contractor to include all completed forms as part of the prime contractor's bid or proposal package.
- g) A recipient must require its prime contractor to complete and submit ARP Form 6100-4—DBE Program Subcontractor Utilization Form as part of the prime contractor's bid or proposal package.
- h) Copies of ARP Form 6100-2—DBE Program Subcontractor Participation Form, ARP Form 6100-3—DBE Program Subcontractor Performance Form and ARP Form 6100-4—DBE Program Subcontractor Utilization Form may be obtained from EPA OSDBU's Home Page on the Internet or directly from EPA OSDBU.
- i) A recipient must ensure that each procurement contract it awards contains the term and condition specified in the Appendix A concerning compliance with the requirements of this part. A recipient must also ensure that this term and condition is included in each procurement contract awarded by an entity receiving a grant under federal financial assistance agreement.

§ 33.410 Can a recipient be penalized for failing to meet its fair share objectives?

A recipient cannot be penalized or treated by EPA as being in noncompliance with this subpart, solely because its MBE or WBE participation does not meet its applicable fair share objective. However, EPA may take remedial action under § 33.105 for a recipient's failure to comply with other provisions of this part, including, but not limited to, the good faith efforts requirements described in subpart C of this part.

Source: Federal Requirements and Contract Provisions for Special Appropriation Act Projects, US Environmental Protection Agency, Region III, June 2008

**APPENDIX C: RESOURCE LISTING AND CONTACT INFORMATION
FOR UTILIZATION OF MINORITY AND WOMEN'S BUSINESS ENTERPRISES**

Resource Listing	Contact Information	Website if applicable
U.S. Small Business Administration (SBA) In addition to the national office, the SBA has local district and regional offices to assist small businesses in contracting with the public and private sector.	US Small Business Administration 409 3rd St, SW Washington DC 20416 Phone: 800-827-5722	https://www.sba.gov/
U. S. Small Business Administration (SBA) - OK. District Office	301 NW 6 th St. Oklahoma City, OK 73102 Phone: 405.609.8000	https://www.sba.gov/offices/district/ok/oklahoma-city
Minority Business Development Administration (MBDA): The MBDA is an agency within the U.S. Dept. of Commerce, created to foster the development and growth of minority businesses in the U.S. and coordinates resources in the public and private sectors to help MBEs.	1401 Constitution Ave NW Washington, D.C. 20230 Email: support@mbda.gov Phone: (202) 482-2000	http://www.mbda.gov/
Standard Industrial Classification Codes (SIC) or North American Industry Classification System (NAICS) codes visit the websites.	U.S. Bureau of Labor Statistics Postal Square Building, 2 Massachusetts Ave. NE Washington, DC 20212-0001 Phone: 1-202-691-5200	http://www.bls.gov/iag/tgs/iag_index_naics.htm
Oklahoma Department of Transportation (ODOT) and the <u>Minority/Disadvantaged Business Enterprise (ODOT – MBE/DBE)</u> . Project Owners and bidders may locate qualified M/WBE's through the MBE/WBE Directory	200 NE 21 st Street Oklahoma City, OK 73105 Phone: 405.521.2082	https://okdot.gob2g.com/Default.asp
US EPA Office of Small and Disadvantaged Business Utilization (OSDBU): advocates and advances the business, regulatory, and environmental compliance concerns of small and socio-economically disadvantaged businesses. The Small Business Vendor Profile System contains information of number of small and disadvantaged companies registered with OSDBU.	USEPA Office of Small Programs 1200 Pennsylvania Ave. NW Mail Code 1230T Washington, D.C. 20460 Phone: 202 566-2075	https://www.epa.gov/aboutepa/about-office-small-and-disadvantaged-business-utilization-osdbu Select "search the OSBP Registry" Click on the search criteria of interest (ethnicity, size, SIC, etc.)

National Black Chamber of Commerce	4400 Jenifer St NW #331, Washington, DC 20015 Phone: 202 466-6888 Fax: 202 466-4918 Email: info@nationalbcc.org	http://www.nationalbcc.org
U.S. Hispanic Chamber of Commerce	424 K St NW #401, Washington, DC 20005 Phone: (202) 842-1212	http://www.usbcc.com
National Association of Minority Contractors (NAMC)	910 17th Street, NW, Suite 413 Washington, DC 20006 Phone: 202.296.1600 info@namcnational.org	http://namcnational.org/
National Association of Women's Business Owners (NAWBO)	601 Pennsylvania Ave NW South Building, Ste 900 Washington, DC 20004 Phone: 800-556-2926 Fax: 202-403-3788	www.nawbo.org
National Minority Supplier Development Council, Inc. (NMSDC)	1359 Broadway, 10th Floor, Suite 1000 New York, NY 10018 Phone: (212) 944-2430 Fax: (212) 719-9611	http://www.nmsdc.org/
Native American Development Corporation (NADC) - provides technical assistance, financial lending opportunities, and champions small businesses	17 N. 26th St. Billings, MT 59101 Phone: (406) 259-3804 Fax: (406) 259-4569 Email: nadcptac@nadc-nabn.org	http://www.nadc-nabn.org/
City of Tulsa – Small Business Enterprise Program Maintains a list of Minority and Female business Enterprises that are certified through the “building Resources in Developing and Growing Enterprises	175 E. 2nd St. Tulsa, OK. 74103 Phone: (918) 596-7818	https://www.cityoftulsa.org/developmentbusiness/small-business-enterprise-program/ Click on the ‘member list”
Southwest Minority Supplier Development Council: Maintains lists of certified Minority Business Enterprises in Oklahoma	7301 Broadway Ext Ste 224, OKC, OK 73116 Phone: (405) 767-9900	http://www.smsdc.org/

National Association of Women in Construction (NAWIC)	327 S. Adams Street Fort Worth, TX 76104 Phone: 800-552-3506 817.877.5551 Fax: 817.877.0324	http://www.nawic.org/
Bureau of Indian Affairs - Maintains a list of Native American Contractors and Suppliers by Trade	P.O. Box 368 (1 Mile North on Hwy 281) Anadarko, OK 73005 Phone: (405) 247-6673 Fax: (405) 247-5611	https://www.bia.gov/as-ia/eed/division-economic-development/native-american-business-development
Oklahoma Department of Commerce Certification Programs and information	900 N Stiles Ave. Oklahoma City, OK 73104 Phone: (405) 815-6552 Toll-Free: (800) 879-6552	https://www.okcommerce.gov/doing-business/#business-services
Cherokee Nation Tribal Employment Rights Office - Maintains a directory of Indian-owned businesses	Cherokee Nation TERO Dept. P.O. Box 948 Tahlequah, OK 74465 Phone: (918) 453-5334 or Toll Free: 800-256-0671 ext. 5334	http://cherokeetero.com/

ARP-6100-2 DBE Subcontractor Participation Form

OWRB Financial Assistance Agreement Recipients must require prime contractors to provide this form to their DBE subcontractors. This form gives a DBE subcontractor the opportunity to describe work received and/or report any concerns regarding the project.

Subcontractor Name	Project Name	
Bid/Proposal No.		Point of Contact
Address		
Telephone No.	Email address	
Prime Contractor Name		Funding entity Oklahoma Water Resources Board

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Amount Received by Prime Contractor

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Subcontractor Signature	Print Name
Title	Date

ARP-6100-3 DBE Subcontractor Performance Form

This form is intended to capture the DBE₁ subcontractor's₂ description of work to be performed and the price of the work submitted to the prime contractor. OWRB Financial Assistance Agreement Recipients must require prime contractors to provide this form to their DBE subcontractors.

Subcontractor Name	Project Name
Bid/Proposal No.	Point of Contact
Address	
Telephone No.	Email Address
Prime Contractor Name	Funding Entity Oklahoma Water Resources Board

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: ____ DOT ____ SBA ____ Other: _____		Meets/ exceeds EPA certification standards? ____ YES ____ NO ____ Unknown

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

Subcontractor Signature	Print Name
Title	Date

ARP-6100-4 DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE₁ subcontractors₂ and the estimated dollar amount of each subcontract. OWRB Financial Assistance Agreement Recipients must require their prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name	Project Name		
Bid/Proposal No.		Point of Contact	
Address			
Telephone No.		Email address	
Funding Entity Oklahoma Water Resources Board			

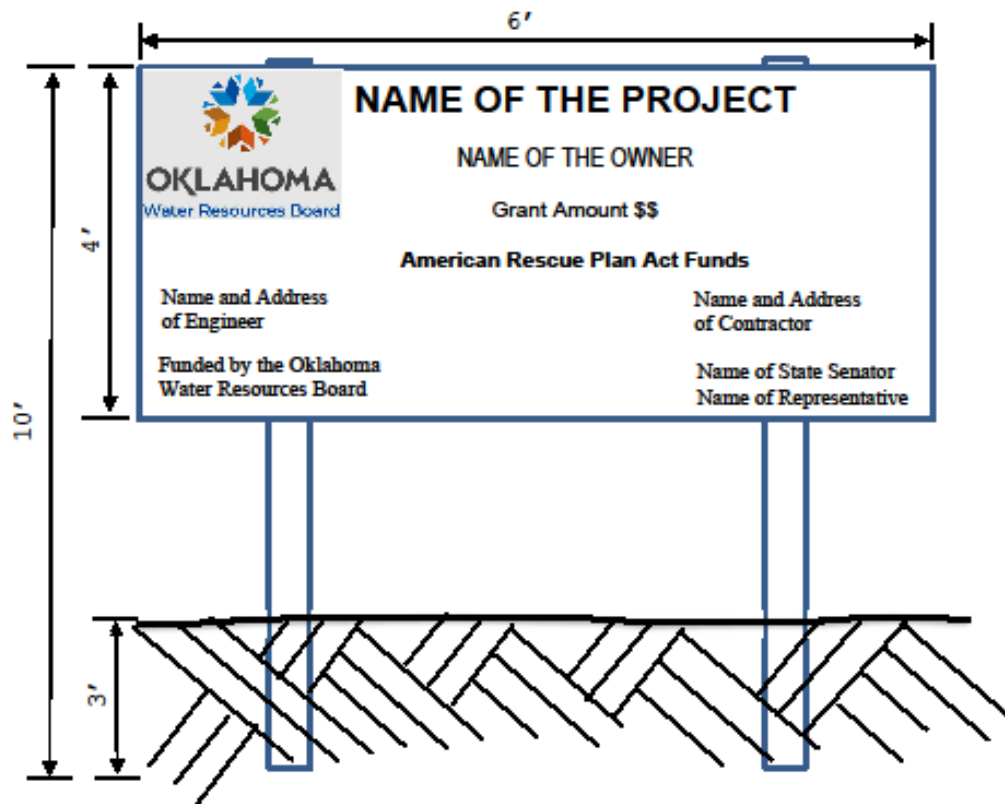
I have identified potential DBE certified Subcontractors	___ YES	___ NO	
If yes, please complete the table below. If no, please explain:			
Subcontractor Name/ Company Name	Company Address/ Phone/ Email	Est. Dollar Amt.	Currently DBE Certified?

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

PROJECT SIGN

- The general contractor shall erect and maintain for the life of the construction contract a suitable sign, 4' x 6' in size, and detailed hereon, lettered black on white background. Sign shall be professionally painted. Lettering to be appropriate size. No separate bid item. Sign shall be the general obligation of the Contractor.
- The OWRB logo is required on the project sign if the project is funded in part with OWRB Financial Assistance Program funds. The OWRB logo is available at <http://www.owrb.ok.gov/about/index.php> or may be provided directly by OWRB.
- Redwood Posts shall be 4" x 4" x 10' buried securely a minimum of 3 feet below ground.
- Sign face shall be constructed of 3/4" x 4' x 6' - 5 ply Dura-plywood board & mounted to Posts with four (4) 5/8" x 6" Carriage Bolts.



CONTRACT SPECIFICATIONS

A. General

1. This Contract is intended to, and hereby does, provide for complete in place, **Independence Avenue Waterline (ARP-23-0026-G)**, including all necessary work and material for a total job, whether or not such work and material is shown or implied in the plans and specifications.
2. All construction and materials shall conform to the City of Shawnee Standard Specifications as contained herein. All work necessary to make for a complete and operable Independence Avenue Waterline as intended by these plans and specifications for which bid items are not provided, shall be considered incidental work and the cost thereof shall be included in other appropriate bid items.
3. The cost to include the furnishing and installation of all temporary sheeting, shoring, timbering and bracing required to maintain any excavation in a condition to furnish safe working conditions and to permit the safe and efficient installation of all items of contract work shall be included in other items of work. The CONTRACTOR shall further, at his own expense, shore up or otherwise protect all fences, buildings, walls, walks, curbs, or other property adjacent to any excavation which might be disturbed during the progress of the work. The CONTRACTOR will be held liable for any damage which may result to neighboring property from excavation or construction operations.
4. Whenever any excavation is carried beyond the lines and grades shown on the Contract Drawings, written in the Contract Documents, and/or given by the ENGINEER, the CONTRACTOR shall, at his own expense, refill all such excavated space with such materials and in such a manner as may be directed. Beneath and around concrete structures, space excavated without authority shall be thoroughly compacted when refilling, or if deemed necessary by the ENGINEER, shall be refilled with concrete at the CONTRACTOR'S expense.
5. If the materials encountered on any excavation are not suitable for structural foundations, or if necessary, to go an additional depth or width from that designated on the contract drawings to provide proper bearing for pipe and concrete, the CONTRACTOR shall make such additional excavations outside the regular limits of the work as may be directed by the ENGINEER. The cost of such additional excavation shall be merged into the appropriate unit price.
6. Excavated material shall be deposited so as to interfere as little as possible with the execution of the whole work or its several parts. Such material as cannot be placed in its final position in fills and embankment shall be removed to a temporary spoil bank, from which it shall later be taken and placed in embankment or fills.
7. Unsuitable and surplus excavated material not incorporated in the improvement shall be disposed of by the CONTRACTOR at his own expense unless otherwise designated in the project specifications, or on the contract drawings.
8. If private land is used by the CONTRACTOR as a spoil site, the CONTRACTOR shall obtain written permission from the OWNER or agent of the land agreeing to its use for this purpose and provide the project OWNER with a certified copy of such agreement.
9. The CONTRACTOR shall notify residents and business OWNERS of construction by distributing door hangers to each and every house, business, and /or occupied structure located

on the street or alley where the construction shall occur, at least 48 hours in advance of the commencement of construction.

B. Site Conditions

The CONTRACTOR shall be responsible for familiarizing himself with surface and subsurface conditions. The base bid as shown in the proposal shall include cost for unclassified excavating of earth, rock, dewatering, stabilizing unsuitable soils such as quicksand or other unsuitable materials, or any hazard that may be encountered. The cost for such work shall be included in the appropriate bid item. No additional compensation shall be given for such work. The CONTRACTOR shall satisfy himself as to the accuracy of all measurements before constructing any permanent structure.

C. Surveys

The CONTRACTOR shall develop and make all detailed surveys needed for construction such as slope stakes, batter boards, stakes for construction location and other working points, lines and elevations. The CONTRACTOR shall carefully preserve all benchmarks, reference points and stakes established by the ENGINEER and in case he causes damage or disturbance, he will be charged for the cost of replacement and shall be responsible for any mistakes that may be caused by their loss.

D. Utility Locations

The elevation and location of all utilities shown on the contract drawings were taken from public records. It shall be the duty of the CONTRACTOR to make final and exact determination of the location and extent of these utilities, and he will be liable for any expense resulting from damage to them. Unless otherwise indicated on the contract drawings or unless otherwise taken care of by the OWNER thereof, all utilities and all structures of any nature, whether below or above ground, that may be affected by the work shall be protected and maintained by the CONTRACTOR and shall not be disturbed or damaged by him during the progress of the work. Should the CONTRACTOR disturb, disconnect or damage any utility or any structure, all expenses of whatever nature arising from such disturbance or the replacement or repair thereof shall be borne by the CONTRACTOR. This provision shall apply whether or not said utility or structure is shown on the plans. All utility locations shown or not shown on these plans shall be the responsibility of the CONTRACTOR prior to excavation. Utility location telephone numbers are:

1-800-522-6543	Statewide
1-800-654-8349	Out of State

E. As-Built Records

The CONTRACTOR is required to keep a current record of all field changes on jobsite at all times. They shall be legibly marked on his plan and shall become property of the City of Shawnee prior to completion for purposes of constructing an as-built record of this project.

F. Arrangement and Charge for Water Furnished by the City

If the CONTRACTOR desires to use city water, he shall pay the rate established by City Ordinance for such service and he shall make complete and satisfactory arrangements with the City Utility Department for so doing. Flush meters will be used and the CONTRACTOR shall deposit the cost of the flush meter with the Utility Department and will pay for repairs and maintenance of the meter

for the period which he has the meter in use in his possession. CONTRACTOR shall be charged for the amount of water he uses, including any monthly minimum charge.

G. Use of Fire Hydrants

The CONTRACTOR or his employees shall not open, turn off, interfere with, attach pipe or hose to, or connect anything with any fire hydrant, stop valve or stop cock or tap any water-main belonging to the City unless duly authorized to do so by the OWNER.

H. Protection and Opening to Pedestrians and Traffic

The CONTRACTOR is required to receive permission from the CITY ENGINEER to close any traffic lanes or alleys or roads during construction. No road shall be permanently or temporarily closed without prior approval by the CITY ENGINEER. The CONTRACTOR shall conduct his work so as to interfere as little as possible with public travel, whether vehicular or pedestrian; whenever it is necessary to cross, obstruct, or temporarily close roads, driveways and walks, whether public or private. The CONTRACTOR shall, at his own expense, provide and maintain suitable and safe bridges, detours, barricades, signing, lighting, striping and/or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to OWNERS of private drives before interfering with them; provided, however, that such maintenance of traffic will not be required at any point where the CONTRACTOR has obtained permission from the OWNER and/or tenant of private property, or from the authority having jurisdiction over public property involved to obstruct traffic at any designated point thereon and for the duration of whatever period of time as may be agreed upon. All work pertaining to traffic control shall be in accordance with the latest revision of "The Manual on Uniform Traffic Control Devices."

I. Materials and Construction

All materials and construction shall be in accordance with the City of Shawnee Standard Specifications for Construction (Standard Specifications) and Construction Standards as contained herein.

J. Testing and Acceptance Requirements

The CONTRACTOR shall be responsible for paying the cost of all testing outlined in the Standard Specifications. Testing shall be performed by a qualified testing laboratory approved by the OWNER.

K. Protection and Preservation of Property and Landscape

The CONTRACTOR will be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours. The CONTRACTOR shall furnish such watchmen, guards, fences, warning signs, lights and walkways, and shall take all other precautions as shall be necessary to prevent damage to persons or property. All structures and improvements damaged by the CONTRACTOR, his employees, SUBCONTRACTORS, or agents, shall be restored to a condition as good as when he entered upon the work. The duty of the ENGINEER to conduct construction inspection of the CONTRACTOR'S performance does not include any review of the adequacy of the CONTRACTOR'S safety measures in, on, or near the construction site or sites. The ENGINEER has not been retained or compensated to provide design and construction review services relating to the CONTRACTOR'S safety precautions or to means, methods, techniques, sequences, or procedures required for the CONTRACTOR to perform his work.

No trees shall be removed on the site of the work where outside of excavation limits, except where their removal is authorized by the ENGINEER. Where trees are on the line of the trench or adjacent thereto such trees and roots shall be removed and disposed of by and at the expense of the CONTRACTOR.

Trees remaining at the end of construction shall be adequately protected from permanent damage by reason of construction operations. Trimming of remaining trees where required shall be as directed by the ENGINEER.

All turf, shrubbery, and other landscaping, damaged or removed by the CONTRACTOR shall be replaced under the direction and to the satisfaction of the OWNER, by and at the expense of the CONTRACTOR.

Any traffic signal loop wire, pull box, or conduit that is damaged or destroyed shall be replaced under the direction and to the satisfaction of the OWNER, by and at the expense of the CONTRACTOR.

L Administrative Matters

All permits, fees, and licenses required under City Ordinance not regulated by state or federal law will be collected.

DIVISION 01 – GENERAL REQUIREMENTS**SECTION 01 00 00 – GENERAL CONDITIONS****PART 1 – GENERAL****1.1 DESCRIPTION**

The General Conditions shall govern and control all work to which they apply; however, since these specifications are of a general nature, they may refer to work not found in this project, in which case such non-applicable stipulations will have no meaning in this Contract. In case of conflict between the General Conditions and the Special Conditions, the Special Conditions shall govern. In case of conflict with either the General or Special Conditions by Supplemental Conditions of a funding agency such as EPA, FMHA, EDA or HUD, the Supplemental Conditions will govern.

PART 2 – DEFINITIONS**2.1 DEFINITIONS**

DEFINITIONS: Whenever the words defined below, or pronouns used in their stead occur hereinafter, they shall have the meanings given as follows:

- A. "OWNER" shall mean the City of Shawnee or Shawnee Municipal Authority.
- B. "ENGINEER" shall mean Cowan Group Engineering, LLC, who has been employed by the OWNER for this work, or his duly authorized agent.
- C. "Inspector" shall mean the engineering or technical inspector or inspectors duly authorized by the ENGINEER, limited to the particular duties entrusted to him or them.
- D. "CONTRACTOR" shall mean the person, persons, partnership, company, firm or corporation entering into this contract for the performance of the work, or the agent appointed to act for such party.
- E. "Specification" shall mean, collectively, all of the terms and stipulations contained in the written portion of information furnished.
- F. "Drawings or Plan Sheets" shall mean, collectively, all of the drawings pertaining to the contract and made a part thereof, and also such supplementary drawings as the ENGINEER may issue from time to time in order to clarify the drawings, or for the purpose of showing authorized changes in the work, or for showing details which are not shown thereon.
- G. The term "Grade" used in these Specification is understood to refer to and indicate the established elevations of the paving, flow line of waterlines and other appurtenances as shown on the drawings.
- H. Whenever in these CONTRACT DOCUMENTS the words "as ordered", "as directed", "as permitted", "as allowed", or words or phrases of like import are used, it shall

be understood that the order, direction, requirements, permission, or allowance of the OWNER and ENGINEER is intended.

- I. Similarly, the words "approved", "reasonable", "suitable", "acceptable", "properly", "satisfactory", or words of like effect and import, unless otherwise particularly specified herein, shall mean approved, reasonable, suitable, acceptable, proper, or satisfactory in the judgment of the OWNER and ENGINEER.
- J. Whenever the term "or equal" is used in the drawings and/or Specification it shall refer to a material which will adequately perform the same function, in the opinion of the ENGINEER, as the material specified or shown on the drawings.

PART 3 - SCOPE OF WORK

The work to be covered under these contracts in accordance with the drawings listed herein and, in these specifications, consists of the furnishing of all materials, equipment, tools, labor, transportation and services necessary to complete the construction as outlined herein and as shown on the drawings. The complete installation shall not lack any part which can be reasonably implied as necessary to its proper functioning nor any subsidiary which is customarily furnished.

PART 4 - EXAMINATION OF SITE OF WORK

It is the obligation of the bidder to examine carefully the site of the proposed work; to ascertain for himself all the facts concerning conditions therein, including all physical characteristics above, on and below the surface of the ground; to investigate the subsurface conditions and to determine for his information the character and proportionate quantities of soils, rock and other subsurface material which may be encountered in the work; to inform himself by independent research of the difficulties to be encountered and judge for himself the accessibility of the work and all other circumstances affecting the cost of doing the work or the time required for its completion; and the bidder agrees to this obligation in signing the proposal. When provided, the soils boring and testing report is attached to these Specification for the CONTRACTOR'S information and is not a part of the contract. No guarantee is made as to their accuracy or completeness. The OWNER assumes no responsibility whatsoever with respect to ascertaining for the bidder such facts covering physical characteristics at the site of the work. The bidder agrees that, if awarded the contract, he will make no claim for, and will have no right to, additional payment or extension of time for completion of the work or any other concession because of any failure on his part to fully acquaint himself with all conditions relating to the work. The bidder shall rely exclusively upon his own estimate, investigation and evaluation of site conditions.

PART 5 - SITE CONDITIONS

Where connections to existing utilities are shown on the drawings, the work may be required to be done at night or at a time which will least interfere with the operation of the existing facility.

The tie to existing utilities will be coordinated with personnel of the OWNER of the existing lines and will be done at a time to least inconvenience their operation. The work may be required to be done at night or weekends or both.

Where possible the existing utilities (water, gas, etc.) have been noted on the drawings. There may be additional buried lines that are not shown and if such is encountered, said lines will be left in service. CONTRACTOR shall take all precautions available prior to construction to locate, identify, and verify utilities. If said lines are broken by the CONTRACTOR, they shall be repaired as soon as possible.

The work along or across state highways shall be done in accordance with the permit from Division Engineer, Department of Transportation. The right-of-way shall be maintained in a satisfactory manner at all times. All roads, streets, drives, etc., cut during construction shall be properly protected by barricades, flashing lights, etc., and shall be made passable as soon as possible after laying of lines during the day and always at night. CONTRACTOR shall maintain the above cut roads in a passable condition until the wearing surface is replaced and then kept in a satisfactory condition for five (5) years after job is completed.

PART 6 - EXPLOSIVES

In handling explosives used during the construction of the project, the CONTRACTOR shall adhere to all Federal and State laws and City ordinances regulating the purchase, transportation, storage, handling, and use of such explosives. No blasting shall be done without 12-hour notification of the OWNER and ENGINEER, proof of insurance, and the presence of the Inspector. All equipment, tools, and materials used shall be of the correct type and in good condition for the operation. The CONTRACTOR shall take all necessary precautions to avoid damage to property resulting from the transportation, storage, handling and use of explosives. Before blasting, the CONTRACTOR shall take all necessary precautions to ensure that rock and debris will be confined to the excavation. Any blasting within 10 ft. of a water, sewer, gas or pipeline shall be done with very light charges, and utmost care shall be taken to avoid disturbance to these lines.

PART 7 - SUBMITTALS

Engineering data covering all equipment and fabricated materials to be furnished under this contract shall be submitted to the ENGINEER for review. This data shall include drawings and operation of component materials and devices; the external connections; anchorages and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment. Data submitted shall include drawings showing essential details of any changes proposed by CONTRACTOR and all required structural layout and wiring diagrams.

No work shall be performed in connection with the fabrication or manufacture of materials and equipment, nor shall any accessory or appurtenance be purchased until the drawings and data therefore have been reviewed, except at the CONTRACTOR'S own risk and responsibility.

At least five (5) copies of each drawing and necessary data with statement of approval by the CONTRACTOR, shall be submitted to the ENGINEER. Each drawing or data sheet shall be clearly marked with the name of the project, the ENGINEER'S name, CONTRACTOR'S name and references to applicable specification paragraphs and drawing sheets. When catalog pages are submitted, the applicable items shall be identified.

The ENGINEER'S review of drawings and data submitted by the CONTRACTOR will cover only general conformity to the drawings and specifications, external connections and

dimensions which affect the layout. The ENGINEER'S review of drawings returned marked NO EXCEPTIONS NOTED or EXCEPTIONS NOTED does not indicate a thorough review of all dimensions, quantities and details of the material, equipment, device or items shown and does not relieve the CONTRACTOR from any responsibility for errors, omissions, or deviations from the contract requirements.

All drawings and data, after final processing by the ENGINEER, shall become a part of the contract documents, and the work shown or described thereby shall be performed in conformance therewith unless otherwise authorized by the OWNER or the ENGINEER.

After drawings and data have been accepted by OWNER or ENGINEER, the CONTRACTOR shall submit three (3) additional copies of all data and one (1) set of reproducible of all drawings to OWNER for file records. Also, CONTRACTOR shall keep accurate "record drawings" records of the work and turn these records over to the OWNER at the completion of the work.

PART 8 - SURVEYS

The OWNER shall establish base lines or control points for the location of the principal component parts of the work together with benchmarks adjacent to the work as shown or indicated on the Drawings. The CONTRACTOR shall develop and make all detail surveys necessary for construction. The CONTRACTOR shall be responsible for the accuracy of all lines and grades for all parts of the work. He shall do all field work necessary to lay out and maintain the work and shall make available to the OWNER all facilities and information necessary for properly checking the accuracy of such field work. Such checking shall in no way relieve the CONTRACTOR of his responsibility of the correctness of all field work.

The OWNER will provide survey of property including reference points, property corners and benchmarks where necessary in the opinion of the ENGINEER. If necessary, the CONTRACTOR shall transfer these reference points and benchmarks to permanent locations where they will not be disturbed. If disturbed, the CONTRACTOR shall re-install them to OWNER'S satisfaction, at CONTRACTOR'S cost.

PART 9 - PERMITS AND REGULATIONS

The CONTRACTOR shall secure and pay for all construction permits required to carry out the work unless otherwise specified and shall produce same upon demand of the OWNER. The CONTRACTOR shall give all notices and pay all fees and shall, before starting work, ascertain whether the drawings and specification are at variance with any codes or regulations applying at the site. The CONTRACTOR shall obtain completion survey, certificate of completion or occupancy if required by local regulations.

All features of design and construction shall comply with the local building regulations and/or other lawful or public regulations which apply at the site. If any features of construction as shown on the OWNER'S plan, do not conform to the regulations, the CONTRACTOR shall notify the OWNER of such discrepancy, and shall base his quotation and work on features of construction which do conform to the regulations.

If the CONTRACTOR performs any work contrary to such laws, ordinances, rules and regulations and without such notice to the OWNER, he shall bear all costs arising therefrom.

PART 10 - INSPECTION

The CONTRACTOR will provide access to the work site and facilities for representatives of the Environmental Protection Agency, Oklahoma Department of Environmental Quality and other agencies, as well as, OWNER and ENGINEER, as required whenever the work is in progress.

PART 11 - SATURDAY, SUNDAY, HOLIDAY AND NIGHT WORK

No work shall be done between the hours of 7:00 p.m. and 7:00 a.m., nor on Saturday, Sunday or legal holidays without the written approval or permission of the ENGINEER in each case, except such work as may be necessary for the proper care, maintenance and protection of work already done, or of equipment, or in the case of an emergency.

PART 12 - PROTECTION OF PROPERTY

- A. The protection of City, State and Government monuments, street signs and other OWNER's property is of prime importance, and if the same be damaged, destroyed or removed, they shall be repaired, replaced or paid for by the CONTRACTOR. Disturbance to this property must first be approved by the agency which controls it.
- B. No valves or other control on any utility main or building service line shall be operated for any purpose by the CONTRACTOR.
- C. At places where the CONTRACTOR'S operations are adjacent to the plant of railway, telegraph, telephone, electric and gas companies, or water, sanitary sewers and storm sewers, damage to which might result in expense, loss or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.
- D. The OWNER has attempted to locate all storm sewers, culverts, buried telephone or electrical conduits, sanitary sewers and water mains that might interfere with the construction of this project. The CONTRACTOR shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner and duplication or rearrangement work may be reduced to a minimum and that services rendered by those parties will not be unnecessarily interrupted. The revision and crossings of the various types of lines shall be made as follows:
 - 1. Storm sewers and culverts may be removed at the time of crossing or may be adequately braced and held in position while the pipe is placed beneath them. If the storm sewer or culvert is removed, it shall be replaced with pipe of the same type and size as that removed and it shall be re-joined to the undisturbed line with a joint satisfactory to the ENGINEER. Backfill over the main up to and around the storm sewer shall be thoroughly compacted in order that no settlement will occur. The revision and crossing of said lines shall be at the expense of the CONTRACTOR.
 - 2. All overhead and buried telephone and electrical conduits, to be revised or crossed by the construction of this project shall be protected in accordance with the directions of the utility company owning the conduits and/or mains. The CONTRACTOR shall notify the companies and obtain their permission before

making any crossing or revisions. The revision and crossing of said lines shall be at the expense of the CONTRACTOR. Any overhead cables or buried cables or conduits damaged by the CONTRACTOR shall be repaired at his expense to the satisfaction of the ENGINEER and of the OWNER.

3. The CONTRACTOR shall not remove any water or sanitary sewer lines except as directed by the ENGINEER or as required by the Drawings and specifications and shall adequately brace and protect them from any damage during construction. Any existing water main or sewer main or lateral damage caused by the CONTRACTOR'S operations will be repaired by the CONTRACTOR. The repairs will be made at the CONTRACTOR'S expense.
- E. The location of utility service lines serving individual properties may or may not be shown on the Drawings, but the CONTRACTOR shall assume that such service lines exist whether or not they are shown on the Drawings, and it shall be the responsibility of the CONTRACTOR to make any necessary changes in the line and/or grade of such services, or to secure the necessary changes therein to be made by the particular utility company involved or other OWNER thereof, or by an agent or individual CONTRACTOR approved by such utility company or other OWNER. CONTRACTOR shall pay the cost of all such revisions whether performed by CONTRACTOR, the utility company or other OWNER, or an approved CONTRACTOR. In the event of interruption of a utility service as a result of accidental breakage, CONTRACTOR shall promptly notify the ENGINEER and the OWNER of the utility and shall repair or cause the same to be repaired, in the same manner as necessary changes above are provided for, the CONTRACTOR shall do all things necessary to see that the restoration of services is done as promptly as may be reasonably done. All sanitary sewer service lines damaged shall be replaced with cast iron pipe regardless of type or kind damaged.
- F. In the event the CONTRACTOR in any way fails to comply with the requirements of protecting, repairing and restoring of any utility or utility service, the OWNER may, upon forty-eight (48) hours written notice proceed to protect, repair, rebuild or otherwise restore such utility or utility service as may be deemed necessary, and the cost thereof will be deducted from any money due, or which may become due the CONTRACTOR pursuant to the terms of his contract.

PART 13 - FIELD OFFICE

Copies of the drawings, specification, and other contract documents shall be kept at the site of the work available for use at all times.

PART 14 - ALTERATION OF QUANTITIES

The CONTRACTOR agrees that the quantities of work as stated in the Bid Schedule or indicated on the drawings are only approximate, and that the OWNER shall have the right to omit portions of the work and to increase or decrease the quantities of any item of work. Final payment will be based on the actual quantities used and installed in accordance with the drawings and Specification.

PART 15 - QUALITY CONTROL

When required in writing by the ENGINEER, the CONTRACTOR shall make such tests as may be necessary to show that the requirements of the Specification have been fulfilled.

All tests shall be made under the supervision and direction of the ENGINEER, and the CONTRACTOR will provide all required materials, labor and apparatus, etc., or so directed, engage an approved testing laboratory for making same. Any work found defective shall be removed, replaced and retested until satisfactory to the ENGINEER, all at the CONTRACTOR'S expense.

Should tests required by the ENGINEER, except those specifically called for elsewhere in these General Requirements or in the Specification show that the requirements of the Specification have been fulfilled, then the costs of such tests shall be paid for by the OWNER.

PART 16 - MEASUREMENT AND FITTING OF PARTS

The CONTRACTOR, without extra charge, shall make such slight alterations as may be necessary to make adjustable parts fit the fixed parts, leaving all complete and in proper shape when done. The CONTRACTOR shall verify all dimensions given in the drawings and shall report any error or inconsistency to the ENGINEER before commencing work.

PART 17 - CONTRACTOR'S SUPERINTENDENT

The CONTRACTOR shall keep a competent Superintendent and any necessary assistants at the site throughout the progress of the work. All directions given to said Superintendent shall be as binding as if given to the CONTRACTOR. Upon request, such directions will be confirmed, in writing, to the CONTRACTOR.

The CONTRACTOR'S Superintendent and/or any of his assistants shall be promptly replaced in the event he or they shall prove to be incompetent and/or unsatisfactory to the ENGINEER.

PART 18 - ASSISTANCE BY ENGINEER

It is distinctly understood and agreed that such assistance as the ENGINEER may render to the CONTRACTOR in connection with the interpretation of drawings and specification shall not relieve the CONTRACTOR from any responsibility for the work. Any work which proves faulty shall be made right by the CONTRACTOR without delay. The failure of the ENGINEER, or his Inspectors to call the CONTRACTOR'S attention to faulty work or work done which is not in accordance with drawings and specification shall not prevent the OWNER from insisting that the CONTRACTOR make all work right.

PART 19 - INCIDENTAL WORK

Work called for on the drawings and/or specifications and are not set forth in the Bid Schedule as pay items, shall be considered as incidental work and will not be paid for directly, but shall be included in the price bid for the various pay items.

PART 20 - TERMINATION OF CONTRACT

If the CONTRACTOR shall be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse, or should fail, except in cases for which

extension of time is provided, to supply enough properly skilled workmen, equipment or proper materials, or if he should fail to make prompt payment to SUBCONTRACTOR or for material or labor, or persistently disregard laws, ordinances or the instructions of the ENGINEER, or otherwise be guilty of a substantial violation of any provision of the Contract, then the OWNER upon the certificate of the ENGINEER that sufficient cause exists to justify such action, may without prejudice to any other right or remedy and after giving the CONTRACTOR seven days written notice, terminate the employment of the CONTRACTOR and take possession of the premises and of all materials, tools and appliances thereon and finish the work by whatever method the OWNER may deem expedient. In such case, the CONTRACTOR shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract Price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the CONTRACTOR. If such expense shall exceed such unpaid balance, the CONTRACTOR shall pay the difference to the OWNER as herein provided, and the damage incurred through the CONTRACTOR's default shall be certified by the ENGINEER.

In the event of termination of Contract before completion of the work, due to abandonment of the project or discontinuance thereof, the CONTRACTOR will be paid in proportion to the work completed and in progress as per scope of work described in the drawings and specification and in accordance with the unit price schedule.

PART 21 – PROGRESS PAYMENTS, ACCEPTANCE AND FINAL PAYMENT

Basis for Progress Payments: The Schedule of Quantities as shown in the Plans will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period. The amount of retainage with respect to progress payments will be 5% until 50 percent completion after which retainage shall be 2.5%.

Upon receipt of written notice from the CONTRACTOR that the work is ready for final inspection and acceptance, the ENGINEER shall promptly make such inspection and when he finds the work acceptable under the Contract and the Contract fully performed, he shall promptly issue a final certificate over his own signature, stating that the work provided for in this Contract has been completed and is accepted by him under the terms and conditions thereof, and the entire balance found to be due the CONTRACTOR, including the retained percentage, shall be paid to the CONTRACTOR, as approved by the OWNER, at the office of the OWNER within 30 days after the date of said final certificate.

If, after receipt of written notice from CONTRACTOR requesting final inspection and the performance of said final inspection by ENGINEER, additional inspections are necessary in order for ENGINEER to issue a final certificate; the OWNER shall withhold the cost associated with said additional inspections from the final payment due the CONTRACTOR.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the ENGINEER that all payrolls, material bills, equipment rentals, and all other indebtedness connected with the work have been paid.

PART 22 - PLACING WORK IN SERVICE

If desired by the OWNER, portions of the work may be placed in service when completed and the CONTRACTOR shall give prior access to the work for this purpose, but such use and operation shall not constitute an acceptance of the work.

PART 23 - SCHEDULES

The CONTRACTOR shall furnish the ENGINEER with a tentative schedule, in a format approved by the ENGINEER, setting forth in detail the procedure he proposes to follow, and giving the dates on which he expects to start and to complete separate portions of the work. If at any time, in the opinion of the ENGINEER, proper progress is not being maintained, such changes shall be made in the schedule of operations which will satisfy the ENGINEER that the work will be completed within the period stated in the proposal, or extension thereof made as herein provided.

CONTRACTOR is to prepare list of proposed SUBCONTRACTORS including material suppliers; submit to ENGINEER for approval before subcontracts are awarded. No SUBCONTRACTOR is to be employed on work unless approved by OWNER and ENGINEER.

PART 24 - PROJECT SIGN

A project sign is required for this project. See Division 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS, page **44** for project sign requirements and an example.

PART 25 - INSURANCE

The CONTRACTOR shall protect, indemnify, save and hold harmless the OWNER, their officers, agents, and employees from all suits, actions or claims of any kind or character brought because of bodily injuries, sickness, disease or personal injury, or damages received or sustained by any person, persons, or property on account of any operations of the CONTRACTOR, his agents, employees, his subcontractors or any others authorized by the CONTRACTOR to perform work on the project.

Third Party Beneficiary Clause. It is specifically agreed by and between the parties executing this Contract, that it is not intended by any of the provisions of any part of the Contract to create in the public or any member thereof any third-party beneficiary provisions or to authorize anyone not a party to this Contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of this Contract.

The CONTRACTOR shall carry insurance of the following kinds and amounts on all City Contracts:

- A. CONTRACTOR'S Public Liability, Auto Liability and Property Damage Liability Insurance.** The CONTRACTOR shall provide regular CONTRACTOR'S Public Liability Insurance for a combined amount of one million (\$1,000,000) dollars of coverage for all damages arising out of bodily injury, death, and property damage for each occurrence with an aggregate limit of two million (\$2,000,000) dollars.

The CONTRACTOR shall provide business auto liability coverage for an aggregate limit of one million (\$1,000,000) dollars of coverage for bodily injury and property

damage arising out of the operation or maintenance of any vehicle including owned, non-owned and hired vehicles, and employee non-ownership use.

B. Insurance for SUBCONTRACTOR'S and CONTRACTOR'S Protective Public Liability and Property Damage Liability Insurance. In the event that any of the work to be performed by the CONTRACTOR on the project is sublet or assigned or is otherwise to be performed by anyone other than the CONTRACTOR'S own employees, then the insurance specified above shall extend to cover such work.

C. Workmen's Compensation Insurance and Employer's Liability Insurance. The CONTRACTOR shall furnish satisfactory evidence to the City that, with respect to the work to be performed by him on the project, he carries regular Workmen's Compensation and Employers Liability Insurance covering his liability under the "Workmen's Compensation Law of the State of Oklahoma". The CONTRACTOR shall maintain the aforementioned insurance in full force and effect for the duration of the Contract. Should the CONTRACTOR fail or neglect to maintain the aforementioned insurance, the City specifically reserves the right to withhold all funds due and owing the CONTRACTOR until such time as the required insurance is in effect.

In addition to the aforementioned insurance coverage, on any project in which the CONTRACTOR shall perform any Railway-Highway work, the CONTRACTOR shall also secure the following: "Railroads' Protective Liability and Property Damage Insurance".

D. Railroads' Protective Liability and Property Damage Insurance. In addition to the above, the CONTRACTOR shall furnish satisfactory evidence to the City that, with respect to the work to be performed by him under the Contract, he has provided for and on behalf of the Railway Company or Railway Companies involved, Protective Public Liability Insurance in an amount as may be required by the Railway Company, which amount shall be specified in the bid documents. Policies shall not include liability for negligence on the part of the Railway Company, its agents or employees, except as set out in Coverage A, B, or C of the form of policy, or amendments thereto, referred to under paragraph 6 below. This insurance applies to each and all Railway Companies involved in the work.

E. General. The insurance hereinbefore specified shall be carried in Insurance Companies approved by the City, and where applicable the Railway Company, during all times when work is being carried on under the terms of the Contract, until all work required to be performed under the Contract is satisfactorily completed as evidenced by the formal acceptance by the City.

F. Certificates of Insurance. Required insurance shall be documented by Certificates of Insurance which provide that the OWNER shall be notified at least thirty (30) days in advance of cancellation, non-renewal or adverse change. The Certificate of Insurance shall show the OWNER as the named insured.

For general liability, the CONTRACTOR shall provide an indication of the amounts of claims, payments or reserves chargeable to the aggregate amount of liability coverage.

PART 26 - SAFETY STANDARDS AND ACCIDENT PREVENTION

With respect to all work performed under this Contract, the CONTRACTOR shall:

- A. Comply with the safety standards provisions of applicable laws, building and construction codes and the Manual of Accident Prevention in Construction published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1910 or 1926 as applicable.
- B. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
- C. Trench Excavation and Safety System: All work under this item shall be in accordance with the current edition of the OSHA Standard for Excavation and Trench Safety Systems, 29 CFR 1926 Subpart P.

The CONTRACTOR shall notify all utility companies and OWNERS in accordance with the OSHA requirements given in 29 CFR 1926.651 (b) (2) for the purpose of locating utilities and underground installations.

Where the trench or excavation endangers the stability of a building, wall, street, highway, utilities, or other facility, the CONTRACTOR shall provide support systems such as shoring, bracing, or underpinning to ensure the stability of such facility. The CONTRACTOR may elect to remove and replace or relocate such facilities with the written approval of the facility owner, the ENGINEER, and the OWNER.

Payment for the work required by this item shall be included in the lump sum price bid. With each periodic payment request, CONTRACTOR shall submit a certification that the CONTRACTOR has complied with the provisions of the OSHA standards.

PART 27 - WAGE RATES

If the total project cost exceeds \$10,000,000 (ten million dollars), CONTRACTOR is required to comply with Davis Bacon Act wage rates. This project is not expected to exceed that amount; therefore, no specific wage rates apply.

PART 28 - WORKMEN

The CONTRACTOR shall employ foreman and skilled laborers where necessary, and if any person employed on the work shall refuse or neglect to obey orders of the ENGINEER or Inspector when such orders are in keeping with the provisions of these specifications or shall appear to the ENGINEER or his Inspector to be incompetent, disorderly or unfaithful, he shall, upon order of the ENGINEER, be at once discharged and not again employed upon any part of the work. It shall be the responsibility of the superintendent representing the CONTRACTOR to transmit all necessary orders and instructions. If requested by the ENGINEER, the CONTRACTOR shall submit, in written form, qualifications including work experience of any workman used on the project.

PART 29 - NUMBER OF WORKING DRAWINGS AND SPECIFICATIONS

The ENGINEER will furnish to the CONTRACTOR not more than two (2) sets of drawings and specifications for construction. The CONTRACTOR may procure additional copies of drawings and specifications for construction at cost of reproduction. Such costs are reimbursable by the ENGINEER.

PART 30 - PRECONSTRUCTION CONFERENCE

Prior to the commencement of work at the site, a preconstruction conference will be held at a mutually agreed time and place. The conference shall be attended by:

- A. CONTRACTOR and his superintendent.
- B. Principal SUBCONTRACTORS.
- C. Representatives of principal suppliers and manufacturers as appropriate.
- D. ENGINEER and its Resident Project Representative.
- E. Representatives of OWNER.
- F. Government representatives as appropriate.
- G. Others as requested by CONTRACTOR, OWNER, or ENGINEER.
- H. Unless previously submitted to ENGINEER, CONTRACTOR shall bring to the conference a preliminary schedule for each of the following:
 - 1. Progress.
 - 2. Procurement.
 - 3. Values for progress payment purposes.
 - 4. Shop Drawings and other submittals.

The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include:

- A. CONTRACTOR'S preliminary schedules.
- B. Transmittal, review, and distribution of CONTRACTOR'S submittals.
- C. Processing applications for payment.
- D. Maintaining record documents.
- E. Critical work sequencing.
- F. Field decisions and change orders.
- G. Use of premises, office and storage areas, security, housekeeping, and OWNER'S needs.
- H. Major equipment deliveries and priorities.

I. CONTRACTOR'S assignments for safety and first aid.

ENGINEER will preside at the conference and will arrange for keeping the minutes and distributing the minutes to all persons in attendance.

PART 31 - PROGRESS MEETINGS

CONTRACTOR shall schedule and hold regular progress meetings at least monthly and at other times as requested by ENGINEER or required by progress of the work. CONTRACTOR, ENGINEER, and all SUBCONTRACTORS active on the site shall be represented at each meeting. CONTRACTOR may at its discretion request attendance by representatives of its suppliers, manufacturers, and other SUBCONTRACTORS.

CONTRACTOR shall preside at the meetings. Meeting minutes will be prepared and distributed by CONTRACTOR. The purpose of the meetings will be to review the progress of the work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.

PART 32 - SUBSTANTIAL AND FINAL COMPLETION

All work including site restoration shall be finished within the time called out on the Bid Form for final completion.

PART 33 - EXCAVATION

All excavation shall be unclassified. No additional payment shall be made for rock, groundwater, or other natural formations encountered. Payment for excavation shall be included in other items of work.

PART 34 - SUBCONTRACTORS

CONTRACTOR is to prepare a list of proposed SUBCONTRACTORS including material suppliers and submit to ENGINEER for approval before SUBCONTRACTORS are awarded.

No SUBCONTRACTOR is to be employed on work unless approved by OWNER and ENGINEER.

PART 35 - RIGHT-OF-WAY/PROJECT VIDEO

CONTRACTOR shall video the complete right-of-way of the project prior to initiating construction and deliver video tape to the ENGINEER at the pre-construction conference. The video shall be taken in such a way to document pre- construction conditions for use in documenting satisfactory right-of-way restoration and other issues relative to initial conditions prior to construction.

PART 36 - RECORD DRAWINGS

36.1 GENERAL

- A. The CONTRACTOR shall be responsible for accumulation and maintenance of a complete set of Project Record Documents and upon completion and acceptance of the project shall submit these documents to the ENGINEER, as the OWNER'S representative, for a permanent record.

- B. The Project Record Documents shall consist of:
1. One complete set of drawings, with revisions.
 2. One complete Project Manual with all addenda, field bulletins and change orders.
 3. Complete set of all field test data.
 4. Complete set of approved shop drawings, product data brochures and samples.
 5. Six complete sets of maintenance and operating instructions, parts lists and supplier identification on all operating fixtures and equipment.

36.2 MAINTENANCE OF RECORD DOCUMENTS

- A. The CONTRACTOR shall maintain, on the site, one complete set of contract documents, other than those used for construction, throughout the life of the job.
1. This set of documents shall be marked "Record Set" and shall be maintained up to date at all times and available to the ENGINEER for inspection.
 2. The only notations or other markings to be made on this set are notations of field variations made from the work shown on the drawings for purposes of "Record Drawings" revisions when the project is complete. Failure to record revisions by each CONTRACTOR, shall be considered a breach of contract.
 3. This set of Documents will be turned over to the ENGINEER for preparation of "Record Drawings" **prior to approval of final application for payment.**

36.3 MAINTENANCE AND OPERATING INSTRUCTIONS

- A. A complete set of maintenance and operating instructions on the project shall be prepared for the OWNER'S continual use.
1. To be bound in booklet form, 8-1/2" x 11" in size, labeled "Operating Manual".
 2. To be indexed for quick reference use.
 3. To contain manufacturer's printed data, record forms, diagrams, parts lists, maintenance procedures, start-up procedures, operating procedures, service requirements and schedules, and names, addresses and phone numbers of SUBCONTRACTOR, manufacturer and local service agent.
 4. To contain all written warranties and guarantees.
- B. Each CONTRACTOR shall submit six complete copies of this "Operating Manual" material from his trade to the ENGINEER at the completion of the project.
- C. The ENGINEER shall assemble, bind, label and index this material for the OWNER as stated above. Failure to submit the data listed on the part of any CONTRACTOR may be considered cause to withhold final payment until all such information is received.

PART 37 - CHANGES IN THE WORK

ALL CHANGES SHALL BE MADE IN WRITING AND APPROVED BY THE OWNER OR ENGINEER. THIS INCLUDES CHANGES INVOLVING COST OR THOSE NOT INVOLVING COST. NO CHANGE WILL BE ACCEPTABLE UNLESS APPROVED IN WRITING.

The OWNER, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the work with the Contract Total being adjusted accordingly. All changes involving cost shall be made using a written modification order and shall be supported with necessary documentation as to the increase or decrease in cost and time. No increase or decrease in cost or time will be made without an approved modification order that is completed at or before the change is made. Increases in cost or time will not be allowed at the end of the job for work completed earlier without an approved change order. The OWNER shall have authority to make minor changes in the work which do not involve extra cost, and which do not significantly change the design. All such changes shall be made with a written field order.

PART 38 – WEATHER DAYS

CONTRACTOR IS RESPONSIBLE FOR TRACKING ADVERSE WEATHER DAYS. CONTRACTOR SHALL NOTIFY THE ENGINEER THAT THEY WILL BE TAKING A WEATHER DAY. THE WEATHER DAY WILL NOT BE CONSIDERED UNLESS IT MEETS THE REQUIREMENTS BELOW. IT IS UP TO THE ENGINEER TO ACCEPT THE WEATHER DAY.

The contract time consists of the number of calendar days stated in the Contract for the completion of the work beginning on the effective date of the work order including all weekends, holiday, and normal adverse weather days. All calendar days elapsing between effective dates of any orders of the Owner to suspend work and to resume work for suspensions, not the fault of the Contractor shall be excluded.

The occurrence of unusually severe weather during the life of the Contract will be considered a basis for extending contract time when work is not already suspended for other reasons. Unusually severe weather shall mean weather which at the time of year it occurs is unusual for the place in which it occurs.

Extension of time for unusually severe weather will include only those actual adverse weather days in excess of the normal adverse weather days included in the contract time. Normal adverse weather shall mean adverse weather which, regardless of its severity, is to be reasonably expected for that particular place at that particular time of year. The normal adverse weather days included in the contract time as shown in Table A are based on historical records of temperature and precipitation.

Actual adverse weather days are those days meeting one or more of the criteria in A, B, C, or D below. Time extensions for days meeting more than one criterion will take into consideration only that criterion having the greatest impact. Those actual adverse weather days covered by criterion A, B, or C that are in excess of the days in Table A will be allowed without regard to when they occur (except prior to mobilization, during suspension for other reasons, or after the project completion date) or their impact on contract completion. However, those days covered by criterion D will be subject to the limitations as noted.

- A. Days with Maximum temperature of 32°F or less - one full day allowed.
- B. Days with Minimum temperature of 32°F or less, but whose maximum temperature is over 32°F - one-half day allowed.

- C. Days when 1" or more precipitation (rain or snow equivalent) occurs - one full day allowed.
- D. Days when weather related conditions exist which prohibit proper performance of work as specified - one full day allowed. Allowance of such days will be subject to the work which is being delayed, being critical to timely contract completion and the Contractor making every reasonable effort to minimize the adverse impact of the conditions.

TABLE A
NORMAL ADVERSE WEATHER DAYS
(BY MONTH)

<u>MONTH</u>	<u>NORMAL ADVERSE WEATHER DAYS</u>
January	8
February	7
March	5
April	3
May	3
June	3
July	2
August	2
September	2
October	3
November	4
December	7

END OF SECTION 01 00 00

END OF SECTION 01 00 00

SECTION 01 11 00 - SUMMARY OF WORK**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. The work covered by these specifications and drawings shall consist of all materials, transportation costs, equipment, and tools that are related to, or are to be incorporated in this contract and must be received, unloaded, stored, installed, erected, service connections provided, and coordinated with the construction by the CONTRACTOR under this contract. Installation of equipment and materials shall mean furnishing of all labor and materials as required to place the improvements in successful operation. The CONTRACTOR shall be responsible for all equipment and materials and shall replace at his own expense all such equipment and materials found defective in manufacture or damaged in handling after delivery by the manufacturer. The improvements are as listed:

**CITY OF SHAWNEE / SHAWNEE MUNICIPAL AUTHORITY
INDEPENDENCE AVENUE WATERLINE**

- B. This contract shall include minor items not specifically mentioned herein but shown on the accompanying plans or obviously necessary to provide a complete job.
- C. The following description, while not intended to cover all details, outlines some items of the work to be accomplished under this Contract:
1. **Replace approximately one and a half miles of waterline through boring, trenching, and horizontal directional drilling.**
 2. **Remove and replace asphalt and concrete pavement as necessary.**

Note: The water system must stay in operation throughout construction. Temporary pumping, piping, plugs, shut offs, etc. shall be considered incidental and included in the cost of other bid items.

- D. The price named in the Proposal shall include the furnishing of all labor, material, transportation costs, equipment rental, etc., necessary to construct the project as herein specified and as shown on the accompanying plans.
- E. The CONTRACTOR shall cooperate with the OWNER during construction so as to place the improvements in operation at minimum inconvenience and without significant disruption of the OWNER. The CONTRACTOR shall minimize his area of operation. Any areas disturbed will be restored to the OWNER'S satisfaction.

END OF SECTION 01 11 00

SECTION 01 11 50 – MEASUREMENTS AND PAYMENTS**PART 1 – PAY REQUESTS****1.1 CONTRACTOR TO SUBMIT DETAILED BREAKDOWN OF CONTRACT AMOUNT**

- A. Except in the cases where the unit prices form the basis for payment under the contract, the CONTRACTOR shall, within ten (10) days of receipt of the Notice to Proceed, submit a complete breakdown of the contract amount showing the value assigned to each part of the work, including an allowance for profit and overhead. Upon approval of the breakdown of the contract amount by the ENGINEER, it shall be used as the basis for all requests for payment.

1.2 CONTRACTOR MONTHLY PAY REQUESTS

- A. The CONTRACTOR may submit periodically, but not more than once each month, a request for payment for work done and materials delivered and stored on the site. The CONTRACTOR shall furnish the ENGINEER all reasonable facilities required for obtaining the necessary information relative to the progress and execution of the work. Payment for materials stored on the site will be conditioned upon evidence submitted to establish the OWNER'S title to such materials. Each request for payment shall be computed from the work completed on all items listed in the detailed breakdown of contract amount, less five (5) percent to be retained until 50 percent completion and acceptance of the work, and less previous payments, provided that any after 50 percent of the work has been satisfactorily completed, the OWNER shall reduce the percentage retainage to two and one-half (2 ½) percent where unit prices are specified. The request for payment shall be based on the quantities completed.

1.3 MATERIAL STORED ON SITE

- A. The following items will be required if the CONTRACTOR requests payment for material stored on the site.
1. CONTRACTOR must furnish invoices showing quantity, size, costs, etc. of the material.
 2. The invoices must be approved by the OWNER, PROJECT INSPECTOR and/or ENGINEER.
 3. Payment will be made only for material stored in a location approved by the ENGINEER and the OWNER. The storage area must provide adequate protection from the weather and vandalism.
 4. The 5 percent retainer which applies to materials installed will also apply to materials stored.
 5. Payment for materials stored on the site for this project will be made as follows: The above items must be furnished with the current pay estimate, and the CONTRACTOR will be paid as per invoice. In order for the CONTRACTOR to receive payment for the next pay estimate, he must furnish a notarized statement of payment in full from the suppliers for materials invoiced in preceding pay estimate. The procedure shall hold true for all successive materials payments until all materials have been acquired by the CONTRACTOR.

1.4 ENGINEER'S ACTIONS TO PENDING PAY REQUESTS

- A. Within ten (10) days of submission of any request for payment by the CONTRACTOR, the ENGINEER shall:
1. Approve the request for payment as submitted.
 2. Approve such other amount as he shall decide is due the CONTRACTOR, informing the CONTRACTOR in writing of his reasons for approving the amended amount.
 3. Withhold the request for payment, informing the CONTRACTOR in writing for his reasons for withholding it.

1.5 OWNER'S ACTIONS TO APPROVED PAYMENT REQUEST

- A. Within thirty (30) days from the date of approval of a request for payment by the ENGINEER, the OWNER shall:
1. Pay the request of payment as approved.
 2. Pay such other amount in accordance as herein provided as he shall decide is due the CONTRACTOR, informing the CONTRACTOR and the ENGINEER in writing of his reasons for paying the amended amount.
 3. Withhold payment in accordance as herein provided informing the CONTRACTOR and the ENGINEER of his reasons for withholding payment in writing.

1.6 OWNER'S RIGHT TO WITHHOLD PAYMENT ON APPROVED REQUESTS

- A. The OWNER may withhold payment in whole or in part on an approved request for payment to the extent necessary to protect himself from loss on account of any of the following causes discovered subsequent to approval of a request for payment by the ENGINEER:
1. Defective work.
 2. Evidence indicating the probable filing of claims by other parties against the CONTRACTOR.
 3. Failure of the CONTRACTOR to make payments to SUBCONTRACTORS, material suppliers or labor.
 4. Damage to another CONTRACTOR.

1.7 PAYMENT FOR UNCORRECTED WORK

- A. If, in the opinion of the ENGINEER, it is undesirable to replace any defective or damaged material or to reconstruct or correct any portion of the work injured or not performed in accordance with the contract documents, the compensation to be paid the CONTRACTOR hereunder shall be reduced by such amount as in the judgment of the ENGINEER shall be equitable.

1.8 PAYMENT FOR REJECTED WORK AND MATERIALS

- A. The removal of work and materials rejected by the OWNER and the re-execution of acceptable work by the CONTRACTOR shall be at the expense of the CONTRACTOR, and he shall pay the cost of replacing the work of other CONTRACTORS destroyed or damaged by the removal of the rejected work or materials and the subsequent replacement of acceptable work.
- B. Removal of rejected work or materials and storage of materials by the OWNER shall be paid by THE CONTRACTOR within thirty (30) days after written notice to pay is given by the OWNER. If the CONTRACTOR does not pay expenses of such removal and after ten (10) days written notice being given by the OWNER of his intent to sell the materials, the OWNER may sell the materials at auction or at private sale and shall pay to the CONTRACTOR the net proceeds therefrom after deducting all the costs and expenses that should have been borne by the CONTRACTOR.

1.9 ACCEPTANCE AND FINAL PAYMENT

- A. When the CONTRACTOR shall have completed the work in accordance with the terms of the contract documents, the ENGINEER shall certify his acceptance to the OWNER and his approval of the CONTRACTOR'S final request for payment, which shall be the contract amount plus all approved additions less all approved deductions and less previous payments made. The CONTRACTOR shall furnish evidence that he has fully paid all debts for labor, materials, and equipment incurred in connection with the work, following which the OWNER shall accept the work and release the CONTRACTOR except as to the conditions of the Performance Bond, any legal rights of the OWNER, required guarantee and correction of faulty work after final payment, and shall authorize payment of the CONTRACTOR'S final request for payment. The CONTRACTOR must allow sufficient time between the time of completion of the work and approval of the final request for payment for the ENGINEER to assemble and check the necessary data.

1.10 CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT

- A. The approval of the final request for payment by the ENGINEER and the making of the final payment by the OWNER to the CONTRACTOR shall not relieve the CONTRACTOR of responsibility for faulty materials or workmanship. The OWNER shall promptly give notice of faulty materials or workmanship and the CONTRACTOR shall promptly replace any such defects discovered within one year from the date of written acceptance of the work. The ENGINEER shall decide all questions arising under this paragraph.

END OF SECTION 01 11 50

SECTION 01 21 19 - TESTING LABORATORY-SERVICES (CONTRACTOR-Employed Lab)

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. CONTRACTOR shall employ and pay for the services of an independent testing laboratory to perform specified services and testing.

1.2 RELATED REQUIREMENTS

- A. Conditions of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders, or approvals of public authorities.
- B. Respective sections of specifications: Certification of products.
- C. Respective sections of specifications, laboratory tests required, and standards for testing.

1.3 QUALIFICATION OF LABORATORY

- A. Meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
- B. Meet basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction."
- C. Authorized to operate in the state in which the project is located.
- D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.
- E. Testing Equipment
 - 1. Calibrated at reasonable intervals by devices of accuracy traceable to either
 - a. National Bureau of Standards.
 - b. Accepted values of natural physical constants.

1.4 LABORATORY DUTIES

- A. Cooperate with OWNER'S REPRESENTATIVE and CONTRACTOR; provide qualified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1. Comply with specified standards.
 - 2. Ascertain compliance of materials with requirements of Contract Documents.

- C. Promptly notify OWNER'S REPRESENTATIVE and CONTRACTOR of observed irregularities or deficiencies of work or products.
- D. Promptly submit written report of each test and inspection; one copy each to OWNER'S REPRESENTATIVE, OWNER, CONTRACTOR, and one copy to Record Document File. Each report shall include:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Testing laboratory name, address, telephone number.
 - 4. Name and signature of laboratory inspector.
 - 5. Date and time of sampling or inspection.
 - 6. Record of temperature and weather conditions.
 - 7. Date of test.
 - 8. Identification of product and specification section.
 - 9. Location of sample or test in the project.
 - 10. Type of inspection or test.
 - 11. Results of tests & compliance with Contract Documents.
 - 12. Interpretation of test results, when requested by OWNER'S REPRESENTATIVE.
- E. Perform additional tests as required by OWNER'S REPRESENTATIVE or the OWNER.

1.5 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
 - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
- B. Approve or accept any portion of the work.
- C. Perform any duties of the CONTRACTOR.

1.6 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel, provide access to work, to manufacturer's operations.
- B. Secure and deliver to the laboratory adequate quantities of representation samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.

- D. Furnish copies of products test reports as required.
- E. Furnish incidental labor and facilities:
 - 1. To provide access to work to be tested.
 - 2. To obtain and handle samples at the project site or at the source of the product to be tested.
 - 3. To facilitate inspections and tests.
 - 4. For storage and curing of test samples.
- F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
 - 1. When tests or inspections cannot be performed after such notice, reimburse OWNER for laboratory personnel and travel expenses incurred due to CONTRACTOR'S negligence.
- G. Employ and pay for the services of a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required:
 - 1. For the CONTRACTOR'S convenience.
 - 2. When initial tests indicate work does not comply with Contract Documents.

1.7 CONTRACTOR'S GENERAL RESPONSIBILITIES

- A. No failure of test agencies to perform adequate inspections or tests or to properly analyze or report results shall relieve CONTRACTOR of responsibility for fulfillment of requirements of contract documents. It is recognized that required inspection and testing program is intended to assist the CONTRACTOR, OWNER, ARCHITECT, ENGINEER, and governing authorities in nominal determination of probable compliances with requirements for certain elements of work. The program is not intended to limit the CONTRACTOR'S regular quality control program, as needed for general assurance of compliances.

END OF SECTION 01 21 19

SECTION 01 33 00 - SUBMITTALS AND SUBSTITUTIONS**PART 1 - GENERAL****1.1 DESCRIPTION****A. Work Included**

1. Wherever possible throughout the contract documents, the minimum acceptable quality of workmanship and materials has been defined by manufacturer's name and catalog number, reference to recognized industry and government standards, or description of required attributes and performance.
2. To ensure that the specified products are furnished and installed in accordance with design intent, procedures have been established for advance submittal of design data and for their review by the ENGINEER.
3. Make all submittals required by the contract documents, and revise and resubmit as necessary to establish compliance with the specified requirements.

B. Related Work Described Elsewhere: Individual requirements for submittals are described in pertinent other Sections of these specifications.

1.2 QUALITY ASSURANCE

A. Coordination of Submittals: Prior to each submittal, carefully review and coordinate all aspects of each item being submitted and verify that each item and the submittal for it conforms in all respects with the requirements of the contract documents. By affixing the CONTRACTOR'S signature to each submittal, certify that this coordination has been performed.

B. Certificates of Compliance

1. When requested, certify that materials used in the work comply with specified provisions thereof. Certification shall not be construed as relieving the CONTRACTOR from furnishing satisfactory materials if, after tests are performed on selected samples, the material is found to not meet specified requirements.
2. Show on each certification the name and location of the work, name and address of CONTRACTOR, quantity and date or dates of shipment or delivery to which the certificate applies, and name of the manufacturing or fabricating company. Certification shall be in the form of letter or company-standard forms containing all required data. Certificates shall be signed by an officer of the manufacturing or fabricating company.
3. In addition to the above information, all laboratory test reports submitted with certificates of compliance shall show the date or dates of testing, the specified requirements for which testing was performed, and results of the test or tests.

1.3 SUBMITTALS

- A. Submittal Schedule: Within 10 days after award of Contract, and before any items are submitted for approval, submit to the ENGINEER two copies of the schedule described in Article 2.1 of this Section.
- B. Certificates of Compliance: Upon completion of the work, and as a condition of its acceptance, submit to the ENGINEER all Certificates of Compliance.
- C. Procedures: Make submittals in strict accordance with the provisions of this Section.
- D. Schedule of Values: Within 10 days of the Pre-Construction Conference, submit a schedule of values for lump sum bid items indicating the cost breakdown of lump sum bid items for use in progress payment preparation. Submit to the ENGINEER two copies of the schedule described in Article 2.2 of this Section.

PART 2 - PRODUCTS

2.1 SUBMITTAL SCHEDULE

- A. General: Compile a complete and comprehensive schedule of all submittals anticipated to be made during progress of the work. Include a list of each type of item for which CONTRACTOR'S drawings, Shop Drawings, Certificates of Compliance, material samples, guarantees, Operations and Maintenance manuals or other types of submittals are required. Upon approval by the ENGINEER this schedule will become part of the Contract and the CONTRACTOR will be required to adhere to the schedule except when specifically otherwise permitted.
- B. Coordination: Coordinate the schedule with all necessary subcontractors and materials suppliers to ensure their understanding of the importance of adhering to the approved schedule and their ability to so adhere. Coordinate as required to ensure the grouping of submittals as described in Article 1.3.
- C. Revisions: Revise and update the schedule on a monthly basis as necessary to reflect conditions and sequences. Promptly submit revised schedules to the ENGINEER for review and comment.

2.2 SCHEDULE OF VALUES

- A. The ENGINEER will review the tentative schedule of values to determine whether, in his judgment, the schedule of values is of sufficient detail and if the prices included are "unbalanced" or "front-end loaded", in an effort to inflate the prices of those items of work to be completed in the early stages of the work.
- B. Breakdown cost to list major products or operations for each line item which has an installed value of more than \$5,000.00. The sum of the items listed on the schedule of values shall equal the contract lump sum price.

- C. The ENGINEER will provide the CONTRACTOR with his comments and/or may request additional information from the CONTRACTOR to justify certain item quantities and prices, therefore. On the basis of the ENGINEER'S comments, the CONTRACTOR shall revise and resubmit the tentative schedule for further review and/or approval.
- D. Once the ENGINEER accepts the tentative schedule, it shall become the schedule of values to be used in determining partial payment estimates. Two (2) copies of this schedule shall be submitted to the ENGINEER for distribution and his use. No modifications will be made to the schedule of values, except as required by approved change orders.
- E. No partial payment request (including the first) shall be approved until the schedule of values has been approved by the OWNER and ENGINEER.

2.3 SHOP DRAWINGS AND COORDINATION DRAWINGS

A. Shop Drawings

- 1. Scale and Measurements: Make all Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the work.
- 2. Type of Prints Required: Submit all Shop Drawings in the form of electronic (.pdf) or hardcopy, minimum of 8 ½" by 11".

2.4 MANUFACTURERS' LITERATURE

- A. General: Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly indicate which portion of the contents is being submitted for review.
- B. Number of Copies Required: Submit the number of copies which are required to be returned plus two copies which will be retained by the ENGINEER. Under no circumstances shall less than five copies be submitted.

2.5 SAMPLES

- A. Accuracy of Samples: Samples shall be of the precise article proposed to be furnished. Samples shall have stickers or tags which bear identification of the project, the subcontractor, the vendor or manufacturer, the product color name or number, model, style or series, and the size and thickness of components.
- B. Number of Samples Required: Unless otherwise specified, submit all Samples in the quantity which is required to be returned plus one which will be retained by the ENGINEER.
- C. Reuse of Samples: In situations specifically so approved by the ENGINEER, the ENGINEER'S retained sample may be used in the construction as one of the installed items.

- D. Match Existing Materials: Brick or other materials that are to match existing materials shall require a "test panel" to be erected adjacent to the existing material to allow the OWNER to approve the match in size, color, and texture.

2.6 COLORS AND PATTERNS

- A. Unless the precise color and pattern is specifically described in the contract documents, and whenever a choice of color or pattern is available in a specified product, submit accurate color and pattern charts to the ENGINEER for review and selection.

2.7 SUBSTITUTIONS

A. Approval Required

1. The Contract is based on the standards of quality established in the contract documents.
2. All products proposed for use, including those specified by required attributes and performance, shall require approval by the ENGINEER before being incorporated into the work.
3. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved for this work by the ENGINEER.

B. "Or Equal":

1. Where the phrase "or equal" or "approved or equal" occurs in the contract documents, do not assume that materials, equipment, or methods will be approved as equal unless the item has been specifically approved for this work by the ENGINEER.
2. The decision of the ENGINEER shall be final.

PART 3 - EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

- A. General: Bind submittals with cover label that identifies project, division of work, subcontractor, and vendor/manufacturer. Consecutively number all submittals. Accompany each submittal with a letter of transmittal containing all pertinent information required for identification and checking of submittals.
- B. Internal Identification: On at least the first page of each copy of each submittal, and elsewhere as required for positive identification, clearly indicate the submittal number in which the item was included.
- C. Resubmittals: When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new submittal number.

3.2 COORDINATION OF SUBMITTALS

- A. General: Prior to submittal for approval, use all means necessary to fully coordinate all material including, but not necessarily limited to:
 - 1. Determine and verify all interface conditions, catalog numbers, and similar data.
 - 2. Coordinate with other trades as required.
 - 3. Clearly indicate all deviations from requirements of the contract documents.
- B. Grouping of Submittals: Unless otherwise specified, make all submittals in groups containing all associated items to ensure that information is available for checking each item when it is received. Partial submittals may be rejected as not complying with the provisions of the contract documents and the CONTRACTOR shall be strictly liable for all delays so occasioned.

3.3 TIMING OF SUBMITTALS

- A. General: Make all submittals far enough in advance of scheduled dates for installation to provide all time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.
- B. ENGINEER'S Review Time: In scheduling, allow at least 21 calendar days for review by the ENGINEER following his receipt of the submittal. Should unanticipated circumstances prevent the normal review time, a minimum of 10 working days review time must be allowed for reviews.
- C. Delays: Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the contract completion date.

3.4 ENGINEER'S REVIEW

- A. CONTRACTOR'S approval: Prior to submission to the ENGINEER, all submittals shall have been reviewed and approved by the CONTRACTOR.
- B. General: Review by the ENGINEER shall not be construed as a complete check, but only that the general method of construction and detailing is satisfactory. Review shall not relieve the CONTRACTOR from responsibility for errors which may exist.
- C. Authority to Proceed: The notations "Reviewed, No Exceptions Noted" or "Reviewed, Exceptions Noted" authorize the CONTRACTOR to proceed with fabrication, purchase, or both, of the items so noted, subject to the revisions, if any, required by the ENGINEER'S review comments.
- D. Revisions: Make all revisions required by the ENGINEER. If the CONTRACTOR considers any required revision to be a change, he shall so notify the ENGINEER as provided for under "Changes" in the General Considerations. Show each drawing revision by number, date, and subject in a revision block on the drawing. Make only those revisions directed or approved by the ENGINEER.

- E. Revisions After Approval: When a submittal has been reviewed by the ENGINEER, resubmittal for substitution of materials or equipment will not be considered unless accompanied by an acceptable explanation as to why the substitution is necessary.

END OF SECTION 01 33 00

SECTION 01 45 00 - QUALITY CONTROL**PART 1 - GENERAL****1.1 DESCRIPTION****A. Section Includes**

1. Quality assurance - control of installation.
2. Tolerances
3. References and standards.
4. Mock-up.
5. Testing laboratory services.
6. Inspection services.
7. Manufacturers' field services.
8. Subcontracting.

B. Related Sections

1. Section 01 33 00 – Submittals and Substitutions: Submission of manufacturers' instructions and certificates.

1.2 QUALITY ASSURANCE

- A. The CONTRACTOR will be held strictly to the intent of the contract documents in regard to the quality of materials, workmanship, and execution of the work. Inspections may be made at the factory or fabrication plant of the source of material supply.
- B. The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedure, or construction safety.
- C. The CONTRACTOR shall monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- D. The CONTRACTOR will supervise and direct the work. He will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The CONTRACTOR will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervisor and coordination of the work.
- E. The CONTRACTOR shall comply with manufacturers' instructions, including each step in sequence.

- F. Should the manufacturers' instructions conflict with Contract Documents, the CONTRACTOR shall request clarification from ENGINEER before proceeding.
- G. The CONTRACTOR shall comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- H. The CONTRACTOR shall perform work by persons qualified to produce required and specified quality.
- I. The CONTRACTOR shall verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- J. The CONTRACTOR shall secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 IMPROPER COVERAGE OF BURIED CONSTRUCTION

- A. If any work is covered contrary to the written instructions of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for the ENGINEER'S observation, and replaced at the CONTRACTOR'S expense.
- B. If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction; if, however, such work is not found to be defective, the CONTRACTOR will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate change order shall be issued.
- C. Defect Assessment
 - 1. Replace the work, or portions of the work, not conforming to specified requirements.
 - 2. If, in the opinion of the ENGINEER it is not practical to remove and replace the work, the ENGINEER will direct an appropriate remedy or adjust payment.
- D. Tolerances
 - 1. The CONTRACTOR shall monitor fabrication and installation tolerance control of all products to produce acceptable work. Do not permit products and installation outside of allowable tolerances to accumulate.
 - 2. The CONTRACTOR shall comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from ENGINEER before proceeding.

3. The CONTRACTOR shall adjust products to appropriate dimension and position before securing products in place.

E. References and Standards

1. For products or workmanship specified by association, trade, or other consensus standards, the CONTRACTOR shall comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
2. The CONTRACTOR shall conform to reference standard by date of issue current date for receiving bids, except where a specific date is established by code.
3. The CONTRACTOR shall obtain copies of standards where required by product specification sections.
4. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the ENGINEER shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

F. Mock-Up

1. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
2. The CONTRACTOR shall assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
3. Accepted mock-ups shall be a comparison standard for the remaining work.
4. Where mock-up has been accepted by ENGINEER and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

G. Testing Services

1. The OWNER will appoint and employ services of an independent firm to perform testing. OWNER shall pay for services.
2. The independent firm will perform tests and other services specified in individual specification sections and as required by the ENGINEER.
3. Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the ENGINEER or the OWNER.
4. Reports will be submitted by the independent firm to the ENGINEER and CONTRACTOR, in duplicate indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
5. The CONTRACTOR shall cooperate with the independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

- a. Notify ENGINEER and independent firm 24 hours prior to expected time for operations requiring services.
 - b. Make arrangements with independent firm and pay for additional samples and tests required for CONTRACTOR'S use.
 - 6. Testing does not relieve CONTRACTOR to perform work to contract requirements.
 - 7. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the ENGINEER. Payment for re-testing will be charged to the CONTRACTOR or by deducting testing charges from the Contract Sum/Price.
- J. Removal of Defective and Unauthorized Work
- 1. All work which has been rejected or condemned shall be repaired, or, if it cannot be satisfactorily repaired it shall be removed and replaced at the CONTRACTOR'S expense. Defective materials shall be removed immediately from the site of the work.
 - 2. Work done without lines and grades having been given, work done beyond the lines or not in conformity with the grades shown on the plans or as given, save as herein provided, work done without proper inspection will be done at the contractor's risk and will be considered unauthorized and at the option of the ENGINEER may not be accepted and may be ordered removed at the CONTRACTOR'S expense.
 - 3. If any work is covered contrary to the written instructions of the ENGINEER it must, if requested by the ENGINEER, be uncovered for the ENGINEER'S observation, and replaced at the CONTRACTOR'S expense.
 - 4. If the ENGINEER considers it necessary or advisable that covered work be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction; if, however, such work is not found to be defective, the CONTRACTOR will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate change order shall be issued.
- K. Inspection Services
- 1. Owner will appoint, employ, and pay for specified services of an independent firm to perform inspection.
- L. Manufacturers' Field Services
- 1. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of

equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

2. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
3. Refer to Section 01 33 00 – Submittals and Substitutions, Manufacturers' Field Reports article.
4. Coordination of Plans, Specifications, and Special General Conditions: The plans, these specifications, Special General Conditions, and all supplementary documents are intended to describe a complete work and are essential parts of the contract. A requirement occurring in any of them is binding. In case of discrepancies, figured dimensions shall govern over scaled dimensions; plans shall govern over specifications. Special General Conditions shall govern over both General and Standard Specifications, and the plans and quantities shown on the plans shall govern over those shown on the proposal. The CONTRACTOR shall take no advance of any apparent error or omission in the plans and specifications, and the ENGINEER shall be permitted to make such corrections or interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specification.

In the event the CONTRACTOR discovers any apparent error or discrepancy, he shall immediately call such error or discrepancy to the attention of the ENGINEER, and request in writing an interpretation thereof by the ENGINEER.

M. Subcontracting

1. The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the work which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.
2. The CONTRACTOR shall not award work to SUBCONTRACTOR(S) in excess of fifty (50) percent of contract price, or in excess of fifty (50) percent of the labor and equipment required to install the project, without prior written approval of the OWNER.
3. The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of its SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as the CONTRACTOR is for the acts and omissions of persons directly employed by the CONTRACTOR.
4. The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the contract documents insofar as applicable to the work of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.
5. Nothing contained in this CONTRACT shall create any contractual relationship between the SUBCONTRACTOR and the OWNER.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Beginning new work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION 01 45 00

SECTION 01 50 00 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Electricity, Lighting.
- B. Heat, Ventilation.
- C. Telephone Service.
- D. Water.
- E. Sanitary Facilities.
- F. Construction Aids.
- G. Barriers.
- H. Cleaning During Construction.
- I. Field Offices and Sheds.

1.2 ELECTRICITY, LIGHTING

- A. Provide and pay the cost of service required for construction operations.
- B. Arrange for connection of permanent power to operate the permanent facilities and pay the cost for power to operate each individual facility until such time as the individual facility is substantially complete.
- C. Provide and pay the cost of power required for all testing of each facility, including testing of the completed permanent installation.

1.3 HEAT, VENTILATION

- A. Provide as required to maintain specified conditions for construction operations, to protect materials and finishes from damage due to temperature or humidity.
- B. Provide ventilation of enclosed areas to cure materials, to disperse humidity, and to prevent accumulations of dust, fumes, vapors, or gases.

1.4 WATER

- A. Provide all water required for construction operations.

1.5 SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures.

1.6 CONSTRUCTION AIDS

- A. Provide and operate drainage and pumping equipment; maintain excavations and site free of standing water.
- B. Provide special equipment required to locate prior to excavation all buried utilities and pipelines, regardless of whether or not they are shown on the drawings.

1.7 BARRIERS

- A. Provide traffic control required to direct and maintain an orderly flow of traffic in public roadways affected by the CONTRACTOR'S operations.
- B. Provide qualified and suitably equipped flagmen when construction operations encroach on traffic lanes as required for regulation of traffic.
- C. Provide barriers around existing trees and plants. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water.

1.8 CLEANING DURING CONSTRUCTION

- A. Control accumulation of waste materials and rubbish; periodically dispose of off-site.
- B. Clean interior areas prior to start of finish work; maintain areas free of dust and other contaminants during finishing operations.

1.9 FIELD OFFICES AND SHEDS

- A. Storage sheds for tools, materials, and equipment: Weathertight, with heat and ventilation for products requiring controlled conditions, with adequate space for organized storage and access, and lighting for inspection of stored materials.

1.10 REMOVAL

- A. Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary facilities. Remove underground installations to a depth of two (2) feet; grade site as indicated. Restore existing facilities used during construction to specified or to original condition.

END OF SECTION 01 50 00

SECTION 01 60 00 – PRODUCT REQUIREMENTS**PART 1 - GENERAL****1.1 DESCRIPTION****A. Section Includes**

1. Products.
2. Transportation and handling.
3. Storage and protection.
4. Product options.
5. Substitutions.

B. Related Sections

1. Section 01 45 00 - Quality Control: Product quality monitoring.

C. Products

1. The CONTRACTOR shall not use materials and equipment removed from existing premises, except as specifically permitted by the contract documents.
2. The CONTRACTOR shall provide interchangeable components of the same manufacture for components being replaced.

D. Transportation and Handling

1. The CONTRACTOR shall:
 - a. Transport and handle products in accordance with manufacturer's instructions.
 - b. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
 - c. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

E. Storage and Protection

1. The CONTRACTOR shall:
 - a. Store and protect products in accordance with manufacturers' instructions.
 - b. Store with seals and labels intact and legible.
 - c. Store sensitive products in weathertight, climate controlled enclosures in an environment favorable to product.
 - d. Provide for exterior storage of fabricated products, which shall be placed on sloped supports above ground.

- e. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- f. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- g. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- h. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- i. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

F. Product Options

- 1. The CONTRACTOR shall provide products specified by reference standards or by description only: any product meeting those standards or description.
- 2. The CONTRACTOR shall provide products specified by naming one or more manufacturers with a provision for substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

G. Substitutions

- 1. ARCHITECT / ENGINEER will consider requests for substitutions only within 15 days after date established in Notice to Proceed.
- 2. Substitutions may be considered when a product becomes unavailable through no fault of the CONTRACTOR.
- 3. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

A request constitutes a representation that the BIDDER or CONTRACTOR:

- a. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
- b. Will provide the same warranty for the substitution as for the specified product.
- c. Will coordinate installation and make changes to other work which may be required for the work to be completed with no additional cost to OWNER.
- d. Waives claims for additional costs or time extension which may subsequently become apparent.
- e. Will reimburse OWNER and ARCHITECT / ENGINEER for review or redesign services associated with re-approval by authorities.
- 4. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the contract documents.

5. Substitution Submittal Procedure:
 - a. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - b. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - c. The ARCHITECT / ENGINEER will notify CONTRACTOR in writing of decision to accept or reject request.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION 01 60 00

SECTION 01 70 00 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures
- B. Final cleaning
- C. Adjusting
- D. Project record documents
- E. Operation and maintenance data
- F. Spare parts and maintenance products
- G. Maintenance service

1.2 RELATED SECTIONS

- A. Section 01 50 00 - Construction Facilities and Temporary Controls

1.3 CLOSEOUT PROCEDURES

- A. The CONTRACTOR shall:
 - 1. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for ENGINEER'S review.
 - 2. Provide submittals to ENGINEER that are required by governing or other authorities.
 - 3. Submit final Application for Payment identifying total adjusted contract sum, previous payments, and sum remaining due.

1.4 FINAL CLEANING

- A. The CONTRACTOR shall:
 - 1. Execute final cleaning prior to final project assessment.
 - a. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
 - b. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
 - c. Replace filters of operating equipment.
 - d. Clean debris from roofs, gutters, downspouts, and drainage systems.

- e. Clean site, sweep paved areas, rake clean landscaped surfaces.
- f. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.5 ADJUSTING

- A. The CONTRACTOR shall adjust operating products and equipment to ensure smooth and unhindered operation.

1.6 PROJECT RECORD DOCUMENTS

- A. The CONTRACTOR shall maintain on site one set of the following record documents and record actual revisions to the work:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other modifications to the Contract
 - 5. Reviewed Shop Drawings, Product Data, and Samples
 - 6. Manufacturer's instruction for assembly, installation, and adjusting
- B. The CONTRACTOR shall ensure entries are complete and accurate, enabling future reference by OWNER.
- C. The CONTRACTOR shall store record documents separate from documents used for construction.
- D. The CONTRACTOR shall record information concurrent with construction progress.
- E. Specifications: The CONTRACTOR shall legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 1. Product substitutions or alternates utilized.
 - 2. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: The CONTRACTOR shall legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
 - 4. Field changes of dimension and detail.

5. Details not on original contract drawings.

1.7 OPERATION AND MAINTENANCE DATA

A. The CONTRACTOR shall:

1. Submit data bound in 8 ½ x 11-inch text pages, three D side ring binders with durable plastic or cloth covers.
2. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
3. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
4. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, typed on 20-pound white paper, in three parts as follows:
 - a. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, CONTRACTOR, SUBCONTRACTORS, and major equipment suppliers.
 - b. Part 2: Operation and maintenance instructions, arranged by system. For each category, identify names, addresses, and telephone numbers of SUBCONTRACTORS and suppliers. Identify the following:
 - 1) Significant design criteria
 - 2) List of equipment
 - 3) Parts list for each component
 - 4) Operating instructions
 - 5) Maintenance instructions for equipment and systems
 - 6) Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents
 - c. Part 3: Project documents and certificates, including the following:
 - 1) Shop drawings and product data
 - 2) Air and water balance reports
 - 3) Certificates
 - 4) Photocopies of warranties and bonds
5. Submit one (1) draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with ENGINEER'S comments. Revise content of all document sets as required prior to final submission.
6. Submit five sets of revised final volumes, prior to final payment.

1.8 SPARE PARTS AND MAINTENANCE PRODUCTS

A. The CONTRACTOR shall:

1. Provide spare parts, maintenance, and extra products in quantities specified in individual specification sections.
2. Deliver to project site and place in location as directed and obtain a receipt prior to final payment.

1.9 MAINTENANCE SERVICE

A. The CONTRACTOR shall:

1. Furnish service and maintenance of components indicated in specification sections during the warranty period.
2. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
3. Maintenance service shall not be assigned or transferred to any agent or SUBCONTRACTOR without prior written consent of the OWNER.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION 01 70 00

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Maintain at the site for the OWNER one record copy of:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the contract.
 - 5. Approved shop drawings, product data and samples.
 - 6. Field test records.
- B. Related Requirements in other parts of the Project Manual:
 - 1. Conditions of the Contract.

1.2 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in CONTRACTOR'S field office apart from documents used for construction.
 - 1. Provide files and racks for storage of documents.
 - 2. Provide locked cabinet or secure storage space for storage of samples.
- B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- C. Make documents and samples available at all times for inspection by OWNER'S REPRESENTATIVE.

1.3 RECORDING

- A. Label each document "PROJECT RECORD" in neat large printed letters.
- B. Record information concurrently with construction progress.
 - 1. Do not conceal work until required information is recorded.
- C. Drawings: Legibly Mark to Record Actual Construction:
 - 1. Location of waterline, referenced to permanent improvements.
 - 2. Actual construction of waterline.
 - 3. Actual construction of permanent installation.

D. Specifications and Addenda; Legibly Mark Each Section to Record:

1. Manufacturer, trade name, catalog number, and supplier of Representative for the OWNER.
2. Changes made by Change Order.

E. Drawings and Specifications: Post addenda items, whether written or drawn, on the pages affected such that:

1. Cut-outs of items are securely attached to the sheet that the addenda modified.
2. The addenda number is reflected in each posted item.
3. Completely revised sheets are posted over the sheet revised and the outdated sheet is labeled "void".

1.4 SUBMITTALS

A. At contract close-out, deliver Record Documents to OWNER'S REPRESENTATIVE.

B. Accompany submittal with transmittal letter in duplicate, containing:

1. Date.
2. Project title and number.
3. CONTRACTOR'S name and address.
4. Title and number of each Record Document.
5. Signature of CONTRACTOR or his authorized REPRESENTATIVE.

END OF SECTION 01 78 39

DIVISION 02 – EXISTING CONDITIONS

SECTION 02 10 00 – SITE REMEDIATION

PART 1 - GENERAL

1.1 SCOPE

Work under this heading shall include all items of demolition and clearing necessary to prepare the site for construction.

PART 2 - PRODUCTS

2.1 MATERIALS

All salvage materials from demolition or other clearing shall remain the property of the OWNER, unless specifically noted otherwise.

PART 3 - EXECUTION

- A. Protection of trees and improvements: CONTRACTOR shall exercise extreme care in the protection of all existing trees and other improvements on the site designated by the OWNER'S REPRESENTATIVE to remain.
- B. Topsoil shall be stripped from the area to be occupied by building, walks, drives, parking etc., and stockpiled in area designated by OWNER'S REPRESENTATIVE where it will not interfere with building or utility operations. Use topsoil for finish grading.
- C. Remove from site all brush, rubbish and miscellaneous debris resulting from demolition and clearing ahead of construction to meet all safety standards on the site. All wood, vegetation and non-vegetable matter to be removed from topsoil as it is being stockpiled and hauled off with other debris.
- D. Care must be taken to confine clearing operation to the building site with no encroachments on adjacent foliage or possible damage to adjacent areas.
- E. OWNER shall designate area to be cleared for parking, storage of materials and other workspace in addition to building site. This area shall not be cleared of trees and no soil to be stripped or disturbed. Fill and level holes and depressions, prior to final acceptance of project.

END OF SECTION 02 10 00

SECTION 02 42 00 - REMOVALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General Supplementary Conditions and Division 01 Specification Sections, apply to this section.

1.2 WORK INCLUDED

- A. The work required under this section consists of operations, methods, labor, and materials for partial interior, exterior, and/or site underground removals with all related items necessary to complete the Work indicated on the contract drawings.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 CONDITION OF SITE AND BUILDINGS

- A. The condition of site and buildings shall be accepted as found. The OWNER will not assume responsibility for conditions found or continuation of conditions existing at time of Proposal Invitation or thereafter. Any damage or loss, whether by reason of fire, theft, or other casualty or happening on the site, will not relieve the CONTRACTOR'S obligations to complete the work.

3.2 PROTECTION OF LIFE, STRUCTURES AND PROPERTY

- A. Execute work to insure against damages to remaining property. Do not interfere with property or portions of building without permission from authorized persons approved by the OWNER. Maintain free and safe passages in and around work areas. Do not seal off required exits without permission from authorities having jurisdiction.
- B. Provide, erect, and maintain lights, barriers, barricades as necessary to protect life, meeting all Federal, OSHA, State and local laws and regulations.

3.3 UTILITY SERVICES

- A. Remove all utility services as required and/or indicated on the drawings. Provide temporary utilities and services into areas requiring continued services before and after removal work.
- B. All electrical equipment and circuits shall be restored to original condition that are damaged or destroyed during removals and are not called out to be removed on the contract drawings.

3.4 REMOVALS

- A. Before starting demolition work, review all requirements for final remodeling work so that useable existing system components as required for completion of the new work is not destroyed. Coordinate all work with other CONTRACTORS.
- B. Remove any personal property, equipment, machinery, or other fixtures and turn them over to the OWNER as called for on the contract drawings.

3.5 DEBRIS

- A. Remove from the areas of removals, all debris as it accumulates. Do not store or permit debris to accumulate on the site. If the CONTRACTOR fails to remove excess debris promptly, the ENGINEER shall reserve the right to have debris removed by others at CONTRACTOR'S expense.
- B. Upon work completion, remove all tools, materials, equipment, apparatus, temporary toilets, and rubbish of every sort. Leave all existing building surfaces, not scheduled to be removed, swept clean condition at completion of work within any given area. Leave buildings and site clean, neat, and orderly.

3.6 REMOVAL OF PAVEMENT, SIDEWALKS, CURBS, ETC.

- A. Break concrete pavement, base course, and other similar materials designated for removal into pieces no heavier than 150 lbs. [68 kg]. Stockpile at locations shown on the plans.
- B. If the contract documents require the removal of asphalt concrete or Portland cement concrete pavement, saw the joint to the line and depth, as approved by the ENGINEER, to prevent under-break or shatter of adjacent areas.

3.7 REMOVAL AND DISPOSAL OF SALVAGED MATERIALS, STRUCTURES, AND OBSTRUCTIONS

- A. Unless otherwise required by the contract documents, all salvaged material shall become the property of the CONTRACTOR. Ownership of salvaged materials implies the responsibility to dispose of the salvaged material in accordance with all applicable local, state, and federal rules and regulations. CONTRACTOR is not allowed to bury or otherwise dispose of material within the project's boundaries or on any publicly owned property without the ENGINEER'S prior written approval.

END OF SECTION 02 42 00

SECTION 02 44 00 - ADJUSTMENT OF EXISTING STRUCTURES**PART 1 - GENERAL REQUIREMENTS****1.1 SCOPE**

This work shall consist of the necessary adjustments, alterations, relocating, or resetting to the required grade and alignment of existing structures, equipment or appurtenances which are not to be removed or abandoned and which are not the property of a private company, firm, or corporation required to move their own property, in accordance with these specifications and in reasonably close conformity with the lines, grades, elevations and dimensions shown on the drawings or established by the ENGINEER.

PART 2 - PRODUCTS**2.1 MATERIALS**

Materials for use in this work shall be as set out on the drawings, or if not specified, shall be of the same grade of material as specified elsewhere in these specifications for a similar type of work or of a material equivalent to that in the structure being adjusted.

PART 3 - EXECUTION**3.1 CONSTRUCTION METHODS****A. General**

1. The materials and workmanship necessary in raising, lowering, or otherwise adjusting or resetting existing structures shall conform to the requirements of the drawings and specifications for the class of work involved, or as directed by the ENGINEER. Whole bricks salvaged in good condition from structures may be used in rebuilding such structures provided the bricks are cleaned satisfactorily and approved by OWNER. Existing structures shall be rebuilt in accordance with the drawings and specifications. The final adjustment to grade shall be completed after the final surface course has been placed if the structure is in the pavement.
2. The CONTRACTOR shall guard against damage or breakage to any portion of the structure or appurtenance to be altered, removed, or reset. Any damage or breakage due to the CONTRACTOR'S negligence or failure to properly protect such structure or appurtenances, shall be repaired or replaced at the CONTRACTOR'S expense.

B. Manholes

1. Where the tops of the manholes are to be lowered to a new grade, the walls shall be removed and rebuilt to an elevation far enough below the new grade so that the maximum batter of the walls does not exceed 4 in. (10.1 cm) per foot (30.5 cm).
2. Where manholes are to be built up a distance of one foot (0.305 m) or less to a new grade, the walls may be carried up vertically and one new standard step shall

be set. Where the walls are to be built up a distance exceeding one foot (0.305 m), the existing walls shall first be removed to the bottom of the batter section of the walls, or to such elevation that the inside diameter of the manhole is not less than 3.5 ft. (1.1 m). The manhole shall then be rebuilt in conformity with the size and shape requirements for new manholes.

C. Catch Basins, Inlets, Manholes

1. Where inlets, catch basins, manholes or similar structures are to be revised to grade or rebuilt, the work shall be done in conformity with the requirements for new construction of this class of work as provided elsewhere in these specifications.

D. Valve Boxes, Meter Boxes, Lampholes

1. Care shall be taken in removing and resetting to grade, valve boxes, meter boxes, etc., to avoid breaking and any breakage shall be replaced by the CONTRACTOR at his expense.

E. Fire Hydrants, Valves, Water Meters, Water Line, etc.

1. Where adjustment or relocation of water lines and appurtenances is to be done by the OWNER, the CONTRACTOR shall be responsible for coordinating the arrangements with the OWNER for lowering or relocating of all water lines and the resetting of water valves, meters, manholes, and fire hydrants. When the alteration is part of the work to be performed by the CONTRACTOR as a part of his contract, such work shall be done in conformity with the requirements of the OWNER and in accordance with the requirements of these specifications for new work of this type.

F. Electric Traffic Signals or Right-of-Way Systems

1. Where the adjustment or relocation of electric traffic signals, highway lighting standard or conduits, cables, or appurtenances is to be done by the OWNER where the work is located, the CONTRACTOR shall make complete arrangements with the proper City or ODOT officials for the work to be done. When the alteration is part of the work to be performed by the CONTRACTOR as a part of his contract, such work shall be done in conformity with requirements of the OWNER, or as specified on the Drawings or in the Proposal and as directed by the ENGINEER.

G. Sewer Pipe

1. Sewer pipe removed to be re-laid shall be re-laid in conformity with the requirements of new sewers.

3.2 METHOD OF MEASUREMENT

Unless otherwise shown on bid form, the cost for various items, listed in Part 3.3, but not limited to, shall be included in other items of work.

3.3 BASIS OF PAYMENT

A. Accepted items, measured as provided above, will be paid for at the contract unit price for:

1. MANHOLES ADJUST TO GRADE	EA.
2. MANHOLES REBUILT	EA.
3. CATCH BASINS ADJUST TO GRADE	EA.
4. CATCH BASINS REBUILT	EA.
5. INLETS ADJUST TO GRADE	EA.
6. INLETS REBUILT	EA.
7. VALVE BOXES ADJUST TO GRADE	EA.
8. METER BOXES ADJUST TO GRADE	EA.
9. LAMPHOLES ADJUST TO GRADE	EA.
10. FIRE HYDRANT RESET	EA.
11. VALVES RESET	EA.
12. WATER METERS RESET	EA.
13. WATER LINE LOWERED	L.F.
14. WATER LINE REMOVED AND RELAID	L.F.
15. ELECTRIC TRAFFIC SIGNALS RESET	EA.
16. HIGHWAY LIGHTING STANDARDS RESET	EA.
17. ELECTRIC CABLE RELAID	L.F.
18. ELECTRIC CABLE CONDUIT RELAID	L.F.
19. PIPE SEWER REMOVED AND RELAID	L.F.
20. REMOVE AND RESET MANHOLE FRAME AND COVER	EA.

B. Valve boxes, meter boxes, etc., in conjunction with valves or meters to be reset will be considered as part of the valve or meter and will not be paid for as a separate item.

C. Valves in water lines or fire hydrant leads will not be considered as a separate pay item, but the cost of resetting same, and shall be included in the price bid for the water line or lead.

D. When the valve is under pavement, adjustment of valve box will be a separate pay item.

END OF SECTION 02 44 00

DIVISION 03 - CONCRETE**SECTION 03 10 00 - FORMWORK****PART 1 - GENERAL****1.1 SCOPE OF WORK**

- A. Furnish, install all labor, materials, equipment, and services as required to complete all formwork for all cast-in-place concrete as shown on drawings, and/or specified herein.

1.2 SHOP DRAWINGS

- A. Per Division 01 General Conditions, submit Shop Drawings showing location, layout of construction joints, form joints, locations of tie holes or plugs, and procedure for pouring into formwork.

1.3 COORDINATION

- A. Secure all pipe sleeves, anchors, bolts, including those for angle frames, inserts, supports, ties, other materials in connection with concrete construction, in position before concrete is placed.
- B. Obtain information, instructions from other trades, suppliers in ample time to schedule, coordinate installation of items furnished by them to be embedded in concrete so provisions for their work can be made without delaying project.
- C. Make cutting and/or patching made necessary by failure or delay in complying with these requirements at no cost to OWNER.

1.4 GENERAL REQUIREMENTS

- A. Furnish formwork and formwork accessories according to ACI SPEC-301.
- B. Provide complete forms of such strength and construction as to prevent any spread, shifting, or settling when concrete is deposited, tight enough to avoid any leakage or washing out of cement mortar.
- C. Design forms, false-work supports so stresses indifferent members can be determined, including details. They shall have sufficient rigidity to resist deflection more than 1/8" between supports after concrete has been placed, to assure smooth, even appearance of surfaces.
- D. Plywood or lined forms will not be required for surfaces which are normally submerged or not ordinarily exposed to view. Other types of forms, such as steel or unlined wooden forms, may be used for surfaces which are not restricted to plywood and may be used as backing for form linings. Concrete forms are required above all extended footings.

- E. Where concrete is placed against a gravel or crushed rock which does not contain at least 25% material passing a No. 4 sieve, such surfaces shall be covered with polyethylene film 6 mil thick to protect the concrete from loss of water. Joints in the film shall be lapped at least 4".
- F. Use bolts, rods, other approved devices for internal ties, spreaders; of such construction that when forms are removed, no metal is within 1" of an exterior nor within 1/2" of an interior concrete surface.
- G. Take special care that forms are true to required lines, grades, surfaces so as to give uniform, neat, workmanlike finish to all concrete surfaces, and to make form supports of sufficient strength, well braced, on adequate foundations so there is no settling or distortion when weight of concrete is added.
- H. Remove all dirt, chips, sawdust, rubbish, water, etc., from forms by water hosing and air pressure before any concrete is deposited. Leave no wooden ties or blocking in concrete except where indicated for attachment of other work.
- I. ENGINEER will cooperate with CONTRACTOR in matter of removing forms and shoring as early as possible. Length of time forms must remain in place depends on rate of time required for concrete to obtain proper strength and on construction loads that will be placed on concrete. Forms shall not be removed until authorized by the ENGINEER.
- J. Forms shall not be removed or disturbed for at least seven (7) days from date of last pouring unless approved by the ENGINEER.
- K. On removal of forms, all bolts, wires for anchoring, etc., shall be either removed, cut off to lengths as directed, or left in place for anchorage of other work as specified.
- L. Forms to be reused shall be in good condition, thoroughly cleaned before being reused.
- M. Provide 3/4" chamfer at any wall, column and vertical corners unless otherwise shown.

1.5 CONSTRUCTION JOINTS

- A. Make and locate generally as indicated on drawings all construction joints so as not to impair strength of structure and only at locations approved by the ENGINEER. Form keys used in any cold joints shown or required.

PART 2 - MATERIALS

2.1 SLABS, WALLS AND EXPOSED CONCRETE:

- A. Forms for flat exposed surfaces shall be 5-ply Exterior B-B (Concrete Form) panels. Panels with raised or separate face veneers shall not be used for exposed concrete.

2.2 SURFACE TREATMENT

- A. Surface Treatment: Plywood panels shall have smooth surface treatment to prevent any development of bond or adhesion to concrete and to seal plywood surfaces against moisture. Master Finish RL Series as manufactured by Master Builder Solutions; Burke Form Sealer as manufactured by W. J. Burke Company, or approved equal, shall be used, applied in strict accordance with manufacturer's directions.

2.3 FORM TIES AND SPREADERS

- A. Form Ties and Spreaders: Shall be metal, cone nut type. No wood spreaders will be permitted.

2.4 ROUGH HARDWARE

- A. Rough Hardware: Nails, bolts, screws, anchors, etc., as shown or needed shall be furnished and set.

END OF SECTION 03 10 00

SECTION 03 20 00 - REINFORCEMENT**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. Furnish all labor, materials, equipment, and services as required to complete all reinforcing steel work as shown on drawings, and/or specified herein.

1.2 SHOP DRAWINGS

- A. Per Division 01, General Conditions, submit Shop drawings showing bending and placing of all reinforcing. Drawings shall include diagrammatic elevations of all walls at a scale sufficiently large to clearly show the position, erection marks of marginal bars and their dowels and splices.

1.3 COORDINATION

- A. Coordinate with other trades so as not to interfere. Bring interferences between trades to ENGINEER'S attention; resolve before any concrete is poured.

1.4 STORAGE

- A. Store reinforcement to avoid rusting or coating with grease, oil, dirt, or other objectionable materials. Reinforcement coated with such materials will be rejected.

1.5 STANDARDS

- A. Comply with requirements set forth in the "Manual of Standard Practice for Detailing Reinforced Concrete Structures", published by the American Concrete Institute except where more exacting requirements are specified in Contract Documents.

PART 2 - MATERIALS**2.1 REINFORCEMENT**

- A. Reinforcing bars shall be deformed bars conforming to ASTM A-615 Grade 60.
- B. Welded wire fabric shall conform to requirements of ASTM A-1064 using bright steel wire meeting ASTM A-1064. Gauges, dimensions shall be as noted on the drawings.
- C. All steel for reinforcement shall be new, non-rusted stock, free from mill scale, delivered without rust other than may have accumulated in prompt transportation to the work.
- D. Tie wire shall be No. 16 American Wire Gauge or heavier, black annealed.
- E. Supports for reinforcing bars in slabs shall be metal, of sufficient strength to adequately support bars, of a type approved by ENGINEER. Supports or spacers for

bars in walls shall be such that exterior face of wall will not be marred when forms are stripped, and final finish has been completed.

- F. Dowels from footings to walls shall be same size, spacing as wall reinforcement, unless otherwise shown. Dowels shall project 12 inches into wall, 12 inches into footing unless detailed or noted otherwise.

PART 3 - REINFORCING BARS TO BE FURNISHED TO OTHER TRADES

3.1 VERTICAL REINFORCING

- A. All vertical reinforcing bars required for vertically reinforcing masonry work shall be furnished by REINFORCING CONTRACTOR, properly cut, shaped as indicated on drawings. Masons shall install in place all reinforcements supplied them as required by Drawing details.

3.2 HORIZONTAL REINFORCING

- A. Horizontal mesh type masonry reinforcing shall be furnished.

PART 4 –REINFORCING STEEL

4.1 REQUIREMENTS FOR PLACEMENT OF REINFORCING STEEL

- A. Reinforcement shall be accurately placed, securely tied at intersections with 16-gauge black annealed wire; shall be maintained in proper position by chair, bars, supports, or approved devices.
- B. Bars shall lap 18 inches at splices, except as otherwise indicated. Splices in adjoining horizontal bars shall be staggered at least 6'. Where this is not feasible, submit suggestions for ENGINEER'S consideration. Horizontal bars shall be hooked around corners not less than 9 inches, with minimum of 12 inches as per typical details.

4.2 CONCRETE PROTECTION OF REINFORCING

- A. Shall be not less than the following:
 1. 3" where concrete is poured against ground.
 2. 2" where concrete is poured against forms but may be in contact with ground.
 3. 1-1/2" minimum in exterior face of exterior walls (exposed to weather but not in contact with ground).
 4. 3/4" minimum in interior walls and interior face of exterior walls.
 5. 1-1/2" in beams, girders, and columns.
 6. Clear distance between bars shall be not less than 1-1/2", 1-1/2 bar diameters, nor less than 1-1/3 times the maximum size of coarse aggregate. See details for any specific variations to these requirements. Where conduits, piping, inserts, sleeves, etc., interfere with placing of reinforcing steel as shown or called for,

CONTRACTOR must consult with ENGINEER, secure method of procedure from him before pouring any concrete. Bending or field cutting of bars around openings or sleeves will not be permitted.

END OF SECTION 03 20 00

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE**PART 1 - GENERAL****1.1 SCOPE**

- A. This section covers all cast-in-place concrete, including reinforcing steel, forms, finishing, curing and other appurtenant work.
- B. Transit mix concrete will be permitted if it meets the requirements of this section and is mixed and delivered in accordance with ASTM C94.

1.2 SUBMITTALS

- A. Submittals shall be made in accordance with all the requirements of the General Conditions and the Contract Documents.
- B. Submit for review a proposed design mix for each concrete strength and class required by these Specifications. Failure to include any items of information noted in this paragraph for a given concrete strength or type will be cause for requirement of a resubmittal. Information to be submitted for each strength and class shall include the following items:
 - 1. Concrete mix design
 - a. Constituent quantities per cubic yard.
 - b. Sources of all concrete mix components including coarse aggregate, fine aggregate, cement, water, admixtures, and pozzolans where included.
 - c. Cement type and manufacturer, include chemical analysis (mill test report) for each cement type to be used.
 - d. Pozzolan type and source; include chemical analysis for each pozzolan type to be used.
 - e. Water/cement ratio, by weight.
 - f. Air content
 - g. Mix design slump.
 - h. Average compressive strengths conforming to the requirements of ACI 318 at 28 days. Provide both average strengths and sample standard deviation. Provide results at 7 and 14 days if available.
 - i. Laboratory shrinkage test results for concrete mix designs, where specified.
 - 2. Aggregate:
 - a. Laboratory sieve analysis, conforming to ASTM C33.
 - b. Verification that aggregate is not "deleterious," or "potentially deleterious." Provide documentation or other certification that aggregate does not contain deleterious substances and has been used without issues on previous projects.

3. Admixtures. Submit Manufacturer's data brochures on all admixtures proposed for use and provide certification of compliance with specified ASTM standards for each admixture.
- C. Submit concrete placement drawings showing pour sequence, lift numbers, locations of all joints, concrete mix being placed, concrete finishes, and all pertinent embedments including embedded plates, sleeves, pipes, conduits, anchors, etc., where applicable. Where the Drawings permit the CONTRACTOR to select joint locations, show the selected dimensions on the placement drawings. Approval of the placement drawings shall not relieve the CONTRACTOR of the responsibility of placing all concrete and embedments as specified.
 - D. If cold weather or hot weather concrete conditions are anticipated on the Project, submit a work plan for cold weather concreting and/or for hot weather concreting, describing proposed methods and procedures for mixing, delivering, placing, finishing, and curing concrete. Submit plans well in advance of cold or hot weather job conditions. Include procedures to be implemented upon abrupt changes in weather conditions or due to equipment failures. If a plan for either is not submitted and cold or hot weather concrete conditions are present, the CONTRACTOR will not be allowed to pour concrete until a plan is received and reviewed as long as cold or hot weather conditions are present on the Project.
 - E. Furnish a delivery ticket for ready mixed concrete to the OWNER'S REPRESENTATIVE as each truck arrives. Each ticket shall provide a printed record of the weight of cement batched and each separate aggregate individually batched. Use the type of indicator that returns for zero punch or returns to zero after a batch is discharged. Clearly indicate the weight of fine and coarse aggregate, cement, and water in each batch, the quantity delivered, the time any water is added, and the numerical sequence of the delivery. Show the time of day batched and time of discharge from the truck. Indicate the number of revolutions of mix trucks.
 - F. Submit Manufacturer's data sheets and product specifications for curing compounds and items specified in other Sections including form release agents, bonding agents, etc. Identify the locations where each will be used in the Work as a part of the submittal.
 - G. Submitted data shall demonstrate compliance with all requirements of this Specification or deviations shall be clearly noted.

1.3 QUALITY ASSURANCE

A. Concrete Consistency

1. Test for slump shall be performed at the job site immediately prior to placing in accordance with ASTM C143. Slump tests shall be performed for every 35 CY separately for each construction item to indicate workability and consistency throughout the entire project.
2. If the slump is outside the allowed limits, the concrete shall be rejected. Concrete showing either poor cohesion or poor coating of the coarse

aggregate with paste shall be remixed or rejected.

3. If the slump is within the allowable limit, but excessive bleeding, poor workability, or poor finishability are observed, the concrete shall be rejected and changes in the concrete mix shall be made only by an adjustment of one or more of the following:
 - a. The gradation of aggregate.
 - b. The proportion of fine and coarse aggregate.
 - c. The percentage of entrained air, within the allowable limits.

B. Concrete Temperature

1. Concrete temperature shall be taken immediately before placement with the point of measurement being in the chute or bucket.
2. Perform temperature test for each batch and record result on batch ticket.
3. If fresh concrete temperature does not meet requirements in this section the concrete shall be rejected.

C. Concrete Air

1. Test for air content shall be made on a fresh concrete sample for every 35 CY separately for each construction item prior to placing in forms.
2. Air content for concrete made of ordinary aggregates having low absorption shall be made in accordance with either ASTM C231, or ASTM C173. If light weight aggregates or aggregates with high absorptions are used, use ASTM C173.
3. If air content of fresh concrete does not meet requirements specified in this Section, the concrete shall be rejected. Do not place concrete that does not meet the air entrainment requirements of this Section.

D. Compression Testing

1. Compression test specimens shall be made, cured and tested in accordance with ASTM C31 and ASTM C39.
2. Compressive strength tests shall be made on cylinders at 7 and 28 days. The value of each test result shall be the average compressive strength of a minimum of 2 cylinders taken at the same time from the same batch of concrete.
3. Compressive test specimens shall be 6" x 12" cylinders or 4" x 8" cylinders. Sets of concrete test cylinders shall be cast for each day's concrete pour as follows.
 - a. A "set" of test cylinders consists of a minimum of six cylinders, one to be broken and strengths recorded at seven days; and three broken and strengths averaged at 28 days. Two hold cylinders will remain unbroken so that they will be available to be broken upon unforeseen circumstances or upon the option of the Engineer to break cylinders at different times.

- b. A minimum of one “set” of cylinders will be made for each concrete pour up to 25 CY in volume. For pours larger than 25 CY, additional “sets” of cylinders will be made for each additional 50 CY of concrete poured.
- 4. Evaluation of compressive strength for compliance with design requirements will be conducted by the ENGINEER per ACI 318 – Section 26.12 based on the results of the 28-day test.
- 5. All test specimens shall be kept as near to the point of sampling as possible and yet receive the same protection from the elements as is given to the portions of the structure being built. Specimens shall be protected from injury. They shall be sent to a testing laboratory approved by the ENGINEER after a minimum of three days of field curing and while in the laboratory shall be kept in the ordinary air at the temperature of approximately 70°F until tested.

E. Failure to Meet Requirements

- 1. The OWNER may withhold payment for any section of concrete which does not meet the requirements of the plans and specifications. Withheld payment shall be based upon unit prices established for concrete, if available. Payment shall be withheld until the unacceptable concrete has been repaired or removed and replaced or otherwise brought into conformance with the plans and specifications.
- 2. Concrete Strength
 - a. If the 28-day strength test results fall below required values, additional curing may be performed and test cores may be obtained in accordance with ASTM C42 with approval of the ENGINEER. Additional curing, core removal and testing, if allowed by the ENGINEER, shall be at the CONTRACTOR'S expense.
 - b. If the strength results from test cores do not exhibit the required strength, the ENGINEER or OWNER'S REPRESENTATIVE reserve the right to require strengthening, replacement of substandard materials and/or additional testing at the CONTRACTOR'S expense. The choice of remedy is at the sole discretion of the ENGINEER or OWNER'S REPRESENTATIVE.
 - c. Other Concrete Properties
 - 1) If concrete properties besides strength do not meet required values, the ENGINEER may require concrete samples to be obtained in accordance with ASTM C42 and evaluated in accordance with ASTM C856 at the CONTRACTOR'S expense.
 - 2) If concrete properties besides strength do not meet required values, and the results of additional examination per ASTM C856 are deemed unsatisfactory at the sole discretion of the ENGINEER, the OWNER reserves the right to require strengthening, replacement of substandard materials and/or additional testing at the CONTRACTOR'S expense.

PART 2 - PRODUCTS**2.1 GENERAL**

Cement	ASTM C150, Type II or I/II
Coarse Aggregate	Crushed rock, washed gravel or other inert material conforming to ASTM C33
Fine Aggregate	Shall conform to ASTM C33
Crushed	
Water	Clean and free from deleterious substances
Reinforcing Steel	Per specification 03 20 00 "Reinforcement"
Welded Wire Fabric	Per specification 03 10 00 "Form Work"
Expansion Joints	Preformed, bituminous type ASTM D994
Joint Sealer	Per specification 03 31 00 "Construction Joint Sealing"

2.2 DESIGN CRITERIA

- A. Use ACI 211.1 as the basis for selecting the proportions of ingredients to produce concrete having proper durability, strength, workability appearance and other required properties. Proportion ingredients to produce a homogenous mixture, which will work readily into corners and angles of forms and around reinforcement by methods of placing and consolidation employed on the work, but without permitting materials to segregate or allowing excessive free water to collect on the surface.
- B. Strength:
 - 1. All concrete is required to have an average 28-day compressive strength equal to or greater than specified strength in section 2.2(F) unless otherwise specified.
- C. Entrained Air:
 - 1. Air-entrain all concrete, unless otherwise specified.
 - 2. Drilled shafts do not require air entrainment unless placed underwater.
 - 3. Provide for not less than three percent (3.0%) nor more than six percent (6.0%) by volume of total entrapped and entrained air for normal weight concrete.
 - 4. Do not air entrain finished floors that call for a troweled finish.
- D. Slump:
 - 1. Provide adequate slump to produce acceptable workability, do not exceed maximum specified slump.
- E. Admixtures:
 - 1. Proportion admixtures according to the Manufacturer's recommendations. All admixtures shall be batched at the batch plant only.

F. Concrete Classification

Class	Min. 28-Day Compressive Strength (psi)	Coarse Aggregate Size (in.)	Max. Water Cement Ratio	Max. Slump (in.)	Min. Cement Content (lb. per CY)
A	4000	1.5 (No. 467)	0.45	5	517
B	3000	1.5 (No. 467)	0.50	4	470
C	4000	1.0 (No. 57)	0.45	4	564
D	5000	0.75 (No. 67)	0.45	5	611
E	1500	1.5 (No. 467)	0.70	4	376
F	4000	0.375 (No. 8)	0.45	8	611

G. Concrete Usage

Class	Usage
A	All reinforced concrete unless otherwise specified
B	Concrete Encasement; Sidewalks, Curbs, Driveways
C	Drilled Shafts; Pumped Concrete; Thin Wall Sections
D	Precast Concrete and Panels
E	Lean Concrete Backfill; Foundation Seal; Blocking/Cradling
F	Underground Duct Banks

2.3 ADMIXTURES

A. Air-Entraining Admixture: ASTM C260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing intentionally added chlorides.

1. Water-Reducing Admixture: ASTM C494/C 494M, Type A. Products.
2. Retarding Admixture: ASTM C 494/C 494M, Type B. Products.
3. Water-Reducing and Retarding Admixture: ASTM C494 / C494M, Type D.
4. Accelerating Admixture: ASTM C494/C494M, Type C.
5. Water-reducing and Accelerating Admixture: ASTM C494/C494M, Type E.
6. High-Range, Water-Reducing Admixture: ASTM C494 / C494M, Type F.

7. High-Range, Water-Reducing and Retarding Admixture: ASTM C494 / C494M, Type G.
8. Plasticizing and Retarding Admixture: ASTM C1017 / C1017M, Type II.
9. Workability-Retaining Admixture: ASTM C494/C494M, Type S.
10. Other admixtures shall be as specified in Section 03 30 00.

2.4 FIBERS

A. Synthetic Microfibers

1. Shall be manufactured from a proprietary blend of polypropylene resins in compliance with ASTM D7508/D7508M for micro-chopped strands, for use in fiber-reinforced concrete meeting the requirements of ASTM C1116/C1116M, Type III.
2. Shall provide a minimum cracking reduction ratio (CRR) of 40 percent when tested in accordance with ASTM C1579.
3. Dosage shall be as recommended by the manufacturer.

B. Synthetic Macrofibers

1. Shall be manufactured from a proprietary blend of polypropylene resins in compliance with ASTM D7508/D7508M for macro-chopped strands or hybrids chopped strands for use in fiber-reinforced concrete meeting the requirements of ASTM C1116/C1116M, Type 111.
2. Shall provide a minimum average residual strength (f_{150}^D) [minimum average equivalent flexural strength ($f_{e,3}$)] of [] psi when tested in accordance with ASTM C1609/C1609M, using the roller support system in ASTM C1812/C1812M.
3. Dosage shall be as recommended by the manufacturer.

2.5 VAPOR RETARDER

- A. Plastic sheet, ASTM E1745, Class A or B.
- B. Polyethylene sheet, ASTM D4397, not less than 10 mils (0.25 mm) thick; or plastic sheet, ASTM E1745, Class C.

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.

- C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B.
- F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

2.7 STORAGE OF MATERIALS

- C. Cement shall be stored in suitable moisture-proof enclosures. Cement which has become caked or lumpy shall not be used.
- D. Aggregates shall be stored so that segregation and the inclusion of foreign materials is prevented. The bottom 6" of aggregate piles in contact with the ground shall not be used.
- E. Reinforcing steel shall be carefully handled and shall be stored on supports which will keep the steel from contact with the ground.

2.8 FORMS

- A. All forms shall be in accordance with Specification 03 10 00 "Form Work".

2.9 EMBEDMENTS

- A. Anchor bolts, castings, steel shapes, conduit, sleeves, masonry anchorage and other materials that are to be embedded in the concrete shall be accurately positioned in the forms and securely anchored. Conduits shall be installed between the reinforcing steel in walls or slabs which have reinforcements in both faces. In slabs which have only a single layer of reinforcing steel, conduits shall be placed under the reinforcement.
- B. Unless installed pipe sleeves, anchor bolts shall have sufficient threads to permit a nut to be installed on the concrete side of the form or template. A second nut shall be installed on the other side of the form or template and the two nuts shall be adjusted so that the bolt will be held rigidly to proper position.
- C. Embedments shall be clean when installed. After concrete placement, surfaces not in contact with concrete shall be cleaned of concrete spatter and other foreign substances.

2.10 BATCHING AND MIXING

- A. Concrete shall be furnished by an acceptable ready-mixed concrete supplier and shall conform to ASTM C94 and furnish batch ticket information.
 - 1. When air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- B. The consistency of concrete shall be suitable for the placement conditions. Aggregates shall float uniformly throughout the mass and the concrete shall flow sluggishly when vibrated or spaded. The slump shall be kept uniform.

PART 3 - EXECUTION**3.1 GENERAL**

- A. The limits of each concrete pour shall be predetermined by the CONTRACTOR and shall be acceptable to the ENGINEER. All concrete within such limits shall be placed in one continuous operation.
- B. Before test sampling and placing concrete, water may be added at project site at the direction and approval of the ENGINEER.
- C. Before concrete is placed, forms, reinforcements, water stops, anchor bolts and embedments shall be rigidly secured in proper position; all dirt, mud, water, and debris shall be removed from the space to be occupied by concrete; all surfaces incrustated with dried concrete from previous placement operations shall be cleaned; and the entire installation shall be acceptable to the ENGINEER.
- D. Concrete shall be conveyed to the point of final deposit by methods which will prevent separation or loss of ingredients. Concrete shall be placed in final position without being moved laterally in the forms more than 6 feet. Lateral placement beyond 6 feet shall require the use of tremie pipe to meet the lateral limit.
- E. Concrete for piers shall be carefully deposited to avoid contact with forms, reinforcing and earth sides until completion of the drop. Necessary precautions shall be taken to prevent earth or other material from falling into excavations and to prevent dislocation of reinforcing during concrete placement. Concrete shall be placed continuously to the top of each pier at a rate of vertical rise of not less than 2' per hour. Forms above grade, if required, shall be cylindrical steel or fiber forms acceptable to the ENGINEER.
- F. During and immediately after placement, concrete shall be thoroughly compacted and worked around all reinforcements and embedments and into the corners of the forms. Mechanical vibrators shall be used which will maintain at least 9000 cycles per minute when immersed in the concrete. Each vibrator shall be driven by not smaller than a 1-1/2 hp motor. The number and type of vibrators shall be acceptable to the ENGINEER.

3.2 HOT WEATHER CONCRETING

- A. Except as modified herein, hot weather concreting shall comply with ACI 305. At air temperatures of 90° F or above, concrete shall be kept as cool as possible during placement and curing. The temperature of the concrete when placed in the work shall not exceed 90° F.
- B. Plastic shrinkage cracking, due to rapid evaporation of moisture, shall be prevented. Concrete shall not be placed when the evaporation rate (actual or anticipated) equals or exceeds 0.2 lbs. per sq. ft. per hour, as determined in ACI 305.

3.3 COLD WEATHER CONCRETING

- A. Except as modified herein, cold weather concreting shall comply with ACI 306. The temperature of concrete at the time of mixing shall be not less than that shown in the following table for corresponding outdoor temperature (in shade) existing at the time of placement.

<u>Outdoor Temperature</u>	<u>Concrete Temperature</u>
Below 10° F	70° F
Between 10° F and 45° F	60° F
Above 45° F	45° F

- B. When placed, heated concrete shall not be warmer than 80° F.
- C. When freezing temperatures may be expected during the curing period, the concrete shall be maintained at a temperature of at least 50° F for five days or 70° F for three days after placement. Concrete and adjacent form surfaces shall be kept continuously moist. Sudden cooling of concrete shall not be permitted.

3.4 FINISHING

- A. All exposed surfaces shall be given a steel float finish.
- B. No Finish: A finish is not required on surfaces which are not visible from the inside or outside of the structure or more than 12 inches below finished grade.
- C. Screened surfaces shall be given an initial float finish as soon as the concrete has stiffened sufficiently for proper working. Any piece of coarse aggregate which is disturbed by the float or which causes a surface irregularity shall be removed and replaced with mortar. Initial floating shall produce a surface of uniform texture and appearance with no unnecessary working of the surface.
- D. Initial floating shall be followed by a second floating at the time of initial set. The second floating shall produce a finish of uniform texture and color. Unless additional finishing is specifically required, the completed finish for unformed surfaces shall be the float finish produced by the second floating.
- E. Floating shall be performed with hand floats or suitable mechanical compactor floats.

F. Smooth Form Finish:

1. Unless otherwise specified, all surfaces not meeting the requirements for "no finish" shall receive a smooth form finish. Use a smooth form finish on all surfaces exposed to view and liquid.
2. Provide a smooth, hard uniform texture on the concrete surface. Use plywood or fiberboard linings or forms in as large sheets as practicable and with smooth, even edges and close joints.
3. Patch tie holes and defects.
4. Provide a smooth, uniform, rubbed surface texture. Rub fins and joint marks and other irregularities with carborundum stone immediately after forms are stripped to leave a smooth, unmarred finish surface. If rubbing of surface is delayed to the point where the concrete surface is dry and cannot be rubbed to produce a smooth, uniform surface Contractor shall provide a blast finish to achieve a smooth uniform surface at no additional cost to the Owner.

G. Related Unformed Surfaces: Tops of piers, walls, bent caps and similar unformed surfaces occurring adjacent to formed surfaces shall be struck smooth after concrete is placed. Float unformed surfaces to a texture reasonably consistent with that of the formed surfaces. Final treatment on formed surfaces shall continue uniformly across the unformed surfaces.

3.5 FINISHING SLABS AND SIMILAR FLAT SURFACES

- A. Comply with the recommendations in ACI 302.1R for screeding, re-straightening and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Finish slabs and similar flat surfaces monolithically and apply as indicated in the Plans and as follows:
 1. Rough Finish.
 - a. Tank floors and slabs that receive grout or additional concrete toppings.
 - b. Provide a rough surface by screeding only without further finish.
 2. Trowel Finish
 - a. Slab surfaces exposed to view, liquids or to be covered with a coating system, flooring coverings or membranes.
 - b. After apply float finish, apply trowel finish and consolidate by hand or power driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 3. Broom Finish
 - a. Sidewalks, walkways and platforms.
 - b. Immediately after float finishing, slightly roughen trafficked surface by

brooming with fiber-bristle broom perpendicular to main traffic route.

3.6 CONCRETE CURING

A. All concrete shall be cured in accordance with the specifications. The curing methods shall be wet curing, sheet materials or membrane curing compound. Unless the curing method is specified otherwise, select one of the appropriate curing methods below.

1. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI SPEC-306.1 for cold-weather protection and with ACI SPEC-301 for hot-weather protection during curing.
2. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb./sq. ft. / h (1 kg/sq. m / h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
3. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
4. Length of Curing Period
 - a. A "curing day" shall be any day on which the atmospheric temperature taken in the shade, or the air temperature adjacent to the concrete, remains above 50° F for at least 18 hours.
 - b. Continuously cure concrete for a period until 7 curing days have been reached. In cold weather, curing may be terminated after a period of 14 consecutive days.

B. Wet Curing

1. Immediately after the finishing operations are completed or forms are stripped, the concrete shall be covered with wet cotton mats or with a temporary covering of canvas or burlap, thoroughly saturated with water before placement. A temporary covering shall be used when factors dictate that cotton mats cannot be placed immediately after finishing operations without marring the finishing of the concrete surface.
2. When temporary coverings are used keep them in place only until the surface has sufficiently hardened so that a cotton mat can be substituted without marring or disturbing the concrete finish.
3. The coverings shall remain in contact with the concrete for the duration of the curing period.
4. The coverings shall be kept saturated with water for the entire curing period.
5. Water used for curing shall be potable and free from any injurious materials or deleterious substances.

C. Sheet Curing

1. Immediately after the finishing operations are completed or forms are stripped, install sheet curing materials in accordance with all Manufacturer's recommendations.
2. Sheet curing shall be in contact with the entire concrete surface so as to prevent drying for the duration of the curing period.
3. When pedestrian traffic is unavoidable, provide suitable walkways to protect the sheet material.

D. Membrane Curing

1. Membrane curing compound is not permitted on surfaces to be rubbed or on surfaces to receive additional concrete, grout, plaster or coatings.
 2. Immediately after the finishing operations are completed or forms are stripped, apply membrane curing compound solution under pressure with a spray nozzle so the entire exposed surface is completely covered with a uniform film. The rate of application shall insure complete coverage but shall not exceed 150 square feet per gallon of curing compound.
 3. After application and under normal conditions, the curing compound shall be dry to the touch within 1 hour and shall be dry thoroughly and completely within 4 hours. When thoroughly dry it shall provide a continuous flexible membrane free from cracks and pinholes and shall remain intact during the required curing period.
 4. If the membrane seal is broken during the curing period, immediately repair it with additional curing compound.
- E. After the curing period, the temperature of the exposed surface shall not be permitted to drop faster than 30 degrees F in 24 hours.

3.7 JOINTS

- A. Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Contraction Joints in Slabs-on-Grade: Form weakened-plane sawed contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness.
- C. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

3.8 CONCRETE SURFACE REPAIRS

- A. Repair defective areas immediately after the removal of forms in accordance with this Section 02 42 00 "Removals" and Section 03 10 00 "Form Work". Repair of defective areas shall be at no additional cost to the OWNER.
- B. If the concrete surface is bulged, uneven or exhibits defects which in the ENGINEER'S opinion cannot be satisfactorily repaired, remove and replace the entire concrete section as directed at no additional cost to the OWNER.
- C. Patch tie holes immediately after removal of forms. After cleaning and thoroughly dampening the tie hole, fill solid with non-shrink, non-metallic grout.

3.9 MISCELLANEOUS ON-SITE MIXED BATCH

- A. The concrete shall be mixed in the approximate proportion of 1:2-1/2:4-1/4 and shall contain not less than one and one quarter barrels of cement per cubic yard of finished concrete. With the approval of the ENGINEER, admixtures may be added in order to increase workability.
- B. The onsite mixed batch will be subject to all testing requirements listed in this specification. The concrete shall meet or exceed strength requirements as required in this specification unless otherwise noted in the plans.

3.10 RESPONSIBILITY OF CONTRACTOR FOR STRENGTH

- C. It is the intent of these specifications that the CONTRACTOR shall guarantee that concrete of the specified compressive strength is incorporated in the structures and that the responsibility for producing the required grades of concrete is assumed by the CONTRACTOR.
- D. Should the average strengths shown by test cylinders fall below the strengths required, the ENGINEER will require any or all of the following changes: amount of cement, grading of aggregate, or ratio of the water to the cement used. If the tests disclosed that the strength of the concrete is insufficient for the structure as built, the ENGINEER may condemn the part of any structure in which concrete of insufficient strength has been placed and the CONTRACTOR, at his cost, shall remove and replace such concrete meeting these specifications.

3.11 EXPERIMENTAL CONCRETE MIXES

- A. The CONTRACTOR shall make experimental mixes prior to the placing of the concrete and at any time during the progress of the work when necessary to demonstrate that the concrete will meet these specifications. Materials for making experimental mixes shall be furnished by the CONTRACTOR and these materials shall be identical with those intended for use in the work. The cost of the materials shall be borne by the CONTRACTOR and shall be included in the price bid for concrete.

3.12 PAYMENT

- A. No separate measurement and payment will be made for the work covered under this section unless specified in the Bid Schedule. All costs in connection with this work shall be included in the applicable contract unit price for which the work pertains. Concrete encasement for underground piped utilities shall be paid for separately. Refer to the Standard Drawings for computation of encasement quantities.

END OF SECTION 03 30 00

SECTION 03 31 00 - CONSTRUCTION JOINT SEALING**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. Work under this section shall include furnishing all labor, materials, and equipment necessary to clean and seal existing construction joints in concrete structures.

1.2 DELIVERY, STORAGE, AND HANDLING

- A. All materials shall be delivered to the site in the manufacturer's original unopened containers, with all labels and other markings intact.
- B. All materials shall be stored off the ground and protected from vandalism, the environment, and possible contamination in accordance with the manufacturer's recommendations.
- C. Materials not meeting the above shall be unacceptable and removed from the site.

1.3 SUBMITTALS

- A. All proposed materials and methods shall be submitted in accordance with Division 01.

PART 2 - PRODUCTS**2.1 GENERAL**

- A. The joints shall be sealed by a one-part gun grade polyurethane sealant preceded by a primer receptive to urethane sealants. Modified amine epoxy or polyurethane grout with backer rod.

2.2 ACCEPTABLE PRODUCTS

- A. Primer:
 - 1. "Vulkem® Sealant Primer 171" as manufactured by Tremco.'
 - 2. "MasterSeal P 173" as manufactured by Master Builders Solutions.
- B. Sealant:
 - 1. "Vulkem® 116 Polyurethane Sealant" as manufactured by Tremco.
 - 2. "MasterSeal NP 1" as manufactured by Master Builders Solutions.

PART 3 - EXECUTION**3.1 ROUTING**

- A. All construction joints shall be routed or sawed to provide the correct joint shape. That shape shall be 3/4" wide by 2" deep. The joint width shall be made with one pass of the saw or router.

3.2 CLEANING

- A. After routing, the joint shall be sandblast cleaned to remove all latent material and provide a good blast profile for sealant adhesion. After sandblasting, the joint shall be blown clean.
- B. After cleaning, install a bond breaker/backing rod in the bottom of the routed joint. The rod shall be installed by roller to ensure constant depth of the joint to be sealed. Backing rod materials are to be recommended by the sealant manufacturer; however, no low melting point or bituminous products are to be used.
- C. Apply one coat of the primer to the prepared joint, exercising care to avoid excessive coverage of the adjacent surface.
- D. After the primer has cured, in accordance with the manufacturer's recommendations, apply the joint sealer to within 1/4" of the top of the joint. The sealant shall then be tooled to provide a uniform concave finish.

3.3 GENERAL INSTALLATION NOTES

- A. All joints to be sealed shall be dry.
- B. Any leaking joints shall be pressure grouted as described elsewhere.
- C. Prior to sealing, all loose or spalled concrete adjacent to the joints shall be removed and replaced as described elsewhere.
- D. No joints are to be sealed which contain new concrete which has not cured for a minimum of 28 days.

END OF SECTION 03 31 00

SECTION 03 60 00 – GROUT**PART 1 - GENERAL****1.1 SECTION INCLUDES**

- A. CONTRACTOR shall furnish all labor, tools, and equipment for the placement of grout in tie holes and other locations as shown on the Drawings and specified herein.
- B. This section includes basic mixing, application, and curing methods for grout.
 - 1. Portland cement grout
 - 2. Rapid curing epoxy grout
 - 3. Non-shrink cementitious grout

1.2 RELATED SECTIONS

- A. The following is a list of Specifications which may be related to this section:
 - 1. Section 03 30 00, Cast-In-Place Concrete
 - 2. Section 03 11 00, Concrete Forming

1.3 QUALITY STANDARDS

- A. The following is a list of standards which may be referenced in this section:

American Concrete Institute:

- 1. ACI SPEC-301 - Specifications for Structural Concrete
- 2. ACI CODE-318 - Building Code Requirements for Structural Concrete

American Society of Testing and Materials:

- 1. ASTM C33 - Standard Specification for Concrete Aggregates
- 2. ASTM C40 – Standard Test Method for Organic Impurities in Fine Aggregates for Concrete
- 3. ASTM C150 - Standard Specification for Portland Cement
- 4. ASTM C191 – Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle
- 5. ASTM C307 – Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing
- 6. ASTM C531 – Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes
- 7. ASTM C579 – Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing and Polymer Concretes
- 8. ASTM C827 - Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures

9. ASTM C1107 – Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)

1.4 SUBMITTALS

- A. Section 01 33 00 – Submittals and Substitutions: Requirements for submittals.
- B. Product Data: Submit product data on grout and miscellaneous materials.
- C. Manufacturer's Installation Instructions: Submit manufacturer's instructions for mixing, handling, surface preparation and placing epoxy type and non-shrink type grouts.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver grout in manufacturer's unopened containers with proper labels intact.
- B. Store grout in a dry shelter, protect from moisture.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not perform grouting if temperatures exceed 100 degrees.
- B. Maintain minimum temperature of 40 degrees F before, during and after grouting, until grout has set.

PART 2 - PRODUCTS

2.1 PORTLAND CEMENT GROUT MATERIALS

- A. Portland Cement: ASTM C150, Type I and II.
- B. Water
 1. Potable; containing no impurities, suspended particles, algae or dissolved natural salts in quantities capable of causing:
 - a. Corrosion of steel
 - b. Volume change increasing shrinkage cracking
 - c. Efflorescence
 - d. Excess air entraining
- C. Fine Aggregate
 1. Washed natural sand
 2. Gradation in accordance with ASTM C33 and represented by smooth granulometric curve within required limits
 3. Free from injurious amounts of organic impurities as determined by ASTM C40.

D. Mix

1. Portland cement, sand and water. Do not use ferrous aggregate or staining ingredients in grout mixes.

2.2 RAPID CURING EPOXY GROUT

A. Manufacturers

1. Sika Corporation
2. Laticrete L&M™
3. Master Builders Solutions
4. ENGINEER approved equal

- B. Rapid Curing Epoxy Grout: High strength, three component epoxy grout formulated with thermosetting resins and inert fillers. Rapid-curing, high adhesion, and resistant to ordinary chemicals, acids and alkalis.

Property	Test	Result
Compressive Strength	ASTM C579	12,000 psi (82.7 MPa) at 7 days
Tensile Strength	ASTM C307	2,000 psi (13.8 MPa) minimum
Coefficient of Expansion	ASTM C531	30x10 ⁻⁶ in per degree F (54x10 ⁻⁵ mm per degree C)
Shrinkage	ASTM C827	None

2.3 NON-SHRINK CEMENTITIOUS GROUT

A. Manufacturers

1. Sika Corporation SikaGrout® 212
2. Laticrete L&M™ Duragrout™
3. Euclid Chemical Dry-Pack Grout
4. Master Builders Solutions MasterFlow 713
5. ENGINEER approved equal

- B. Non-shrink Cementitious Grout: Pre-mixed ready for use formulation requiring only addition of water; non-shrink, non-corrosive, non-metallic, non-gas forming, no chlorides.

- C. Properties: Certified to maintain initial placement volume or expand after set and meet the following minimum properties when tested in accordance with ASTM C1107, for Type D non-shrink grout:

Property	Test	Time	Result
Setting Time	ASTM C191	Initial	2 hours (Approx.)
		Final	3 hours (Approx.)
Expansion			0.10% - 0.4% Maximum
Compressive Strength	ASTM C1107	1 day	4,000 psi (27.6 MPa)
		7 days	7,000 psi (48.3 MPa)
		28 days	10,000 psi to 10,800 psi (69.0 MPa to 74.5 MPa)

2.4 FORMWORK

- A. Refer to Section 03 10 00 for formwork requirements.

2.5 CURING

- A. Prevent rapid loss of water from grout during first 48 hours by use of approved membrane curing compound or with use of wet burlap method.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify areas to receive grout.

3.2 PREPARATION

- A. Remove defective concrete, laitance, dirt, oil, grease and other foreign material from concrete surfaces by brushing, hammering, chipping or other similar means until sound, clean concrete surface is achieved.
- B. Rough concrete lightly, but not enough to interfere with placement of grout.
- C. Remove foreign materials from metal surfaces in contact with grout.
- D. Align, level and maintain final positioning of components to be grouted.
- E. Saturate concrete surfaces with clean water; remove excess water, leave none standing.

3.3 INSTALLATION - FORMWORK

- A. Construct leak proof forms anchored and shored to withstand grout pressures.
- B. Install formwork with clearances to permit proper placement of grout.

3.4 MIXING

A. Portland Cement Grout:

1. Use proportions of 2 parts sand and 1 part cement, measured by volume.
2. Prepare grout with water to obtain consistency to permit placing and packing.
3. Mix water and grout in two steps; pre-mix using approximately 2/3 of water; after partial mixing, add remaining water to bring mix to desired placement consistency and continue mixing 2 to 3 minutes.
4. Mix only quantities of grout capable of being placed within 30 minutes after mixing.
5. Do not add additional water after grout has been mixed.
6. Capable of developing minimum compressive strength of 2400 psi in 48 hours and 7000 psi in 28 days.

- #### **B. Mix grout components in proximity to work area and transport mixture quickly and in manner not permitting segregation of materials.**

3.5 PLACING GROUT

- #### **A. Place grout material quickly and continuously.**
- #### **B. Do not use pneumatic-pressure or dry-packing methods.**
- #### **C. Apply grout from one side only to avoid entrapping air.**
- #### **D. Do not vibrate placed grout mixture, or permit placement when area is being vibrated by nearby equipment.**
- #### **E. Thoroughly compact final installation and eliminate air pockets.**
- #### **F. Do not remove leveling shims for at least 48 hours after grout has been placed.**

3.6 CURING

- #### **A. Immediately after placement, protect grout from premature drying, excessively hot or cold temperatures, and mechanical injury.**
- #### **B. After grout has attained its initial set, keep damp for minimum of 3 days.**

3.7 FIELD QUALITY CONTROL

- #### **A. Tests of grout components may be performed to ensure conformance with specified requirements.**

END OF SECTION 03 60 00

DIVISION 31 – EARTHWORK**SECTION 31 00 00 – GENERAL EARTHWORK****PART 1 - GENERAL****1.1 DESCRIPTION**

This section covers the requirements and procedures for excavation and backfill for structures.

1.2 STANDARD SPECIFICATIONS

A. The following is a list of standard specifications with the accompanying abbreviations used in this specification section:

1. American Association of State Highway and Transportation Officials Standard Specifications - AASHTO.

1.3 QUALITY ASSURANCE

- A. Compaction shall be in accordance with Section 31 23 33 - Trenching, Backfilling and Compaction.
- B. The OWNER shall be the sole and final judge of suitability of all materials.
- C. Materials in question, pending test results, shall not be used in the work. The CONTRACTOR shall remove all materials that fail to meet the requirements of the specifications, whether in stockpiles or in place.
- D. Fills, embankments, backfills or subgrades which do not meet the specification requirements shall be removed or recompacted until the requirements are satisfied.

1.4 PROTECTION

A. Protection of Existing Improvements

1. Protection shall be provided to prevent damage to existing improvements indicated to remain in place on the OWNER'S property and adjoining properties.
2. Damaged improvements shall be restored to their original condition, as acceptable to parties having jurisdiction.
3. Land areas outside the limits of permanent work performed under this contract shall be preserved in their present condition. The CONTRACTOR shall confine his construction activities to areas defined for work on the Drawings.

B. Protection of Existing Utilities

1. The CONTRACTOR shall verify all existing utility locations either shown or not shown on the drawings.

2. The CONTRACTOR shall immediately notify the OWNER and applicable utility company of any damages to existing utilities.
 3. Repairs to damaged utilities shall be made in accordance with the requirements of the OWNER and applicable utility company at no extra cost to the OWNER.
 4. The CONTRACTOR shall coordinate with the OWNER and the applicable utility company for shutoff of or connection to active utilities. Existing utility services shall not be interrupted except as authorized in writing by the OWNER.
- C. Protection of Work Site: Barricades or other type protectors shall be provided to prevent unauthorized personnel from entering work sites.

1.5 JOB CONDITIONS

A. Classification of Excavation

1. No classification shall be made to differentiate the various surface and subsurface conditions the CONTRACTOR may encounter during his performance under this contract.
2. It is the CONTRACTOR'S sole responsibility to verify the site surface and subsurface conditions.

B. Dewatering

1. Excavation and embankment shall be performed in such manner that the area of the site and the area immediately surrounding the site will be continually and effectively drained by gravity or temporary pumps.
2. Water shall not be permitted to accumulate in excavations or other areas of the site.
3. The excavation shall be drained by methods which prevent the softening of subgrades and embankments.

C. Blasting shall not be allowed.

1. Shoring, including sheet piling, shall be furnished and installed as necessary to protect workmen, banks, adjacent paving, structures, and utilities.
2. Shoring, bracing, and sheeting shall be removed as excavations are backfilled, in a manner to prevent caving.

PART 2 - PRODUCTS

2.1 SUITABLE MATERIALS

- A. Suitable materials for fill and, backfill include materials that are free of debris, roots, organic or frozen materials, stones having a maximum dimension of four (4) inches in the upper six (6) inches of fill or six (6) inches in the remainder of fill.

- B. Otherwise, suitable material which is unsuitable due to excess moisture content will not be classified as unsuitable material unless it cannot be dried by manipulation, aeration or blending with other materials to the satisfaction of the OWNER.
- C. Unsuitable materials shall include those materials that are determined by the OWNER to be inadequate for providing a stable slope, fill, subgrade, or foundation for structure.
- D. Expansive clay soils shall be classified as unsuitable unless treated or mixed in a manner approved by the OWNER.

2.2 CAPILLARY WATER BARRIER

A. Coarse Aggregate (Gravel) Capillary Water Barrier.

- 1. Coarse aggregate shall meet the requirements of AASHTO M80.
- 2. Coarse aggregate shall consist of gravel, crushed gravel, or crushed stone.
- 3. Gradation of coarse aggregate shall conform to the requirements of AASHTO M 43, Size Number 57:

Sieve	Mass-Percent Passing
1 ½ inches	(38 mm) 100
1 inch	95 – 100
½ inch (13 mm)	25 – 60
No. 4	0 – 10
No. 8	0 - 5

- 4. Maximum allowable percent of deleterious substances shall meet the requirements of AASHTO M 80, Class B.

B. Fine Aggregate (Sand) Capillary Water Barrier:

- 1. Fine aggregate shall meet the requirements of AASHTO M6.
- 2. In general, fine aggregate shall consist of natural sand having hard, strong, durable particles free from deleterious substances and meeting the following gradation requirements:

Sieve	Mass-Percent Passing
3/8 inch (9.5 mm)	100
No. 4	95 – 100
No. 16	45 – 80
No. 50	10 - 30
No. 100	2 - 10

2.3 FINE AGGREGATE (SAND) BACKFILL

- A. Fine aggregate backfill shall meet the requirements of Paragraph 2.2.B.

2.4 SELECTION OF BORROW MATERIAL

- A. Borrow material, if required, shall be selected to meet requirements and conditions of the particular fill for which it is to be used.
- B. For borrow material obtained outside the limits of the project site, the CONTRACTOR shall obtain the right to procure material and shall pay all royalties and other charges involved.

PART 3 - EXECUTION

3.1 EXCAVATION

- A. Excavation, regardless of material encountered, shall conform to the dimensions and elevations indicated on the Drawings for each building and structure, and shall include trenching for utility and foundation drainage systems to a point five (5) feet beyond the building line of each building and structure.
- B. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms, installation of services, and for inspection, except where the concrete for walls and footings is authorized by the OWNER to be deposited directly against excavated surfaces.
- C. Suitable excavated material shall be transported to and placed to fill areas within the limits of the work.
- D. Unsuitable materials encountered within the limits of the work shall be excavated below grade and replaced with suitable materials as directed by the OWNER, except that concrete footings shall be increased in thickness to the bottom of the over-depth excavations and over-break in rock excavation.
- E. No excavated material shall be wasted without the authorization of the OWNER.
 - 1. Surplus excavated material and unsuitable material shall be disposed of by the CONTRACTOR at his own expense and responsibility.
 - 2. Material authorized to be wasted shall be disposed of in such manner as not to obstruct the flow characteristics of any stream or to impair the efficiency or appearance of any structure.
- F. No excavated material shall be deposited in a manner that may endanger a partly finished structure by direct pressure or by overloading banks contiguous to the operations or that may otherwise be detrimental to the completed work.
- G. Blasting shall not be allowed.

3.2 PREPARATION OF GROUND SURFACE FOR FILL

- A. Areas upon which fills are to be placed shall be cleared and grubbed before the fill is started.

- B. Sloped ground surfaces steeper than one (1) vertical to four (4) horizontal on which fill is to be placed shall be plowed, stepped, or benched, or broken up as directed by the OWNER, in such a manner that the fill material will bond with the existing surface.
- C. When surfaces on which fills are to be placed do not meet the specified density requirements, the ground surface shall be broken up, pulverized, and compacted to the specified density.
- D. When surfaces on which fills are to be placed do not meet the specified moisture content requirements, the ground shall be wetted, aerated, or dried to the specified density.
- E. When the subgrade is part fill and part excavation, the excavated portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill.

3.3 FILL AND BACKFILL

- A. Fills and backfills shall conform to the dimensions and elevations indicated on the Drawings for each building and structure.
- B. Placing Fill and Backfill
 - 1. Suitable material shall be placed in successive horizontal uniformly spread layers of loose material not more than six (6) inches thick, except that in areas not accessible or permitted for the use of self-propelled rollers or vibrators, the loose layer shall be four (4) inches thick.
 - 2. Fills and backfills shall not be placed in wet or frozen areas.
- C. Backfill
 - 1. Backfill shall not begin until construction below finish grade has been completed, underground utility systems have been inspected and tested, form removed, and the excavation cleaned of trash and debris.
 - 2. Fine aggregate backfill shall be placed to the dimensions and elevations indicated on the Drawings.
 - 3. Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation or retaining walls than a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted by power-driven hand tampers suitable for the material being compacted.
 - 4. Backfill shall be placed carefully around pipes to avoid damage to coatings.
 - 5. Backfill shall not be placed against foundation walls prior to 7 days after placement of the walls.
 - 6. As far as practical, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall.

7. Where fill or backfill is to be placed and compacted against structure walls, the walls shall be supported laterally as necessary to prevent damaging or displacing the walls. Any wall so damaged as a result of the CONTRACTOR'S operation shall be completely and promptly replaced.

3.4 COMPACTION

- A. For fill and backfill compaction densities and moisture contents, see Section 31 23 33.
- B. Compaction shall be accomplished by those methods listed in Section 31 23 33. Material shall be aerated or moistened to maintain the required moisture content.
- C. Fine aggregate backfill shall be compacted with a minimum of two (2) passes of a power-driven hand tamper.

3.5 CAPILLARY WATER BARRIER

- A. Either coarse aggregate (gravel) or fine aggregate (sand) capillary water barriers shall be installed under slabs-on-grade as indicated on the Drawings.
- B. The capillary water barrier shall be placed directly on the subgrade after the subgrade has been compacted to the required density and placed to the elevation indicated on the Drawings.
- C. The barrier shall be constructed to the thickness shown in layers not exceeding six (6) inches in compacted thickness.
- D. Each layer shall be compacted to the required density, with a minimum of two passes of a plate-type vibratory compactor.

3.6 FINISH GRADING

- A. Excavated and filled sections, and adjacent transition areas, shall be uniformly smoothly graded. The finished surface shall be reasonably smooth, compacted, and free from irregular surface changes.
- B. The degree of finish shall be that ordinarily obtainable from blade-grader operations, except as otherwise specified.
- C. The surface of fills or excavated areas for slabs-on-grade shall not vary more than 0.05 foot from the established grade.
- D. Other finished surfaces shall not vary more than 0.15 foot from the established grade and cross section and shall be free of depressed areas where water would pond.

END OF SECTION 31 00 00

SECTION 31 22 00 – SITE GRADING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work covered under this item includes all supervision, labor, equipment, and materials required for rough and final site grading. Included in this item are any stripping, filling, excavating, backfilling and compaction required to complete the grading as shown on the plans or as specified herein.

1.2 DUST AND BLOWING MATERIAL CONTROL

- A. The CONTRACTOR shall use all means necessary to control dust on and near the site and on and near all off-site borrow areas if such dust is caused by the CONTRACTOR'S operations during performance of the work or if resulting from the condition in which the CONTRACTOR leaves the site.
- B. All surfaces shall be thoroughly moistened as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of other work on the site.
- C. Any landfilled material which is uncovered during any construction operation will immediately be covered with a minimum of 12 inches of soil and compacted to 90% Standard Proctor Density. The CONTRACTOR will be responsible for ensuring that existing landfilled material is not allowed to be blown or carried off the site and will clean up any material uncovered by his operations which is blown from the site.
- D. Protection of Existing Utilities
 - 1. The CONTRACTOR shall verify all existing utility locations either shown or not shown on the Drawings.
 - 2. The CONTRACTOR shall immediately notify the OWNER and applicable utility company of any damages to existing utilities.
 - 3. Repairs to damaged utilities shall be made in accordance with the requirements of the OWNER and applicable utility company at no extra cost to the OWNER.
 - 4. The CONTRACTOR shall coordinate with the OWNER and the applicable utility company for shutoff of or connection to active utilities. Existing utility services shall not be interrupted except as authorized in writing by the OWNER.
- E. Protection of Work Site: Barricades or other type protectors shall be provided to prevent unauthorized personnel from entering work sites.

PART 2 - PRODUCTS

2.1 FILL MATERIAL, GENERAL

- A. All fill material shall be subject to the approval of the ENGINEER.

2.2 ON-SITE FILL MATERIAL

- A. All on-site fill material used shall be soil or soil-rock mixture which is free from organic matter and other deleterious substance. It shall contain no rocks or lumps over 6 inches in greatest dimension, and not more than 15 percent of the rocks or lumps shall be larger than 2-1/2 inches in greatest dimension.

2.3 IMPORTED FILL MATERIAL (BORROW)

- A. All imported fill material shall meet the requirements stated in Section 31 00 00 and, in addition, shall be predominantly granular with a maximum particle size of 2 inches and a plasticity index of 12 or less.
- B. Any fill material, including topsoil, must be approved by the ENGINEER prior to placement. The CONTRACTOR shall notify the ENGINEER at least four working days in advance of intention to import material, designating the location of proposed borrow material. The CONTRACTOR shall be responsible for obtaining any permits or permission required for ENGINEER to sample, as necessary, from the borrow area for the purpose of making acceptance tests to prove the quality of proposed borrow material.

2.4 OTHER MATERIALS

- A. All other materials, not specifically described but required for a complete and proper installation, shall be as selected by the CONTRACTOR subject to the approval of the ENGINEER.

PART 3 – EXECUTION**3.1 FINISH ELEVATIONS AND LINES**

- A. Grade stakes will be set by the CONTRACTOR and approved by OWNER'S REPRESENTATIVE establishing rough and finish elevations and lines. The CONTRACTOR shall take care to preserve all survey control data and monuments set by the ENGINEER and, if displaced or lost, immediately replace to the approval of the ENGINEER and at no additional cost to the OWNER.

3.2 GRADING**A. General Requirements**

- 1. The CONTRACTOR will perform all rough and finish grading required to obtain the elevations shown in the Drawings.

B. Grading Tolerances

- 1. All rough and finished grading shall be performed with approved equipment to a tolerance of plus or minus 0.1 ft.

C. Compaction

1. Existing cover material will be compacted prior to the placement of any additional fill material. Two passes, at right angles to each other, will be made on existing cover with a sheep's foot roller, to obtain this compaction.
2. New fill material and material disturbed by grading will be compacted to a minimum of 90% Standard Proctor Density using approved compaction equipment.

D. Treatment after Completion of Grading

1. After grading is completed and the ENGINEER has finished his inspection, no further excavating, filling, or grading except with the approval of an inspection of the ENGINEER will be allowed.
2. The CONTRACTOR shall use all means necessary to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

END OF SECTION 31 22 00

SECTION 31 23 33 - TRENCHING, BACKFILLING & COMPACTION**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. The work under this item shall include all earth, shale, gravel, loose rock, solid rock, debris, junk and/or other material excavated or otherwise removed in the preparation of the trench, all work in connection with the excavation, removal and subsequent handling and disposal of such material regardless of its type, character, composition or condition; subgrade preparation, all sheeting, piling, shoring, bracing; and dewatering of trenches; protection of adjacent property; backfilling; sand cushion; grade base stabilization; all specified backfill consolidation; and other work necessary or required. The CONTRACTOR shall fully inform himself of the conditions to be encountered and shall include all payment for same in his bid prices stated in the proposal. No payment will be made for extra work caused by unusual conditions not anticipated by the CONTRACTOR.

PART 2 - PRODUCTS**2.1 STANDARD BEDDING MATERIAL**

- A. Standard Bedding Material (SBM) shall meet the requirements of ASTM D-2321 for the class of materials described in this subsection.
1. Class I shall be an angular, 1/4 in. to 1-1/2 in. graded crushed stone.
 2. Class II shall include coarse sands and gravels with maximum particle size of 1-1/2 inch. These materials may have small percentages of fines but shall be generally granular and non-cohesive, either wet or dry. Class II materials shall include Unified Soil Classification System (USCS) Soil Types GW, GP, SW and SP.
 3. Class III shall include fine sands, sand-clay mixtures and gravel-clay mixtures. USCS Soil Types GM, GC, SM and SC are included in this class.

2.2 BACKFILL

- A. Initial Backfill material used shall be as described below and/or as shown on the standard details.
1. Paved area: SBM material in accordance with section 2.1 of this specification.
 2. Non-Paved area:
 - a. For flexible pipe, SBM material used shall be in accordance with section 2.1 of this specifications at depths greater than 10-feet. Select Fill shall be used from depth 0-10 feet.
 - b. For rigid pipe, Select Fill shall be used.
 - i. Select Fill consists of excavated materials free of rocks larger than 2-1/2 inches, organic material, rubbish, debris, and all other objectionable material.

- B. Final Backfill material used shall be as described below and/or as shown on the standard details.
 - 1. Paved area: SBM material in accordance with section 2.1 of this specification.
 - 2. Non-Paved area: Excavated material shall be used.

PART 3 - EXECUTION

3.1 TRENCH EXCAVATION

- A. The trench shall be excavated so that the pipe can be laid to the alignment and grades shown on the drawings, or as directed by the OWNER'S REPRESENTATIVE. It shall be excavated a maximum of 150 feet in advance of pipe laying, or less, as permitted by the OWNER'S REPRESENTATIVE. Opening of trenches in excess of the maximum requires specific approval of the ENGINEER.
- B. Trenches shall be dry when the trench bottom is prepared. The trench bottom shall be shaped so that even bearing is obtained for the barrel of the pipe, with the bells unsupported. Any required dewatering shall be incidental to the trenching.
- C. From 12-inches above the pipe and below, the standard trench width as shown on the standard drawings shall not be exceeded. If, for any reason this portion of the trench exceeds the permitted width and if the OWNER'S REPRESENTATIVE shall determine that cradling or encasement then is required, said concrete cradle or encasement shall be installed.
- D. Any part of the bottom of the trench excavated more than 4 inches below the specified grade shall be considered incidental and shall be corrected with approved material as directed by the OWNER'S REPRESENTATIVE. In the event suitable material is not available, standard bedding material shall be used. When rock is encountered and concrete cradle is required, it shall be excavated 4 inches below the bottom of the pipe and the trench refilled to grade with standard bedding material.
- E. When quicksand or other unstable earth is encountered, the CONTRACTOR shall excavate to sufficient depth to permit backfilling with crushed stone to provide a stable base for the pipe and shall be considered incidental.

3.2 STANDARD BEDDING MATERIAL

- A. Standard Bedding Material (SBM) shall be used for embedding all pipe as shown on the Standard Details. SBM shall be carefully placed, compacted and tested along the entire length of the pipe to be installed to the limits of trench excavation until the thickness specified in the Standard Details is obtained. This layer of bedding material shall be smoothed by flat bottomed shovel or other appropriate means prior to the placement of pipe.
 - 1. Gravity Pipelines: SBM shall be placed simultaneously on each side of pipe and shall be carefully compacted in accordance with the SPECIFICATIONS for the type of pipe to be installed.

- a. Class I SBM requires little or no compaction due to the nature of the angular particles.
 - b. Class II SBM shall be compacted to a minimum 85% Standard Proctor Density using hand or mechanical tamping methods. Slightly damp material will generally result in maximum compaction with minimum effort. Avoid saturation of Class II SBM.
 - c. Class III SBM shall be compacted to a minimum 90% Standard Proctor Density using hand or mechanical methods. Take care to avoid excessive moisture in using Class III SBM.
2. Pressure Pipelines (except Rural Water): SBM shall be placed simultaneously on each side of pipe and compacted by hand sufficiently to maintain proper grade and alignment.

3.3 BACKFILL

- A. When the type of backfill material to be placed above the standard bedding material is not indicated on the drawings or specified, the backfill may be made with the excavated material, provided that such material, in the opinion of the OWNER'S REPRESENTATIVE, is suitable for backfilling. In the event the excavated material is not suitable, standard bedding material or other approved material shall be used.
- B. The trench shall be backfilled 12" above the pipe by hand or by other methods approved by the OWNER'S REPRESENTATIVE. Special care shall be used in placing this portion of the backfill to avoid damaging or moving the pipe. The remainder of the trench may be backfilled by mechanical methods. Backfilling operation shall be completed within 100 feet or less of the finished line at all times as directed by the OWNER'S REPRESENTATIVE.
- C. ALL clearing requiring proposed underground sewer line trench backfill materials and its placement must meet referenced ASTM D 2321, in accordance with OAC 252:656-5-3(b).

3.4 COMPACTION

- A. All trenching and backfill shall be tested every on every 8-inch lift, every 400 lineal feet for sanitary sewer, every 800 lineal feet for waterlines and all other applications. The trenching and backfill shall meet the specification listed in section 3.2 of this specification or otherwise the required standards below:
 - 1. Paved area: 95% Standard Proctor Density (SPD)
 - 2. Non-Paved area: 90% SPD if cover is less than 10-feet and 95% SPD if cover is greater than 10-feet
- B. If the backfilling has been completed and the backfill material does not meet the requirements for compaction, all the material shall be removed and hauled from the job site and the trenches refilled with material as specified above. Boring will be required at all paved street crossings unless otherwise specified or approved by the ENGINEER.

END OF SECTION 31 23 33

SECTION 31 25 00 - EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary and permanent erosion control systems.
2. Slope protection systems.

1.2 REFERENCES

A. United States Environmental Protection Agency (EPA):

1. NPDES - National Pollutant Discharge Elimination System.

B. Oklahoma Department of Environmental Quality (ODEQ):

1. DEQ General Storm Water Permit (OKR10 and OKR05)

C. Oklahoma Department of Transportation (ODOT):

1. ODOT - State of Oklahoma Department of Transportation Standard Specifications for Highway Construction, Section 735 - Material for Roadside Development and Erosion Control.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the following ODOT standards:

1. Section 220 – Management of Erosion Sedimentation, and Storm Water Pollution Prevention and Control
2. Section 221 - Temporary Sediment
3. Section 230 - Sodding and Sprigging.

B. Regulatory Requirements: Conform to requirements of local Authority Having Jurisdiction for prevention of erosion and sediment control.

1. Conform to NPDES and ODEQ requirements, where required.

1.4 PROJECT CONDITIONS

A. Environmental Requirements: Protect adjacent properties and water resources from erosion and sediment damage throughout work. Take all necessary measures to prevent sedimentation from construction operations to enter adjacent property. Offsite discharge of sedimentation is not permitted.

B. Storm Water Pollution Prevention Plan: Maintain plan at project site at all times available for inspection during contract duration.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. Quick Growing Grasses: Wheat, rye, or oats.
- B. Straw Bales: Free of weed seed.
- C. Fencing for Siltation Control: UV resistant geotextile fabric.
- D. Slab Sod: Rectangular slabs of Bermuda grass.
- E. Temporary Mulches: Loose straw, netting, wood cellulose, or agricultural silage free of seed.
- F. Bale Stakes:
 - 1. Minimum 3 feet length.
 - 2. 2 No. 4 steel reinforcing bars or,
 - 3. 2 steel pickets or,
 - 4. 2 - 2x2 inch hardwood stakes driven 18 inches to 24 inches into ground.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive work.
- B. Report in writing to ENGINEER prevailing conditions that will adversely affect satisfactory execution of the work of this section. Do not proceed with work until unsatisfactory conditions have been corrected.
- C. By beginning work, CONTRACTOR accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the OWNER.

3.2 EROSION CONTROL AND SLOPE PROTECTION

- A. Provide erosion control and slope protection measures to prevent sediment from site entering adjacent property or public right-of-way to include but not be limited to:
 - 1. Temporary silt fences.
 - 2. Straw bales placed around culvert openings or inlets.
 - 3. Diked area with earth berm and silt trap for draining dredged material.
- B. Install erosion control and slope protection in accordance with ODOT standards.
- C. Place all erosion and siltation control measures before start of earthwork and grading construction operations.

- D. Mulch and seed all storm and sanitary sewer trenches not in streets no later than 10 days after backfill. Do not permit more than 500 feet of trench to be open at any one time.
- E. Place all excavated material on uphill side of trenches where possible. Do not place materials in stream beds. Seed any stockpiled material which remains in place longer than 30 days with temporary vegetation and mulch.
- F. Mulch and seed all temporary earth berms, diversions, erosion barriers and temporary stockpiles with temporary vegetative cover with 10 days after grading.
- G. Do not stockpile or otherwise place dredged, excavated or other material, at any time, in or near stream bed which may increase turbidity of water. If turbidity producing materials are present, hold surface drainage from cuts and fills within construction area and from borrow and waste disposal areas in suitable sedimentation ponds or grade surface drainage to control erosion within acceptable limits. Provide and maintain temporary erosion and sediment control measures such as berms, dikes, drains, or sedimentation basins, if required, until permanent damage and erosion control facilities are completed and operative. Hold to minimum area of bare soil exposed at any one time by construction operations.
- H. Drain dredged material minimum 7 days. Store material for drainage to a maximum height of 4 feet.
- I. OWNER'S REPRESENTATIVE may direct CONTRACTOR to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and may direct CONTRACTOR to provide immediate permanent or temporary erosion control measures.
- J. Maintain temporary erosion control systems as directed by OWNER'S Representative to control siltation during construction. Provide maintenance or additional work directed by OWNER'S REPRESENTATIVE immediately upon notification by OWNER'S REPRESENTATIVE.

END OF SECTION 31 25 00

SECTION 32 11 23 - AGGREGATE BASE COURSES**PART 1 - GENERAL****1.1 SCOPE**

- A. This item shall consist of a base course of blended coarse aggregate, sand, stone dust, or other inert finely divided mineral matter and soil binder, containing not less than 40% uniformly graded crushed material retained on the No. 4 sieve, and constructed on the prepared subgrade in accordance with these specifications, and in conformity with the lines, grades, compacted thickness, and typical cross section shown on the drawings.

PART 2 - MATERIAL**2.1 GENERAL**

- A. Stabilized aggregate base course material shall consist of an intimate mixture of graded aggregate, coarse and fine, together with soil binder, and shall be practically free from vegetable or other deleterious substances. Coarse aggregate (material retained on a No. 10 sieve) shall be composed of gravel, stone or disintegrated granite and crushed material. Fine aggregate (the fraction passing No. 10 sieve) shall be sand, stone dust or other inert finely divided mineral matter and soil binder.

2.2 PHYSICAL PROPERTIES

- A. The coarse aggregate retained on the 3/8 in. sieve of the finished mixture, shall not have a percent of wear of more than 50 when tested in accordance with the Los Angeles Abrasion Test A.A.S.H.T.O. Method T-96.

2.3 GRADATION

- A. This specification permits the selection and use of one of three gradations or types of base course. The type required on the project may be specified in the bid item of the proposal. When the type is not so specified, the CONTRACTOR may select the gradation or type in advance of construction. The material produced or processes for the construction of the project shall conform in gradation and all other requirements herein for the type specified or selected and after work starts the same type of material as specified or selected shall be used throughout the project unless otherwise permitted in writing by the ENGINEER. In lieu of the above single type requirements, the CONTRACTOR will be permitted to use a type of finer gradation in the top of base course than in the bottom, provided the type used in the top has a compacted thickness or sufficient depth to obtain a satisfactory surface.
- B. Materials for base course which contain oversize particles of rock, gravel, lumps of clay or conglomerate material shall not be loaded into vehicles for delivery to the road. Such oversize particles of aggregate must be screened, crushed, or otherwise processed to meet the specification before delivery to the road.

- C. The graded aggregate with soil binder, when uniformly blended and sampled from windrows, shall conform to the gradation limits by weight, and other characteristics, for the type being constructed as follows:

Sieve Size	TYPE A	TYPE B
3 inches	100	
1 ½ inches	100	40 – 100
¾ inch	40 – 100	30 – 75
3/8 inch	30 – 75	25 – 60
No. 4	25 -60	20 – 50
No. 10	20 – 43	15 – 35
No. 40	8 -26	7 – 22
No. 200	4 – 12	3 -10

1. The material passing the No. 200 sieve shall not be greater than 2/3 of the material passing the No. 40 sieve.
2. For all types, the material passing the No. 40 sieve shall conform to the following:
 - a. The Plasticity Index shall not exceed 6.
 - b. The Liquid Limit shall not exceed 25.

2.4 SAMPLING AND TESTING

- A. Samples shall be secured from the uniformly blended and flattened windrow and in accordance with A.A.S.H.T.O. Method of sampling T-2.
- B. Tests shall be conducted in accordance with the following A.A.S.H.T.O. Methods:
1. Los Angeles Abrasion T-96
 2. Determining Liquid Limit T-89
 3. Sieve Analyses T-27
 4. Determining Plasticity Index T-91
 5. Sampling T-2
 6. Standard Density T-180, Method D

PART 3 - CONSTRUCTION METHODS

3.1 PREPARATION OF SUBGRADE

- A. Prior to placing the new base course material of subbase and base course material on the roadbed, the existing subgrade shall be brought to the required line, grade and typical cross section shown on the Drawings. Any soft or unsuitable material in the subgrade shall be removed and replaced with satisfactory material. The top 8 inches of the subgrade is then to be compacted to 95% of Standard Proctor Density.
- B. Immediately in advance of placing base course materials or subbase and base course material, the subgrade shall be tested for required density, conformity with the

established line, grade and typical cross section shown on the drawings and shall be satisfactory before base course material or subbase and base course material is placed and spread.

3.2 MIXING AND PLACING

- A. When the several materials required to produce the specified mixture are to be combined and blended on the roadbed, the weighed material shall be delivered and placed in measured windrows, each in the proper proportions before blending. Soil binder to be added to the mixture shall be pulverized to 100% passing the 1-inch sieve and not less than 80% passing the No. 4 sieve. The total quantities for blending at one operation shall not be in excess of the amount that can be readily handled and thoroughly and uniformly mixed and blended to these requirements by the equipment available on the project.
- B. During the latter stages of the mixing and before final mixing is completed the mixture shall be moistened as deemed necessary by the ENGINEER to provide a suitable working condition during the final stages of mixing. Such application of water shall be accurate and uniform throughout the length of section being treated so that no excess wet or dry spots will be evidenced in the finished blend. Application of excess water should be avoided, either during mixing or during compaction, in order that undue softening of the subgrade will not develop.

3.3 SPREADING

- A. After the blended and flattened windrow has been tested and approved by the ENGINEER, the base course material shall be spread uniformly over the full length and width of the section to be compacted. This spreading shall be done in such a manner as to prevent segregation of the mixture. The thickness or depth of the layers shall not be in excess of that which the equipment on the project is capable of compacting to the density required herein for the completed base course.

3.4 COMPACTION - DENSITY

- A. The course or courses being compacted shall be wetted as necessary to maintain throughout the course, a suitable uniform moisture content (Optimum) in order to facilitate compaction and provide uniform density. Rolling shall be continued to the extent required to produce a completed base course having a minimum density of 95% of Standard Proctor Density, in any portion or areas, and including the edges.

END OF SECTION 32 11 23

SECTION 32 12 13.13 – TACK COAT**PART 1 – GENERAL****1.1 DESCRIPTION**

- A. This work consists of preparing and treating an existing bituminous or concrete surface with bituminous material.
1. Original Emulsion. A mixture of asphalt, water, and a small amount of emulsifying agent to maintain a uniform blend.
 2. Diluted Emulsion. An original emulsion diluted with additional water to reduce the viscosity and to allow easier spraying, typically used for fog seals.
 3. Residual Asphalt Content. The amount of asphalt remaining on the pavement surface after all of the water, both in the original emulsion and any additional water, has evaporated.

1.2 MATERIALS

- A. Provide materials in accordance with Section 32 12 16.39 Part 2, "Asphalt Materials."

1.3 EQUIPMENT

- A. Distributors and Supply Tanks
1. Provide distributors and supply tanks capable of uniformly applying bituminous material in accordance with the following:
 - a. At the temperatures specified in the relevant specification sections;
 - b. On variable widths of surface not to exceed 26 ft [7.8 m];
 - c. At rates from 0.010 gal/yd² to 1.000 gal/yd² [0.045 L/m² to 4.525 L/m²]; and
 - d. With constant pressure and uniform temperature.
 2. Ensure the distributor can apply material to vertical faces of asphalt pavement at the joints between paving operations.
 3. Prevent variation that exceeds the specified application rate by more than 0.01 gal/yd² [0.045 L/m²].
 4. Provide a distributor equipped with the following:
 - a. A tachometer,
 - b. Pressure gauges,
 - c. Volume-metering devices or a calibrated tank,
 - d. A thermometer for measuring temperatures of tank contents,
 - e. A power unit for the pump,
 - f. Full circulation spray bars adjustable vertically and laterally,

- g. A positive shut-off valve, and
 - h. Fittings that prevent bituminous material from dripping.
5. Frequently check and adjust the angle of the spray nozzles and the height of the spray bar to ensure uniform distribution of the bituminous material. The ENGINEER will not allow drilling, clogging, or streaking the bituminous material. If any of these conditions occur, stop the operation and correct the problems creating these conditions before resuming distribution.
 6. Check the rate and uniformity of distribution if directed by the ENGINEER. Provide supply tanks in accordance with AASHTO M 156, Section 3.

B. Compactors

1. Provide rollers of the following types:
 - a. Vibratory steel-wheel,
 - b. Non-vibratory steel-wheel,
 - c. Pneumatic tire, or
 - d. A combination of the three types.
2. Provide rollers in good condition, capable of reversing without backlash, and operating at speeds that do not displace the bituminous mixture.
3. Equip vibratory rollers with working amplitude controls or frequency controls designed specifically for the compaction of the specified bituminous material.
4. Use rollers of a type, number, and weight to complete the compaction of the bituminous material before its temperature drops below the specified minimum.
5. Do not use equipment that crushes the aggregate in the bituminous material.

1.4 CONSTRUCTION METHODS

A. Preparation

1. Clean the existing roadbed surface before placing tack coat. Paint a thin, uniform tack coat on all surfaces of curbs and gutters, manholes, and other structures that will come in contact with hot mix asphalt. Ensure the tack coat applications minimize damage and inconvenience to traffic and allow one-way traffic without pickup or tracking the bituminous material.
2. Do not apply tack coat during wet or cold weather or in windy conditions that would cause the tack coat emulsion to drift. Do not apply tack coat to wet surfaces with free standing water. The ENGINEER will allow tack coat application to damp surfaces.
3. The ENGINEER must approve of the following before application:
 - a. Quantity,
 - b. Rate of application,
 - c. Temperature, and

d. Areas to be treated.

B. Fog Seal

1. Apply the fog seal at a rate of 0.100 gal/yd² [0.455 L/m²] of diluted emulsion diluted at 5:1 water to original emulsion. Alter the application rate or dilution ratio as directed by the ENGINEER (based on weather, type of emulsion, and surface type or layer).

C. Tack Coat

1. Apply the tack coat or NT tack material as shown in Table 1 on the following page, unless otherwise required by the Contract. Alter the application rate as directed by the ENGINEER (based on weather and surface type or layer). Use the highest rate in the table for the surface type or layer (top or bottom).

Table 1 Tack Application Rates		
Surface Type/Layer	Original Emulsion gal/yd² [L/m²]	Residual gal/yd² [L/m²]
New Asphalt (bottom)	0.060 [0.270]	0.035 [0.160]
Old Asphalt (bottom)	0.085 [0.385]	0.050 [0.225]
Milled (bottom)	0.085 [0.385]	0.050 [0.225]
New Fabric (bottom)	----	0.200 [0.905]
PFC, OGFSC (top)	0.100 [0.455]	0.060 [0.270]
UTBWC (top)	0.200 [0.905]	0.120 [0.545]
PCC (bottom)	0.075 [0.340]	0.45 [0.205]

2. Ensure that the tack breaks before the application of the next surfacing layer.
3. Re-apply tack at a rate that ensures proper bonding if the tack loses its adhesive properties or is damaged by traffic before being covered by the next surfacing layer, as directed by the ENGINEER, at no additional cost to the OWNER.

1.5 METHOD OF MEASUREMENT

- A. The ENGINEER will measure the volume of Emulsion for Fog Seal, Tack Coat, and NT Tack Material as delivered, before dilution.
- B. The ENGINEER will measure bituminous material by the gallon [liter] or ton [metric ton].

1.6 BASIS OF PAYMENT

- A. The OWNER will pay for each pay item at the contract unit price per the specified pay unit as follows:

INDEPENDENCE AVENUE WATERLINE

Pay Item:	Pay Unit:
(A) FOG SEAL	Gallon [Liter]
(B) TACK COAT	Gallon [Liter]
(C) NT TACK MATERIAL	Gallon [Liter]

- B. The OWNER considers the cost of water for dilution to be included in the contract unit price for *Fog Seal* and *Tack Coat*.

END OF SECTION 32 12 13.13

SECTION 32 12 16.39 – PLANT MIX BITUMINOUS BASES AND SURFACES**PART 1 – MATERIALS****1.1 MATERIAL APPROVAL**

- A. ENGINEER must approve aggregate sources and blend percentages on a project basis before use.
- B. Stockpile the aggregate in accordance with Section 1.2. The ENGINEER may accept aggregates in stockpiles and plant mixed materials after blending and mixing at the plant. Obtain asphalt from an approved source in accordance with Subsection 4.1B.

1.2 STORAGE AND HANDLING OF MATERIAL**A. General**

- 1. Store and handle materials to preserve their quality and fitness for the work. Transport bulk materials in vehicles constructed to prevent loss or segregation after loading and measuring. Store materials to facilitate prompt inspection. Materials will be subject to inspection and retesting before incorporation in the work in accordance with Subsection 1.3, "Samples, Tests, and Cited Specifications."
- 2. At the CONTRACTOR'S request, the ENGINEER may allow the use of approved portions of the right- of-way for storing materials and the CONTRACTOR'S plant and equipment. As part of the request for use of the site, provide the ENGINEER with written documentation of the location of the proposed site, access and egress points, a proposed erosion control plan, a proposed traffic control plan, and any other information required by the ENGINEER relevant to use of the site for materials and equipment storage and plant set up. Provide additional storage space as necessary at no additional cost to the OWNER.
- 3. For controlled access facilities, the CONTRACTOR must obtain approval from the ENGINEER, subject to the approval of FHWA, prior to altering, severing or removing any right-of-way fences. Do not use private property for storage without prior written permission of the OWNER or lessee. If requested, provide copies of such written permission to the ENGINEER.
- 4. When allowed use of approved portions of the right-of-way for establishing asphalt or concrete plants, such plants must be established for the sole purpose of providing material for the respective project. Material production for other projects will not be allowed.
- 5. Restore storage and plant sites on the right-of-way to their original condition at no additional cost to the OWNER.

1.3 SAMPLES, TESTS, AND CITED SPECIFICATIONS

- A. The ENGINEER will inspect, test, and approve material before its incorporation in the work. Unless otherwise specified, tests will be performed using the most recent cited standard methods or specifications, AASHTO, ASTM, or other referenced authority.

For differing test procedures, the ENGINEER will use the following order of precedence:

1. AASHTO, and
 2. ASTM.
- B. For acceptance testing, samples will be taken and tested by certified technicians.
- C. The ENGINEER may inspect, test, or reject material before or during its incorporation into the work. The ENGINEER will address unacceptable material in accordance with Section 01 45 00, "Quality Control." The ENGINEER may retest material and reject material that does not meet the requirements of the contract documents, even if the material was previously tested and conditionally approved at the source of supply. The ENGINEER will provide copies of test results to the CONTRACTOR upon request.

1.4 MINERAL AGGREGATE

- A. Provide mineral aggregate composed of coarse aggregate, fine aggregate, and mineral filler in accordance with these specifications. If crushing natural gravel for mixes, the ENGINEER may require a washing operation to separate fines from the gravel. Different materials are not allowed to be blended in the same storage or feeder. Provide aggregates in accordance with Table 1 below.

Table 1 Physical Properties of Aggregates								
Test	Aggregates to be used in:							
	Superpave, Rich Intermediate Layer ⁱ			Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Surface Course	Open Graded Bituminous Base
	PG 64	PG 70	PG 76	PG76	PG76	PG64	PG76	PG64
L.A. Abrasion ^a , % wear	≤ 40	≤ 40	≤ 40	≤ 30	≤ 30	≤ 40	≤ 30	≤ 40
Micro-Deval ^a , % wear	—	—	≤2 5	≤25	≤25	—	≤ 25	—
Sand equivalent ^b	≥ 40	≥ 45	≥ 50	—	—	≥ 40	—	—
Mechani cally Fracture d Faces ^{b, c, h} , %	≥ 85/ 80	≥ 95/ 90	≥ 98/ 95	≥ 98/95	≥ 98/95	≥ 85/80	≥ 98/95	≥ 85/80
Aggregate Durability Index ^a	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40
Insoluble Residue ^d , ^e , %	≥ 30	≥ 40	≥ 40	≥ 40	≥ 40	—	≥ 40	—
Flat and Elongated ^{b, c, f} , %	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
Natural Sand and Gravel ^b , %	≤ 15	≤ 15	≤ 15	0	0	≤ 15	0	0
Clay Balls and Friable Particles ^g , %	≤ 1.0	≤ 1.0	≤ 1.0	0	0	≤ 1.0	0	0

Table 1 Continued Physical Properties of Aggregates								
Test	Aggregates to be used in:							
	Superpave, Rich Intermediate Layer ⁱ			Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Surface Course	Open Graded Bituminous Base
	PG 64	PG 70	PG 76	PG76	PG76	PG64	PG76	PG64
Soft Particles ^a , %	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Sticks or Roots ^a , %	≤ 0.5	≤ 0.5	≤ 0.5	0	0	≤ 0.5	0	0
Note: For this table: PG64, PG70, and PG76 refer to the high temperature grade of the binder. Unless otherwise noted, specifications for PG binder grades higher than PG76 will use PG76 specifications. ^a Applies to each source. ^b Applies to the combined aggregate. Assume 10% natural sand in coarse RAP and 20% in fine RAP for mix design purposes. ^c Applies to the aggregate retained on the No. 4 [4.75 mm] sieve. ^d Applies to the combined coarse aggregate. ^e Applies to the coarse aggregate in the surface course. Does not apply to shoulders, driveways, and temporary detours. ^f A flat and elongated piece has a length greater than five times the thickness. ^g Applies to combined aggregate. If the maximum for the combined aggregate is not exceeded, the ENGINEER will allow 1.5% for one source. ^h In the mechanically fractured faces requirement format "xx/yy," "xx" is the minimum percentage of coarse aggregate requiring one fractured face, and "yy" is the percentage requiring two fractured faces. ⁱ Only applies to PG 76E-28.								

- B. Ensure a crusher run or similarly graded aggregate is not the only source of crushed coarse aggregate in asphalt concrete.

1.5 COARSE AGGREGATE

- A. Coarse aggregate is defined as that part of the aggregate retained on the No. 8 [2.36 mm] sieve. Provide coarse aggregate consisting of clean, tough and durable particles that are free of soft and disintegrated pieces, shale, clay, organic, or other deleterious material.
- B. Natural gravel is not allowed as a source of insoluble material unless it is crushed so that at least 75 percent of the material retained on the No. 4 (4.75 mm) sieve has at least two mechanically fractured faces.

1.6 FINE AGGREGATE

- A. Fine aggregate is defined as that part of the aggregate that passes the No. 8 (2.36 mm) sieve and consists of hard, durable natural sand grains, crushed stone, stone dust, crushed gravel, mine chat, jig sand or any combination of these. Produce crushed materials from a source that meets the requirements for coarse aggregate in Table 1.

1.7 MINERAL FILLER

- A. If required by the contract documents, provide mineral filler in accordance with AASHTO M 17.

PART 2 – ASPHALT MATERIALS

2.1 ASPHALT REQUIREMENTS

- A. Provide asphalt cement in accordance with AASHTO M 320 and Table 2.

Table 2 Additional Requirements to AASHTO M 320 for Asphalt Cement			
Test	PG 64-22 OK	PG 70-28 OK	PG 76-28 OK
Elastic recovery at 77°F (25°C), %	-----	≥65	≥75
Separation ^a , %	-----	≤10	≤10
Original DSR $G^*/\sin(\delta)$, kPa	≤2.50	≤2.50	≤2.50
RTFO DSR $G^*/\sin(\delta)$, kPa	≤5.50	≤5.50	≤5.50
PAV DSR change in testing temperature, °F (°C)	-----	77 [25]	77 [25]
Spot test ^b	Negative	-----	-----
Flash point, °F (°C)	≥500 [260]	≥500 [260]	≥500 [260]
Solubility in trichloroethylene, %	≥99	≥99	≥99
Note: Asphalt binder suppliers will provide handling requirements and recommended field mixing and compaction temperatures for their product to the hot-mix producer. ^a Separation test samples are prepared in accordance with ASTM D 5976 but are reported as the difference in G^* between the top and bottom samples. ^b Spot test using solvent blend of 65 percent heptane and 35 percent xylene by volume.			

- B. Provide medium-curing cutback asphalt in accordance with AASHTO M 82 for the asphalt type and grade required by the contract documents. The spot test is required

using a solvent blend of 65 percent heptane and 35 percent xylene by volume. Residue may also be obtained by evaporation.

C. Provide emulsified asphalt in accordance with AASHTO M 140 for the asphalt type and grade required by the contract documents with the following exception:

1. The minimum Saybolt Furol Viscosity for RS-2 at 122°F (50°C) is 150.
2. Residue may also be obtained by evaporation.

D. Provide cationic emulsified asphalt in accordance with AASHTO M 208 for the asphalt type and grade required by the contract documents with the following exception:

1. The minimum Saybolt Furol Viscosity for CRS-2 at 122°F (50°C) is 150.
2. Perform the demulsibility test within 30 days of shipment. If the particle charge test is inconclusive, the ENGINEER will approve material with a maximum pH of 6.7. Residue may also be obtained by evaporation.
3. Provide polymer modified cationic emulsified asphalt in accordance with Table 3 for the asphalt type and grade required by the contract documents.

Table 3 Requirements for Polymer Modified Cationic Emulsified Asphalt			
Test	Rapid-Setting	Rapid-Setting	Slow-Setting
	PMCRS-1s	PMCRS-2s ^a	PMCSS-1h
Viscosity, Saybolt Furol, 122°F [50°C], s	25 – 125	125 – 400	—
Storage stability test 24 hr, %	≤1	—	≤1
Settlement test ^b , 5 day, %	—	≤5%	—
Particle charge test	—	positive	positive
Sieve test, %	≤0.05	≤0.10	≤0.10
Demulsibility, %	≥60	≥60	—
Distillation ^e			
Oil distillate, by volume of emulsion, %	≤2	≤2	≤0.5
Residue, %	≥63	≥65	≥62
Tests on residue from distillation test ^{c,d, e}			
Penetration, 77°F, [25°C], 100 g, 5 s	90 – 150	100 – 200	40 – 90
Ductility, 77°F, [25°C], 5cm/min, cm	—	—	≥70
Ductility, 40°F, [4°C], 5 cm/min, cm	—	≥30	—
Softening point, ring, and ball, °F[°C]	—	≥112 [44]	≥135 [57]
Elastic recovery, 50°F [10°C], %	≥60	≥58	—

Table 3, Continued Requirements for Polymer Modified Cationic Emulsified Asphalt			
Test	Rapid-Setting	Rapid-Setting	Slow-Setting
	PMCRS-1s	PMCRS-2s ^a	PMCSS-1h
Tensile stress at 800% elongation, 40°F [4°C], 50 cm/min, kPa	—	≥196	—
Solubility in trichloroethylene ^f , %	≥97.5	—	≥97
Ash content, %	—	≤1.0	—
^a Provide a Type B certification for each polymer modified asphalt lot. Type B defined as manufacturer prepared certification showing the limits of test values as determined by manufacturer's laboratory, a qualified commercial laboratory, or another approved laboratory. ^b After the test cylinder stands undisturbed for 5 days, ensure that there is no milky colored substance and there is a homogenous brown color throughout the cylinder. ^c Modify the distillation procedure as follows: Maintain a temperature from 345°F [174°C] to 355°F [180°C] on the lower thermometer for the last 20 min of the test. Maintain a test duration from 50 min to 70 min from the first application of heat. ^d Ensure the distillation residue of the modified emulsion contains at least 3 percent polymer solids by asphalt mass as determined by an analytical method approved by the ENGINEER. ^e Residue may also be obtained by evaporation. ^f An organic solvent may be used.			

Table 4 Requirements for NT Tack Material			
Test	Emulsion		
	CBC-1H	NTSS-1HM	NTQS-1HH
Saybolt Furol Viscosity, SFS @ 77°F [25°C]	10 – 100	15 – 100	15 – 100
Storage stability test, 24 hours, %	≤ 1	≤ 1	≤ 1
Particle Charge	Positive	–	–
Sieve test, %	≤ 0.1	≤ 0.3	≤ 0.3
Tests on residue from distillation ^a			
Residue, %	≥ 50	≥ 50	≥ 50
Penetration, 77°F [25°C], 100 g, 5 s	40 - 90	≤ 20	≤ 15
Softening point, ring, and ball, °F [°C]	–	≥ 149 [65]	≥ 149 [65]
Flash point, °F [°C]	–	–	–
Original DSR G*/sin(δ) @ 180°F [82°C], kPa	–	≥ 1.00	≥ 1.00
Solubility in trichloroethylene, %	≥ 97.5	≥ 97.5	≥ 97.5
^a Modify the distillation procedure as follows: Maintain a temperature from 345°F [174°C] to 355°F [180°C] on the lower thermometer for the last 20 minutes of the test. Residue may also be obtained by evaporation.			

Table 5 Requirements for 1 NT Tack Material	
Test	Asphalt Cement
	NTHAP
Rotational viscosity ^a @ 300°F [149°C], PaAs	≤ 3
Penetration, 77°F [25°C], 100 g, 5 s	≤ 25
Softening point, ring, and ball, °F [°C]	≥ 158 [70]
Flash point, °F [°C]	≥ 500 [260]
Original DSR G*/sin(δ) @ 180°F [82°C], kPa	≥ 1.00
Solubility in trichloroethylene, %	–
^a Limit may be waived if no application problems are present in the field and material can be pumped.	

E. Handling

1. Handle, load, haul, and transfer bituminous materials in accordance with the following:
 - a. Each transport shall be equipped with a sampling device with a gate valve or petcock located in the discharge line in such a way as to allow a sample to be drawn during the unloading of transport. The device shall be maintained in an operating condition at all times.
 - b. Each hauler shall maintain a "log" or record with each transport showing the type, grade, source, destination and date of the last previous delivery made using the hauling tank as identified therein.
 - c. Each transport to be equipped with an observation hatch so located as to be suitable for inspection and direct measurement of the depth of the material at the lowest point in the tank. (An approximate six inch diameter opening with cover located at the top and near the discharge end of the transport is considered suitable.)
 - d. Before loading, the producer's representative shall inspect the transport to assure that it is empty and check the hauler's "log" to assure that no contamination will result from the previous load.
 - e. When bituminous materials are received for storage at the mixing plant or project site, separate tanks shall be provided for each type and grade material. Storage tanks shall be cleaned before being used for a different material except that cleaning is not required when the material to be stored is compatible with the material last contained in the tank and the tank has been completely emptied.
2. The ENGINEER will reject further shipments if materials fail to produce the results required by the contract documents. The ENGINEER will not accept further work until satisfied that the material has been corrected so that it produces the results required by the contract documents.

F. Application Temperature

1. Heat asphalt materials in accordance with Table 6 below unless otherwise required by the contract documents.

Table 6 Temperature Ranges for Use of Asphalt Materials			
Type or Grade	Mixture, °F [°C]	For Mixing, °F [°C]	For Spraying, °F [°C]
NTHAP	—	350 – 400 [177 -204]	350 – 400 [177 -204]
All PGs	≤350 [177]	275 – 350 [135 – 177]	285 – 350 [141 – 177]
MC-30	—	50 – 120 [10 – 49]	50 – 120 [10 – 49]
MC-70	—	80 – 150 [27 – 66]	80 – 150 [27 – 66]
MC-250	≤200 [93]	100 – 200 [38 – 93]	100 – 200 [38 – 93]
MC-800	≤210 [99]	160 – 210 [71 – 99]	185 – 260 [85 – 127]
MC-3000	≤250 [121]	200 – 250 [93 – 121]	225 – 275 [107 – 135]
All emulsions	—	70 – 185 [21 – 85]	70 – 185 [21 – 85]

PART 3 – COMPOSITION OF MIXTURES

3.1 ASPHALT MIX DESIGN AND INITIAL JOB MIX FORMULA

- A. Prepare superpave mix designs in general accordance with AASHTO R 35 except where modified by these specifications. Prepare PFC mix designs in general accordance with AASHTO PP 77 except where modified by these specifications. Prepare SMA mix designs in general accordance with AASHTO R 46 except where modified by these specifications. The mix design and initial job-mix formula (JMF) are the responsibility of the CONTRACTOR. Submit the mix design and initial JMF to the ENGINEER for review.
- B. The ENGINEER will determine if the mix design meets the design criteria. Provide one mix design for each asphalt concrete mixture required by the contract documents.
- C. Ensure that the initial JMF is in accordance with Tables 8, 10, and 11, or Tables 9, 10, and 11 for the type of mix required by the contract documents. Prepare a trial mixture in accordance with Section 32 12 16.13 Plant Mix Asphalt Paving, Subsection 1.4C. Propose changes to the JMF if the trial, prepared at the initial JMF proportions, fails to meet the requirements of Tables 8, 12, 13, and 14, or Tables 9, 12, 13, and 14. If the changes do not produce a mix design in accordance with these tables, the ENGINEER will require a new mix design. If the changes do produce a mix design in accordance with these tables, the ENGINEER will approve the changes for adjustment of the JMF.
- D. Ensure the JMF establishes a percentage of aggregate passing each required sieve, a percentage of asphalt contained in the mixture, and a mixture temperature at the point of discharge from the plant.
- E. The JMF with the allowable tolerances shown in Table 15, establish the specification limits for each mixture. These limits may be outside the range in Table 8 or Table 9 except for the following conditions:

1. The absolute maximum sieve size,
2. PFC and Open Graded Friction Surface Course, where the JMF with allowable tolerances must be within the broad range in accordance with Table 9.
3. When no tolerances are shown in Table 15, the broad ranges given in Table 9 are the specification limits.

3.2 PLANT PRODUCED MIXTURES

- A. Provide a uniform, plant produced mixture of the combined aggregate and asphalt in accordance with Tables 8, 12, and 13, or Tables 9, 12, and 13 within the specification limits established by the JMF with allowable tolerances.
- B. After the plant is in operation, propose any necessary adjustments to the JMF in accordance with Table 8 or Table 9. If test results indicate the adjustments are in accordance with Tables 12 and 13, adjust the JMF accordingly.
- C. Provide a new mix design to the ENGINEER if the source of materials changes before the use of the new materials. If unsatisfactory results or other conditions make it necessary, the ENGINEER will require a new mix design.
- D. The ENGINEER defines the asphalt JMF as the target value. Attempt to incorporate that asphalt amount regardless of the allowable tolerances.

3.3 RECLAIMED ASPHALT PAVEMENT

- A. Superpave mixtures containing reclaimed asphalt pavement (RAP) will be accepted in accordance with Table 7 if the mixture is not used in the surface layer and meets the contract document requirements for the type or grade.

Table 7 Reclaimed Asphalt Pavements	
Superpave with Binder Type	Maximum RAP, %
PG 58-28	25
PG 64-22 OK	25
PG 70-28 OK	15
PG 76-28 OK	15
PG 76E-28	0

- B. Regardless of the layer or binder type, the ENGINEER will accept superpave mixtures with no more than 25 percent RAP for shoulders, driveways, and layers serving as a bond breaker under PCC pavements if the mixture meets the contract document requirements for the type or grade. Superpave mixtures containing up to 35 percent RAP will be accepted in temporary detours if the mixture meets the contract document requirements for the type or grade, and if the mixture can be produced meeting air quality standards set forth by the Oklahoma Department of Environmental Quality.

Temporary is defined as any material that will not become part of any permanent pavement. Temporary material must be removed before the end of the project.

- C. Process RAP by fractionating it into at least two stockpiles: a coarse stockpile and a fine stockpile. Crush, screen, or size the coarse stockpile so that 100 percent passes through a 1.5 in (37.5 mm) sieve. Crush, screen, or size the fine stockpile so that 100 percent passes through a $\frac{5}{8}$ in (16.5 mm), $\frac{1}{2}$ in (12.5 mm), or $\frac{3}{8}$ in (9.5 mm) sieve. If RAP comes from an unknown source and documentation is unavailable, the ENGINEER will consider the insoluble residue content to be zero. The ENGINEER will reduce the amount of natural sand and gravel allowed in the combined aggregate by the amount of natural sand and gravel contained in the RAP. Do not use RAP in Stone Matrix Asphalt (SMA), Permeable Friction Course (PFC), Rich Bottom Layer (RBL), Open-Graded Friction Surface Course (OGFSC), or Open-Graded Bituminous Base (OGBB) mixes.

Table 8					
Mixtures for Superpave					
Sieve Size ^a	Percent Passing per Superpave Mixture Type				
	S2	S3	S4	S5 / RIL	S6
1½ in [37.5 mm]	100	—	—	—	—
1 in [25.0 mm]	90 – 100	100	—	—	—
¾ in [19.0 mm]	≤ 90	90 – 100	100	—	—
½ in [12.5 mm]	—	≤ 90	90 – 100	100	—
⅜ in [9.5 mm]	—	—	≤ 90	90 – 100	100
No. 4 [4.75 mm]	≥ 40	—	—	≤ 90	80 – 100
No. 8 [2.36 mm]	29 – 45	31 – 49	34 – 58	37 – 67	54 – 90
No. 16 [1.18 mm]	—	—	—	—	—
No. 30 [0.600 mm]	—	—	—	—	—
No. 50 [0.300 mm]	—	—	—	—	—
No. 100 [0.150 mm]	—	—	—	—	—
No. 200 [0.075 mm]	1.0 – 7.0 ^b	2.0 – 8.0 ^b	2.0 – 10.0 ^b	2.0 – 10.0 ^b	5.0 – 15.0
Other Mixture Requirements					
NMS ^c	1 in [25 mm]	¾ in [19 mm]	½ in [12.5 mm]	⅜ in [9.5 mm]	No. 4 [4.75 mm]
Asphalt Cement ^d , % of mix mass	≥ 3.9	≥ 4.3	≥ 4.8	≥ 5.3 / ≥ 5.5	≥ 5.8
Performance grade asphalt cement	e	e	e	e	e

- ^a Table 8 reflects the sieve size boundaries for design and JMF purposes. After the design is established, the JMF will designate combined aggregate sieve requirements with tolerances in Table 14.
- ^b Ensure the ratio of the percent passing the No. 200 (75 µm) sieve to the percent effective asphalt cement is from 0.6 to 1.6.
- ^c Nominal Maximum Size (NMS) is defined as one size larger than the first sieve to retain more than 10 percent.
- ^d The ENGINEER may adjust the lower limit if the effective specific gravity of the combined aggregates is greater than 2.65. The ENGINEER may allow adjustments if a theoretical lab molded specimen at the JMF asphalt content meets the VMA requirement at 4% air voids.
- ^e The CONTRACTOR may substitute a higher grade of asphalt than that shown on the Plans at no additional cost to the OWNER.

Table 9 Asphalt Mixture, Non-Superpave					
Sieve Size ^a	Percent Passing per Asphalt Concrete Mixture Type				
	SMA	PFC ^b	RBL	OGFSC ^{b, c}	OGBB
1 ½ in [37.5 mm]	—	—	—	—	100
1 in [25.0 mm]	—	—	—	—	95 – 100
¾ in [19.0 mm]	100	100	100	—	—
½ in [12.5 mm]	90 – 100	80 – 100	90 – 100	100	25 – 60
⅜ in [9.5 mm]	65 – 80	35 – 60	72 – 90	90 – 100	—
No. 4 [4.75 mm]	22 – 30	1 – 20	53 – 70	25 – 45	≤10
No. 8 [2.36 mm]	16 – 24	1 – 10	34 – 58	≤10	≤5
No. 16 [1.18 mm]	—	—	—	—	—
No. 30 [0.600 mm]	—	—	—	—	—
No. 50 [0.300 mm]	—	—	—	—	—
No. 100 [0.150 mm]	—	—	—	—	—
No. 200 [0.075 mm]	9.0 – 12.0	1.0 – 4.0	2.0 – 10.0	≤5.0	≤3.0
Other Mixture Requirements					
NMS ^d	½ in [12.5 mm]	½ in [12.5 mm]	½ in [12.5 mm]	⅜ in [9.5 mm]	1 in [25 mm]
Cellulose Fiber, % of mix mass	0.3 – 0.4	0.2 – 0.5	—	—	—

Asphalt Cement ^e , % of mix mass	≥6.0	6.0 – 7.0	≥5.2	≥5.1 ^f	2.5 ^g
Table 9, Continued Asphalt Mixture, Non-Superpave					
Performance grade asphalt cement	PG 76-28 OK	PG 76-28 OK	h	h	h
^a Table 9 reflects the sieve size boundaries for design and JMF purposes. After the design is established, the JMF will designate the combined aggregate sieve requirements with tolerances set in Table 15. ^b Use an approved anti-stripping agent at the rate of 5 gal/1,000 gal [5 L/1,000L] of asphalt cement. ^c Retain at least 55 percent of the aggregate between the 3/8 in [9.5 mm] and the No. 4 [4.75 mm]. ^d Nominal Maximum Size (NMS) is defined as one size larger than the first sieve to retain more than 10 percent. ^e The ENGINEER may allow the lower limit to be adjusted if the effective specific gravity of the combined aggregates is greater than 2.65. The ENGINEER may allow adjustments if a theoretical lab molded specimen at the JMF asphalt content meets the VMA requirement at 4 percent air voids. ^f Calculate the JMF for percent AC in the open graded friction course with the following equation: $\% \text{ AC} = (16.5) / (\text{Effective Specific Gravity (Gse)} + 0.165).$ ^g The ENGINEER may allow the amount of asphalt binder to be adjusted if the effective specific gravity of the combined aggregate is greater than 2.833 or less than 2.495. ^h The CONTRACTOR may substitute a higher grade of asphalt than that shown on the Plans, at no additional cost to the OWNER.					

Table 10 Mix Design Properties of Laboratory Molded Specimens							
Property	Superpave			RIL	SMA	PFC	RBL
	PG64	PG70	PG76	PG76E-28	PG76	PG76	PG64
	Number of SGC Gyration						
Nini	6	7	8	—	—	—	—
Ndes	50	65	80	50	50	50	50

	Required Density, % of Gmm						
Nini	85.5 – 91.5	85.5 – 90.5	85.5 – 89.0	—	—	—	—
Table 10, Continued Mix Design Properties of Laboratory Molded Specimens							
Ndes	96	96	96	97	96	≤ 82.0	98
VMA, %	See Table 3.3:5						
VFA, %	See Table 3.3:5						
Lab Permeability, $\text{cm/s} \times 10^{-5}$	≤ 12.5	≤ 12.5	≤ 12.5	≤ 12.5	≤ 12.5	—	≤ 12.5
TSR, Min.	0.8	0.8	0.8	0.8	0.8	—	0.8
ITS ^a , psi	—	—	≥ 75	—	—	—	—
Draindown, %	—	—	—	—	≤ 0.20	≤ 0.20	—
Hamburg Rut Test, Min. No. of Cycles to 12.50 mm, 122 °F	10,000	15,000	20,000	20,000	20,000	—	5,000
Note: For this table: PG64, PG70, and PG76 refer to the high temperature grade of the binder. Unless otherwise noted, specifications for PG binder grades higher than PG76 will use PG76 specifications. ^a Indirect Tensile Strength from AASHTO T 283, preconditioned specimen average, in psi.							

Table 11 Mix Design Properties of laboratory Molded Specimens									
Property	Superpave					RIL	SMA	PFC	RBL
	S2	S3	S4	S5	S6				
VMA ^a , %	≥ 12.5	≥ 13.5	≥ 14.5	≥ 15.5	≥ 16.5	≥ 15.5	≥ 17.0	—	≥ 14.0
VFA, ^b , %	67 - 73	70 - 75	72 - 77	73 - 78	75 - 79	73 - 79	—	—	—
	^a VMA is based on the bulk specific gravity of the aggregates. ^b VFA is defined as the percentage of VMA containing asphalt binder.								

Table 12 Field Properties of Laboratory Molded Specimens							
Property	Superpave			RIL	SMA	PFC	RBL
	PG64	PG70	PG76	PG76E-28	PG76	PG76	PG64
	Number of SGC Gyration						
Nini	6	7	8	—	—	—	—
Ndes	50	65	80	50	50	50	50

	Required Density, % of Gmm						
Nini	85.5 – 91.5	85.5 – 90.5	85.5 – 89.0	—	—	—	—
Table 12, Continued Field Properties of Laboratory Molded Specimens							
Ndes	94.5 - 97.4	94.5 - 97.4	94.5 - 97.4	95.5 – 98.4	94.5 - 97.4	≤ 82.0	96.5 - 99.4
VMA, %	See Table 13						
VFA, %	See Table 13						
Lab Permeability, cm/s × 10 ⁻⁵	—	—	—	—	—	—	—
TSR, Min.	0.75	0.75	0.75	0.75	0.75	—	0.75
ITS ^a , psi	—	—	—	—	—	—	—
Draindown, %	—	—	—	—	—	—	—
Hamburg Rut Test, Min. No. of Cycles to 12.50 mm, 122 °F	—	—	—	—	—	—	—
Note: For this table: PG64, PG70, and PG76 refer to the high temperature grade of the binder. Unless otherwise noted, specifications for PG binder grades higher than PG76 will use PG76 specifications.							
^a Indirect Tensile Strength from AASHTO T 283, preconditioned specimen average, in psi.							

Table 13									
Field Properties of Laboratory Molded Specimens									
Property	Superpave					RIL	SMA	PFC	RBL
	S2	S3	S4	S5	S6				
VMA ^a , %	≥ 12.0	≥ 13.0	≥ 14.0	≥ 15.0	≥ 16.0	≥ 15.0	≥ 16.5	—	≥ 13.5
VFA ^b , %	—	—	—	—	—	—	—	—	—
^a VMA is based on the bulk specific gravity of the aggregates. Compute a new bulk specific gravity from each AASHTO T 209 test. Calculate the value by multiplying the aggregate Effective Specific Gravity (Gse) calculated from the latest AASHTO T 209 test by the aggregate Bulk Specific Gravity (Gsb) from the design. Afterwards, divide the product by the aggregate Gse from the design.									
^b VFA is defined as the percentage of VMA containing asphalt binder.									

Table 14	
Hamburg Test Requirements^a	
Binder Grade	Minimum Number of Passes to 12.50 mm Rut Depth, Tested at 122°F
PG 58	10,000
PG 64	10,000

PG 70	15,000
PG 76	20,000
Table 14, Continued Hamburg Test Requirements	
Note: For the purposes of this table PG64, PG70, and PG76 refer to the high temperature grade of the binder.	
^a Rut test requirements apply to Superpave, SMA, and RIL mixes only.	

3.4 ACCEPTANCE OF COMBINED COLD FEED AGGREGATE GRADATION

- A. The ENGINEER may use combined aggregate samples taken before asphalt coating for mixture gradation acceptance. Obtain the sample by an approved sampling device and perform a sieve analysis in accordance with Subsection 32 12 16.39 Part 4, AASHTO T 27, and AASHTO T 11. This method may be allowed if the asphalt mixture does not contain reclaimed bituminous materials and the aggregate does not appreciably degrade during the drying and mixing process.
- B. The ENGINEER may accept bituminous plant mix gradation results based on specified cold feed combined aggregate samples under the following condition:
 - 1. If the aggregate gradation test on extracted aggregates in accordance with AASHTO T 30 compares favorably with the results of cold feed aggregate gradation results.
- C. If test results do not compare favorably, the ENGINEER will base acceptance gradation tests performed in accordance with AASHTO T 30, on aggregate from extraction or ignition oven testing.

3.5 ACCEPTANCE OF BITUMEN CONTENT

- A. Determine the bitumen content of plant produced mixtures in accordance with OHD L-26 method of test. Determine the bitumen content of open-graded plant produced mixtures (PFC, OGFSC, OGGB) using the tank strap method or a digital printout from the asphalt plant of the quantity used.

3.6 WARM MIX ASPHALT

- A. Unless otherwise shown on the plans, mixtures produced as Warm Mix Asphalt (WMA) will be accepted at the CONTRACTOR'S option. For WMA, mixing temperatures may be reduced. Unless otherwise directed, use only WMA additives or processes preapproved by the ENGINEER. The ENGINEER may accept new additives or processes with sufficient evidence of performance.
- B. Prepare WMA mix designs in general accordance with AASHTO R 35 except where modified by these specifications. Additive manufacturer recommendations will be evaluated and considered for approval by the ENGINEER. WMA requirements are the same as for HMA except where noted. When using the technology during a mix design, increase the oven aging period to four hours before preparing samples for moisture susceptibility and rut testing. Report R 35's, the Materials Division recommended

temperatures, or the supplier's recommended temperatures for plant mixing and roadway compaction on the mix design. Report R 35's, the Materials Division recommended temperatures, or the supplier's recommended temperatures, for laboratory mixing and compaction on the mix design.

- C. For WMA using an additive technology, perform the mix design using the additive. For WMA designs that use a plant process, perform the mix design as an HMA mix design. If the laboratory has a foamer, the design may be performed using that process.
- D. Alternatively, use an existing approved HMA mix design when converting to a WMA, except when the percent binder absorbed exceeds 1.00 percent. The percent binder absorbed formula is shown at the end of this paragraph. When the percent binder absorbed exceeds 1.00 percent, use the plant-produced WMA material for moisture susceptibility and rut testing. Report the additive or process used by name, supplier source, and application rate (if applicable) on the mix design.

$$P_{ba} = \frac{100 G_b (G_{se} - G_{sb})}{G_{se} G_{sb}}$$

Where:

Pba = Percent binder absorbed by total mass of aggregate

Gb = Specific gravity of the binder

Gse = Effective specific gravity of the combined aggregates

Gsb = Bulk specific gravity of the combined aggregates

3.7 TOLERANCES

- A. Apply the tolerances shown in Table 15 to the JMF in accordance with Subsection 3.6.

Table 15 JMF Tolerances Per Mixture						
Sieve Size	Superpave	Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Course	Open Graded Bitum. Base
	Percent Passing					
≥No. 4 [4.75 mm]	±7	±7	±7	±7	±7	—
No. 8 [2.36 mm]	±5	±5	±5	±5	±5	—
No. 16 [1.18 mm]	±4	±4	—	±4	—	—
No. 30 [0.600 mm]	±4	±4	—	±4	—	—
No. 50 [0.300 mm]	±4	±4	—	±4	—	—
No. 100 [0.150 mm]	±3	±3	—	±3	—	—
No. 200 [0.075 mm]	±2	±2	±2	±2	±2	—

Table 15, Continued JMF Tolerances Per Mixture						
Sieve Size	Superpave	Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Course	Open Graded Bitum. Base
Percent Passing						
Other Mixture Tolerances:						
Asphalt cement, % of mix mass	±0.4	±0.4	±0.3	±0.4	±0.3	±0.3
Mix temperature as discharged from mixer, °F [°C]	±20 [±10]	±20 [±10]	±20 [±10]	±20 [±10]	±20 [±10]	±20 [±10]

PART 4 – SAMPLING AND TESTING

4.1 TESTING METHODS

- A. Sample and test in accordance with Table 16 on following page.
- B. Method and Procedure for Sampling Asphalt Materials
 1. Sample asphalt materials in accordance with AASHTO R 66. Sample asphalt materials at the project site or mixing plant in accordance with the following:
 - a. Truck Transports: Sample to be taken by means of a sampling valve (3/8 inch = to 1/2 inch) located in the discharge or unloading line during the unloading of the approximate middle one-third of the load. The first flow through the sampling valve of one or two gallons shall be wasted after which the sample shall be drawn directly into the sample containers.
 - b. Mixing Plant: Sample to be taken from a sampling tap, complying with the requirements of ASTM D 140, located in the bituminous feed lines connecting the storage tanks to be bituminous control unit. The first flow from the sampling valve of one or two gallons shall be wasted after which the sample shall be drawn directly into the sample containers.
 - c. Storage Tank: Sample taken during the circulation of tank contents. Sampling procedure is the same as section 4.1B.1.b.
 - d. Storage Tank: If circulation is not in operation at the time of sampling, obtain sample by means of weighted bottle or other suitable sample thief. Quickly lower sample thief to near bottom of tank and withdraw at a rate of speed so that the sample thief is not completely filled when removed. Sample thief should be cleaned each time it is used and dipped two or three times in the

material being sampled before taking the sample. Immediately after taking pour sample from sample thief directly into sampling containers.

2. The ENGINEER may modify the sampling methods, testing, and acceptance for the asphalt materials. Obtain copies of the procedure from the ENGINEER.
3. Sample at the point of manufacture if the quantity shipped warrants testing. Alternatively, take samples at the point of destination. Use asphalt materials only after the ENGINEER approves them at the source.

Table 16	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
Aggregates	
Sampling	AASHTO T 2
Sieve analysis	AASHTO T 27
Material passing No. 200 [75 µm] sieve	AASHTO T 11
Specific gravity and absorption of fine aggregate	AASHTO T 84
Specific gravity and absorption of coarse aggregate	AASHTO T 85
Los Angeles abrasion	AASHTO T 96
Sand equivalent	AASHTO T 176
Aggregate durability index	AASHTO T 210
Total evaporable moisture content	AASHTO T 255
Aggregate degradation by Micro-Deval apparatus	AASHTO T 327
Lime for asphalt mixtures	AASHTO M 303
Flat and elongated particles in coarse aggregate	ASTM D4791
Mud, clay balls, sand clusters, sticks and roots retained on No. 4 [4.75 mm] sieve	OHD L-9
Fractured faces	OHD L-18
Insoluble residue	OHD L-25
Soft particles	OHD L-38
Asphalt Mixtures	
Mechanical analysis of extracted aggregate	AASHTO T 30
Sampling asphalt mixtures	AASHTO T 168
Bulk specific gravity (Gmb) of compacted asphalt mixtures using saturated surface-dry specimens	OHD L-14
Maximum specific gravity of asphalt mixtures	AASHTO T 209
Resistance to moisture damage ^{a, g}	AASHTO T 283
Draindown characteristics of uncompacted asphalt samples	AASHTO T 305
Preparing specimens by superpave gyratory compactor ^b	AASHTO T 312
Bulk specific gravity (Gmb) and density of compacted asphalt mixtures using automatic vacuum sealing method CoreLok™	OHD L-45

Table 16, Continued	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
Hamburg wheel-track testing of compacted hot mix asphalt (HMA)	AASHTO T 324
Superpave volumetric mix design	AASHTO M 323
Reclaimed asphalt shingles for use in asphalt mixtures	AASHTO MP 23
Design considerations when using reclaimed asphalt shingles (RAS) in asphalt mixtures	AASHTO PP78
Mixture conditioning of hot-mix asphalt	AASHTO R 30
Superpave volumetric design for HMA ^C	AASHTO R 35
Sampling Asphalt Mixtures after compaction (obtaining cores)	AASHTO R 67
Bulk impregnated specific gravity of aggregates ^d	OHD L-7
Specific gravity, unit weight, and percent density of compacted asphalt mixtures	OHD L-14
Bitumen content	OHD L-26
Rutting susceptibility using the hampburg rut tester	OHD L-55
Water permeability of compacted paving mixtures	OHD L-44
Asphalt Materials	
Sampling asphalt materials	AASHTO R 66
Solubility of bituminous materials	AASHTO T 44
Flash and fire points by Cleveland Open Cup	AASHTO T 48
Penetration of bituminous materials	AASHTO T 49
Ductility of bituminous materials	AASHTO T 51
Softening point of bitumen (ring-and-ball apparatus)	AASHTO T 53
Water in bituminous materials by distillation	AASHTO T 55
Standard test methods for emulsified asphalts	AASHTO T 59
Saybolt viscosity	AASHTO T 72
Distillation of cutback asphaltic (bituminous) products	AASHTO T 78
Flash points with tag open-cup apparatus	AASHTO T 79
Inorganic matter or ash in bituminous material	AASHTO T 111
pH of aqueous solutions with the glass electrode	AASHTO T 200
Kinematic viscosity of asphalts (bitumens)	AASHTO T 201
Viscosity of asphalts by vacuum capillary viscometer	AASHTO T 202
Specific gravity of semi-solid bituminous materials	AASHTO T 228

Table 16, Continued	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
Rolling thin film oven test	AASHTO T 240
Polymer content of polymer-modified emulsified asphalt residue and asphalt binders	AASHTO T 302
Flexural creep stiffness using the bending beam rheometer	AASHTO T 313
Rheological properties using a dynamic shear rheometer	AASHTO T 315
Viscosity determination using rotational viscometer	AASHTO T 316
Multiple stress creep recovery (MSCR) test of asphalt binder using a dynamic shear rheometer (DSR)	AASHTO T 350
Emulsified asphalt	AASHTO M 140
Cationic emulsified asphalt	AASHTO M 208
Polymer-modified cationic emulsified asphalt	AASHTO M 316
Performance-graded asphalt binder	AASHTO M 320
Performance-graded asphalt binder using multiple stress creep recovery (MSCR) test	AASHTO M 332
Recovering residue from emulsified asphalt using low-temperature evaporative techniques	AASHTO R 78
Classifying hot mix recycling agents	AASHTO R 14
Accelerated aging using a pressurized aging vessel	AASHTO R 28
Grading or verifying the performance guide	AASHTO R 29
Recovery of asphalt binder from solution by abson method	AASHTO R 59
Estimating application rate and residual application rate of bituminous distributors	ASTM D 2995
Specific gravity by hydrometer	ASTM D 3142
Elastic recovery test by means of ductilometer ^e	ASTM D 6084
Elastic recovery test by means of ductilometer ^f	OHD L-42
Compatibility of an asphalt emulsion and a job aggregate	OHD L-59
Emulsified asphalt residue by evaporation (pan)	OHD L-61
^a Run AASHTO T 283 on 6 in [150 mm] diameter specimens compacted by the Superpave Gyratory Compactor to an approximate height of 3.75 in [95 mm].	
^b Mix design mixtures at 325°F [163°C] and age at 300°F [149°C] from 2 hr to 4 hr. Compact design mixtures at 300°F [149°C]. No minimum aging period is required for field samples. Heat field samples uniformly to 300°F [149°C] for no greater than 4 hr.	

Table 16, Continued	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
^c Compact lab-molded specimens to N _{des} gyrations to determine the density at N _{des} , percent of G _{mm} . Back-calculate the density at N _{ini} , percent of G _{mm} , from these specimens. Compact lab-molded specimens to N _{max} gyrations to determine the density at N _{max} , percent of G _{mm} for mix designs and JMF changes only. Ensure reported values are the average of two specimens.	
^d Use OHD L-7 for OGFSC only.	
^e Use ASTM D 6084 for PG binders only.	
^f Use OHD L-42 for polymer modified emulsions only.	
^g Use AASHTO R 30 for aging instead of the procedure outlined in AASHTO T 283.	

END OF SECTION 32 12 16.39

SECTION 32 13 13 - PORTLAND CEMENT CONCRETE PAVEMENT**PART 1 – GENERAL****1.1 SCOPE**

- A. This work shall consist of a pavement composed of Portland Cement concrete, with or without reinforcement as specified, constructed on a prepared subgrade or base course in accordance with these Specifications and in reasonably close conformity with the lines, grades, thicknesses, and typical cross-sections shown on the plans or established by the ENGINEER.

PART 2 – MATERIALS**2.1 GENERAL**

Cement	AASHTO M 85 Type I & IA
High Early Cement	AASHTO M 85 Type III & IIIA
Water	Clean and free from deleterious substances
Reinforcing Steel	ASTM A615 Bars Grade 60
Epoxy Coated Reinforcing Steel	AASHTO M 284
Welded Wire Fabric	ASTM A1064
Air Entraining Admixtures	AASHTO M 154
Chemical Admixtures	AASHTO M 194
Fine Aggregate	AASHTO M 6
Course Aggregate	AASHTO M 80
Liquid Membrane Curing Compound	AASHTO M 148
Performed Expansion Joint	Bituminous Type AASHTO M 33
Joint Sealer	Hot poured elastic type ASTM C1190

2.2 STRENGTH

- A. The minimum compressive strength as determined by AASHTO T 22 shall be:

<u>AGE</u>	<u>MINIMUM STRENGTH</u>
7 days	2500 psi
28 days	3500 psi

- B. Maximum Water - Cementitious Materials Ratio: 0.48.
- C. Minimum Cementitious Materials Content: 564 lb. per C.Y.
- D. Slump: 2" ± 1", unless specified otherwise.

2.3 FORMS

- A. Straight side forms shall be made of a metal having a thickness of not less than 7/32" and shall be furnished in sections not less than 10' in length. Forms shall have a depth at least equal to the prescribed thickness of the concrete and a base width that will

provide adequate support for all equipment operating on the forms. Flexible or curved forms of proper radius shall be used for curves of 100' radius or less. Flexible or curved forms shall be of a design acceptable to the ENGINEER. Forms shall be provided with adequate devices for secure setting so that when in place they will withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment.

- B. Flange braces shall extend outward on the base not less than $\frac{2}{3}$ the height of the form. Forms with battered top surfaces, and bent, twisted, or broken forms shall be removed from the work. Repaired forms shall not be used until inspected and approved. The top face of the form shall not vary from a true plane more than $\frac{1}{8}$ " in 10', and the upstanding leg shall not vary more than $\frac{1}{4}$ ". The forms shall contain provisions for locking the ends of abutting form sections together tightly, and for secure setting.

2.4 CONCRETE SAW

- A. When sawing joints is elected or specified, the CONTRACTOR shall provide sawing equipment adequate in number of units and power to complete the sawing to the required dimensions and at the required rate. All equipment shall be on the job both before and continuously during concrete placement.

2.5 FINISHING EQUIPMENT

- A. The finishing machine shall be equipped with at least two oscillating type transverse screeds or other approved method of striking off the concrete.
- B. Vibrators, for full width vibration of concrete paving slabs, may be the internal type with either immersed tube or multiple spuds. Pan type vibrators, if used, shall be used in conjunction with internal type vibrators. They may be attached to the spreader or the finishing machine, or may be mounted on a separate carriage. They shall not come in contact with the joint, load transfer devices, subgrade, or side forms. The rated frequency of the surface vibrators shall not be less than 3,500 impulses per minute and the frequency of the internal type shall not be less than 5,000 impulses per minute for tube vibrators and not less than 7,000 impulses per minute for spud vibrators.
- C. The longitudinal float may either be a mechanical float or screed mechanism meeting the approval of the ENGINEER or a manually operated float. The hand operated float shall be a rigid straightedge float not less than 12' nor more than 18' in length with a troweling or smoothing surface not less than 8" nor more than 12" in width, and shall be worked from bridges spanning the pavement.
 - 1. The mechanical float shall be so adjusted and so operated that the screed will have a small quantity of concrete in front of it at all times. The screed shall not be raised or lowered solely for the purpose of maintaining the proper amount of concrete in front of the screed.
 - 2. In lieu of the mechanical or hand operated longitudinal float, the use of a finishing machine with the float pan type finisher, will be permitted provided that satisfactory performance and specified surface smoothness and tolerances are obtained.

- D. The burlap drag shall consist of a seamless strip of burlap or cotton fabric, which shall produce a uniform surface of gritty texture after dragging it longitudinally along the full width of pavement. The dimensions of the drag shall be such that a strip of burlap or fabric at least 3' is in contact with the full width of pavement surface while the drag is used. The drag shall consist of not less than two layers of burlap with the bottom layer approximately 6" wider than the upper layer.
- E. The equipment for applying the white pigmented curing membrane shall be the fully atomizing type equipped with a tank agitator which will keep the compound thoroughly mixed during application. Hand sprayers of the pressure tank type, approved by the ENGINEER, may be used to apply curing membrane vertical surfaces, irregular areas or edges after form removal. Hand sprayers of the pressure tank type accepted by the ENGINEER may be used to apply curing membrane to vertical surfaces, irregular areas or edges after form removal.

PART 3 – EXECUTION

3.1 GENERAL

- A. Preparation of Grade: After the roadbed or base has been graded and compacted, the grade shall be trimmed approximately to correct elevation, extending the work beyond each edge of the proposed concrete pavement. When the foundation is stabilized with an admixture, it shall be within the tolerances provided for the foundation type.
- B. Setting Forms: Forms shall be set to line and grade by shimming or other approved methods. Imperfections or variations in the base or foundation which prohibits the placement of forms to the specified lines or grades shall be corrected in a manner approved by the ENGINEER. Forms shall be staked into place with not less than three pins for each 10' section. A pin shall be placed at each side of every joint. Form sections shall be tightly locked, free from play or movement in any direction. The forms shall not deviate from true line by more than 0.25" at any point. No excessive settlement or springing of forms under the finishing machine will be tolerated. Forms shall be cleaned and oiled prior to the placing of concrete.
- C. Grade and Alignment: The alignment and grade elevations of the forms shall be checked, and corrections made by the CONTRACTOR immediately before placing the concrete. When any form has been disturbed or any grade has become unstable, the form shall be reset and rechecked.
- D. Conditioning of Subgrade or Base Course: When side forms have been securely set to grade, the subgrade or base course shall be brought to proper cross section.
 - 1. When cementitious bases are used, material trimmed from high areas shall be removed and low areas shall be filled with concrete integral with the pavement. The finished grade shall be maintained in a smooth and compacted condition until the pavement is placed.
- E. Unless waterproof subgrade or base course cover material is specified, the subgrade or base course shall be uniformly moist when the concrete is placed.

- F. When cement treated base is used, excessive damage to the asphalt membrane or base shall be repaired at the CONTRACTOR'S expense before placing concrete pavement.
- G. Water may be measured either by volume or by weight. The accuracy of measuring the water shall be within a range of error of not over 1%.
- H. Methods and equipment for adding air entraining agent or other admixtures to the batch shall be approved by the ENGINEER.

3.2 MIXING

- A. The concrete may be mixed at the site of the work, in a central mix plant, or in truck mixers. The mixer shall be of an approved type and capacity. Mixing time shall be measured from the time all materials, except water, are in the drum. Ready mixed concrete shall be mixed and delivered in accordance with requirements of AASHTO M 157-13.
- B. Retempering concrete by adding water or by other means will not be permitted, except that when concrete is delivered in transit mixers or agitators additional water may be added to the batch materials and additional mixing performed in accordance with AASTHO M 157-13 to increase the slump to meet the specified requirements provided the original water cement ratio is maintained.
- C. Limitations of Mixing: No concretes shall be mixed, placed, or finished when the natural light is insufficient, unless an adequate and approved artificial lighting system is operated.

3.3 COLD WEATHER CONCRETING

- A. When concreting is authorized during cold weather, the aggregates may be heated by either steam or dry heat prior to being placed in the mixer. The apparatus used shall heat the mass uniformly and shall be so arranged as to preclude the possible occurrence of overheated areas which might injure the materials. Unless otherwise authorized, the temperature of the mixed concrete shall be not less than 50°F (10°C) and not more than 90°F (32°C) at the time of placing it in the forms.
- B. Unless otherwise stated in contract documents if the air temperature is 35°F or falling, placing concrete will not be permitted without approval. The ENGINEER may require the water and/or the aggregates to be heated to not less than 70°F (21°C) nor more than 150°F (66°C). No concrete shall be placed on frozen subgrade nor shall frozen aggregates be used in the concrete.
- C. The CONTRACTOR shall be responsible for the protection and quality of concrete placed during any weather conditions.

3.4 PLACING CONCRETE

- A. The concrete shall be deposited on the grade in such manner as to require as little re-handling as possible. Unless truck mixers, truck agitators, or non-agitating hauling equipment are equipped with means for discharge of concrete without segregation of the materials, the concrete shall be unloaded into an approved spreading device and

mechanically spread on the grade in such manner as to prevent segregation of the materials. Placing shall be continuous between transverse joints without the use of intermediate bulkheads. Necessary hand spreading shall be done with shovels. Workmen shall not be allowed to walk in the freshly mixed concrete with boots or shoes coated with earth or foreign substances.

- B. Where concrete is to be placed adjoining a previously constructed lane of pavement and mechanical equipment will be operated upon the existing lane of pavement, that lane shall have attained the strength specified for opening to traffic. If only finishing equipment is carried on the existing lane, paving in adjoining lanes may be permitted after three days.
- C. Concrete shall be thoroughly consolidated against and along the faces of all forms and along the full length and on both sides of all joint assembly, the grade, or a side form. The vibrator shall not be operated in any one location longer than necessary to complete the consolidation.
- D. Concrete shall be deposited as near to expansion and contraction joints as possible without disturbing them, but shall not be dumped from the discharge bucket or hopper onto a joint assembly unless the hopper is well centered on the joint assembly.
- E. Should any concrete materials fall on or be worked into the surface of a completed slab, they shall be removed immediately by approved methods.
- F. The CONTRACTOR shall furnish the concrete necessary for casting test cylinders.
- G. Strike Off of Concrete and Placement of Reinforcement: When reinforced concrete pavement is placed in two layers, the bottom layer shall be struck off to such length and depth that the sheet of fabric or bar mat may be laid full length on the concrete in its final position without further manipulation. The reinforcement shall then be placed directly upon the concrete, after which the top layer of the concrete shall be placed, struck off and screeded. Any portion of the bottom layer of concrete which has been placed more than 30 minutes without being covered with the top layer shall be removed and replaced with freshly mixed concrete at the CONTRACTOR'S expense. When reinforced concrete is placed in one layer, the reinforcement may be positioned in advance of concrete placement or it may be placed in plastic concrete, after spreading by mechanical or vibratory means.
- H. Reinforcing steel shall be free from dirt, oil, paint, grease, mill scale, and loose or thick rust which could impair bond of the steel with the concrete.

3.5 JOINTS

- A. Joints shall be constructed perpendicular to the surface of the slab and of the type, dimensions and at locations shown on the plans. Suitable guide lines or devices shall be used to assure satisfactory alignment of joints.
- B. Longitudinal joints shall be formed by sawing or by a parting strip of metal or other approved pre molded material securely held in place while placing the concrete slab. Deformed steel tie bars of specified length, size, spacing and material shall be placed perpendicular to longitudinal joints.

- C. The parting strip shall be securely held in place perpendicular to the surface and true to line and grade, by metal pins, at intervals that average not greater than 3'. The minimum length of parting strips shall be 10' and adjoining sections shall be securely fastened together by lapping and pinning by means of a slip joint or other approved method. The CONTRACTOR shall furnish an approved gauge riding on the side forms for accurately checking the position of the parting strip before concrete is placed against it.
- D. For sawed longitudinal joints, tie bars shall be placed perpendicular to the longitudinal joints; they shall be placed by approved mechanical equipment or rigidly secured by chairs or other approved supports to prevent displacement. Tie bars shall not be painted or coated with asphalt or other material, or enclosed in tubes or sleeves.
- E. When tested with a straightedge, the surface across any joint shall not vary from the straightedge by more than 1/8". Concrete edges at joints which are not sawed shall be tooled to 1/8" radius or otherwise shown on the plans.
- F. The longitudinal joint shall be sawed before the end of the curing period or shortly thereafter and before any equipment or vehicles are allowed on the pavement. The sawed area shall be thoroughly cleaned and, if required, the joint shall immediately be filled with sealer.
- G. Transverse Expansion Joints: The expansion joint filler shall be continuous from form to form, shaped to the subgrade and to the keyway along the form. Preformed joint filler shall be furnished in lengths equal to the pavement width or equal to the width of one lane. Damaged or repaired joint filler shall not be used unless approved by the ENGINEER.
- H. The expansion joint filler shall be held securely in position. An approved installing bar, or other device, shall be used if required to secure preformed expansion joint filler at the proper grade and alignment during placing and finishing of the concrete. Finished joints shall not deviate more than 1/4" in the horizontal alignment from a straight line. If joint fillers are assembled in sections, there shall be no offsets between adjacent units. No plugs of concrete shall be permitted anywhere within the expansion space.
- I. Pre-molded joint filler shall be appropriately punched to the exact diameter and location of the dowels. It shall, unless otherwise provided, be furnished in lengths equal to the pavement width; however, in cases where pavement two or more traffic lanes wide is being placed the pre-molded filler may be furnished in sections, provided the length of each section is equal to the width of one lane. Where more than one section is used in a joint, the sections shall be securely laced or clipped together. The pre-molded joint filler shall be placed on the side of the installing bar nearest the mixer. The bottom edge of the filler shall project to or slightly below the bottom of the slab and unless otherwise prescribed, the top edge shall be 1" below the surface of the pavement. While the concrete is being placed, the top edge of the filler shall be protected by a metal channel cap of at least 38 mm sheet thickness material, having flanges not less than 1 1/2" in depth.

- J. Joints in concrete curbing that cannot be satisfactorily sawed shall be formed by means of steel templates or other approved joint forming dividers installed at the time the concrete is poured and at the location of the joint to be sawed.
- K. Contraction Joints: Transverse contraction joints shall be formed by sawing.
- L. Sawing of transverse contraction joints shall begin as soon after pouring the pavement as can be done without causing undue raveling. Succeeding joints shall be sawed consecutively from beginning to end of the day's run, and all transverse joints shall be sawed to the depth specified on the plans soon enough to prevent uncontrolled transverse cracking.
- M. Construction Joints: Unless otherwise directed, transverse construction joints shall be constructed when there is an interruption of more than 30 minutes in the concreting operations. No transverse joint shall be constructed with 10' of an expansion joint, contraction joint, or plane of weakness. If sufficient concrete has not been mixed at the time of interruption to form a slab at least 10' long, the excess concrete back to the last preceding joint shall be removed and disposed of as directed.
- N. A rigid header shall be provided with holes or slots for dowel bars that shall be of the spacing and dimensions as for expansion joints.
- O. Load Transfer Devices: Approved load transfer devices shall be firmly held in the position indicated on the plans. Dowels shall be held in position parallel to the surface and center line of the slab by an approved support. Dowels for expansion joints shall be capped as shown on the plans.
- P. In lieu of using dowel assemblies at contraction joints, dowel bars may be placed in the full thickness of pavement by a mechanical device approved by the ENGINEER.

3.6 FINAL STRIKE OFF

- A. The sequence of operations shall be the strike off and consolidation, floating and removal of surface particles and unconformities, straight edging, and final surface finish.
- B. In general, the addition of superficial water to the surface of the concrete to assist in finishing operations will not be permitted. If the application of water to the surface is permitted, it shall be applied as a fog spray by means of approved spray equipment.

3.7 STRAIGHTEDGE TESTING AND SURFACE CORRECTION

- A. After the floating has been completed and the excess water removed, but while the concrete is still plastic, the surface of the concrete shall be tested for trueness with a 10' straightedge. For this purpose, the CONTRACTOR shall furnish and use an accurate 10' straightedge swung from handles 3' longer than one half the width of the slab. The straightedge shall be held in contact with the surface in successive positions parallel to the road center line and the whole area gone over from one side of the slab to the other as necessary. Advance along the road shall be in successive stages of not more than one half the length of the straightedge. Any depressions found shall be immediately filled with freshly mixed concrete, struck off, consolidated, and refinished. High areas shall be cut down and refinished. Special attention shall be given to assure

that the surface across joints meets the requirements for smoothness. Straightedge testing and surface corrections shall continue until the entire surface is found to be free from observable departures from the straightedge and the slab conforms to the required grade and cross section.

3.8 EDGING AT FORMS AND JOINTS

- A. After the final finish, but before the concrete has taken its initial set, the edges of the pavement along each side of each slab, and on each side of transverse expansion joints, formed joints, transverse construction joints, and emergency construction joints shall be worked with an approved tool and rounded to the radius required by the plans. A well-defined and continuous radius shall be produced and a smooth, dense mortar finish obtained. The surface of the slab shall not be unduly disturbed by tilting of the tool during use.
- B. At all joints, any tool marks appearing on the slab adjacent to the joints shall be eliminated by brooming the surface. In doing this, the rounding of the corner of the slab shall not be disturbed. All concrete on top of the joint filler shall be completely removed.
- C. All joints shall be tested with a straightedge before the concrete has set, and correction made if one side of the joint is higher than the other or if they are higher or lower than the adjacent slabs.

3.9 SURFACE TEST

- A. As soon as the concrete has hardened sufficiently, the pavement surface shall be tested with a 10' straightedge or other specified device. Areas showing high spots of more than 1/8" but not exceeding 1/2" in 10' shall be marked and immediately ground down with an approved grinding tool to an elevation where the area or spot will not show surface deviations in excess of 1/8" when tested with a 10' straightedge. The surface of ground areas shall be re-textured to match the surface of the surrounding areas. Where the departure from correct cross section exceeds 1/2", the pavement shall be removed and replaced by and at the expense of the CONTRACTOR.
- B. Any area or section so removed shall be not less than 10' in length nor less than the full width of the lane involved. When it is necessary to remove and replace a section of pavement, any remaining portion of the slab adjacent to the joints that is less than 10' in length, shall also be removed and replaced.

3.10 CURING

- A. The entire surface of the pavement shall be sprayed uniformly with white pigmented curing compound immediately after the finishing of the surface and before the set of the concrete has taken place, or if the pavement is cured initially with jute or cotton mats, it may be applied upon removal of the mats. The curing compound shall not be applied during rainfall.
- B. Curing compound shall be applied under pressure at the rate of one gallon to not more than 200 sq. ft. by mechanical sprayers, provided however, that when the temperature

on the roadway is 100°F (37.5°C) or above, the curing compound shall be applied at the rate of one gallon to not more than 150 sq. ft.

- C. At the time of use, the compound shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. Hand spraying of odd widths or shapes and concrete surfaces exposed by the removal of forms will be permitted. Curing compound shall not be applied to the inside faces of joints to be sealed.
- D. The curing compound shall be of such character that the film will harden within four hours after the application. Should the film become damaged from any cause within the required curing period, the damaged portions shall be repaired immediately with additional compound.
- E. Upon removal of side forms, the sides of the slabs exposed shall be protected immediately to provide a curing treatment equal to that provided for the surface.
- F. Curing for Cold Weather: The CONTRACTOR shall be responsible for the quality and strength of the concrete placed during cold weather, and any concrete injured by frost action shall be removed and replaced at the CONTRACTOR's expense.
- G. Removing Forms: Forms shall be removed carefully so as to avoid damage to the pavement. After the forms have been removed, the sides of the slab shall be cured as outlined in one of the methods indicated above. Honeycombed areas shall be satisfactorily repaired.

3.11 OPENING TO TRAFFIC

- A. Traffic shall be excluded from the newly constructed pavement for a period of 14 days after the concrete is placed or longer if weather conditions make it advisable to extend this time. However, at the discretion of the ENGINEER, the pavement may be opened to traffic when specimen beams or cylinders made, cured, and tested have attained a flexural strength of 550 psi when tested in accordance with AASHTO T 97 (third point method) or 650 psi when tested by the midpoint method AASHTO T 177, or a compressive strength of 3500 psi. Prior to opening to traffic, the pavement shall be cleaned of loose material and the joints shall be filled and trimmed as herein required.

3.12 HIGH-EARLY STRENGTH PAVEMENT

- A. General Requirements: When high early strength concrete pavement is specified, it shall be made with high early strength cement. In lieu of high early strength cement and with written permission of the ENGINEER, the CONTRACTOR may use standard Portland Cement with a cement factor 25% in excess of that specified for Portland Cement concrete pavement. No additional compensation will be allowed for the 25% additional cement if standard Portland Cement is used. When 25% of cement is added, the absolute volumes in the mix will be adjusted to compensate for the additional cement. All other requirements hereinbefore specified for concrete pavement shall be applicable subject to the following modifications.
- B. Curing: When high early strength concrete pavement is specified or used, the pavement shall be cured in the same manner as is provided for regular pavement.

- C. Opening to Traffic: Traffic shall be excluded from the newly constructed pavement for a period of not less than 24 hours and for 72 hours if necessary.

3.13 SLIP-FORM PAVER

- A. Optional Use of a Slip Form Paver: If the CONTRACTOR so elects, he may use a slip form paver in lieu of the conventional paving train and stationary side forms.
- B. When a slip form paver is used all requirements of placing pavement with rigid forms shall be complied with except as provided herein:
 - 1. Grade: After the grade or base has been placed and compacted to the required density, the areas which will support the paving machine shall be cut to the proper elevation by means of a properly designed machine. The grade on which the pavement is to be constructed shall then be brought to the proper profile by means of a properly designed machine. If the density of the base is disturbed by the grading operations, it shall be corrected by additional compaction before concrete is placed. The grade shall be constructed sufficiently in advance of the placing of the concrete. If any traffic is allowed to use the prepared grade, the grade shall be checked and corrected immediately ahead of the placing of the concrete. When the foundation for the surfacing is stabilized with an admixture, the area under the pavement and the supporting area for the paving machine shall be within the specified tolerances for the foundation type before concrete is placed.
 - 2. Placing Concrete: The concrete shall be placed with an approved slip form paver designed to spread, consolidate, screed, and float finish the freshly placed concrete in one complete pass of the machine in such manner that a minimum of hand finish will be necessary to provide a dense and homogeneous pavement in conformance with the plans and specifications. The machine shall vibrate the concrete for the full width and depth of the strip of pavement being placed. Such vibration shall be accomplished with vibrating tubes or arms working in the concrete or with a vibrating screen or pan operating on the surface of the concrete. The sliding forms shall be rigidly held together laterally to prevent spreading of the forms.
 - a. The slip form paver shall be operated with a continuous forward movement and all operations of mixing, delivering and spreading concrete shall be so coordinated as to provide a uniform progress with stopping and starting of the paver held to a minimum. If, for any reason, it is necessary to stop the forward movement of the paver, the vibratory and tamping elements shall also be stopped immediately.
 - 3. Finishing: A tube float finishing machine shall be used immediately following the slip form paver, in a manner approved by the ENGINEER.
 - 4. Tolerances: Tolerances of the finished pavement shall meet the requirements except that for the outer 6" along the edges of the pavement, a maximum deviation of 1/4" from a 10' straightedge placed parallel to the centerline of the roadway will be permitted. When auxiliary parallel lanes are constructed using a slip form paver, there shall be no appreciable slump along edges of adjoining lanes. Any valleys

or depressions that will not drain properly shall be corrected by the CONTRACTOR at his own expense and to the satisfaction of the ENGINEER.

5. Curing: Unless otherwise specified, curing shall be done in accordance with one of the methods included in Subsection 3.10. The curing media shall be applied at the appropriate time and shall be applied uniformly and completely to all surfaces and edges of the pavement.
6. Joints: All joints shall be constructed in accordance with Subsection 3.5.
7. Protection against Rain: In order that the concrete may be properly protected against the effects of rain before the concrete is sufficiently hardened, the CONTRACTOR will be required to have available at all times materials for the protection of the edges and surface of the unhardened concrete. Such protective materials shall consist of standard metal forms or wood plank having a nominal thickness of not less than 2" and a nominal width of not less than the thickness of the pavement at its edge for the protection of the pavement edges, and covering material such as burlap or cotton mats, curing paper, or plastic sheeting material for the protection of the surface of the pavement. When rain appears imminent, all paving operations shall stop and all available personnel shall begin placing forms against the sides of the pavement and covering the surface of the unhardened concrete with the protective covering.

END OF SECTION 32 13 13

SECTION 32 92 23 - SODDING

PART 1 - GENERAL

1.1 SCOPE

- A. This work shall consist of furnishing and planting viable Bermuda grass sod in accordance with these specifications. All areas which are not covered by pavement or structures shall be sodded, and/or areas utilized for construction staging.

PART 2 - PRODUCTS

2.1 SOD

- A. Bermuda grass sod to be used as source material shall be a thick stand of common Bermuda grass growing on fertile topsoil. Types of Bermuda grass other than "Common" may not be used unless approved by the ENGINEER. The vegetative parts (rhizomes, stolons, and roots) of Bermuda grass shall be viable as indicated by a dense, deep rooted stand.
- B. The source for sod shall be free of reproducing parts of weeds classified as "Prohibited Noxious" and shall be as free of other legally "Restricted Noxious" plant materials as required by the Oklahoma Department of Agriculture Seed Law. The proposed source of sod will be approved by the ENGINEER before the beginning of sodding operations. Prior to approval, the area shall not be tilled or mowed. However, all vegetative growth exceeding 3 inches in height shall be mowed and the residue removed prior to harvesting the sod or sprigs.
- C. The sod shall be moist when excavated from the source and shall be kept moist until planted. Sod in storage which becomes dry, shall not be re-moistened and used, but shall be discarded.
- D. Sod material shall consist of vegetative parts (rhizomes, stolons and roots) of Bermuda grass with an appreciable quantity of adhering soil.
- E. Solid slab sod shall be rectangular slabs of Bermuda grass. Bermuda grass vegetative parts shall exist throughout the slab and shall be obtained from soils with a minimum P.I. of 3. The slab must have a dense vegetative growth and be capable of being transported in a condition closely resembling its original state.

2.2 FERTILIZER

- A. Fertilizer of 10 20 10 grade and ammonium nitrate (33.5% N), uniform in composition, free flowing and suitable for application with approved equipment shall be provided. The fertilizer shall be delivered to the site in bags or other convenient containers, each fully labeled, conforming to the applicable State fertilizer laws, and bearing the name, trade name or trademark and warranty of the producer.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Preparation of areas to be sodded shall include filling, reshaping of eroded areas, cleaning ditches and refinishing slopes to the established grading section. The area shall be cleared of all litter and debris.

3.2 APPLICATION

- A. The slabs of sod shall be placed soil side down. They shall be placed in rows, which on slopes shall run perpendicular to flow of water. Each slab shall fit tightly against the edge of adjoining slabs and shall be placed so that the vertical joints are not continuous across adjoining horizontal rows. Voids shall be filled with additional sod. All slabs shall be thoroughly pressed into firm contact with the soil underneath.
- B. After the slabs have been placed, the sodded area shall be thoroughly watered. When sufficiently dry, additional voids shall be filled with good soil and watered again. The area shall then be thoroughly watered daily for a period of at least seven days after placement.
- C. Soil moisture shall exist throughout the zone from 1 inch below the surface to at least 5 inches below the surface at the time of planting. The required moisture content of the soil may be estimated and judged closely by the hand squeeze test. The soil should readily form a tight cast when squeezed in the hand. The cast should break into two pieces without crumbling and without leaving excess water on the hand after casting.
- D. Fertilizer shall not be placed on hard or glazed surfaces. Fertilizer shall be applied at the rates shown on the plans or specifications.
- E. When satisfactory results can be obtained, disking for soil preparation, weed removal and incorporation of fertilizer may be accomplished in one operation.
- F. If a fertilizer containing phosphorous is specified, one half of the fertilizer shall be applied before placement of solid slab sod and shall then be incorporated into the soil by disking. After placement and compaction of the sod, the remaining one half of the fertilizer shall be applied and immediately incorporated into the soil with water.
- G. Fertilizer containing nitrogen only shall be applied after the sodding and sprigging operations have been completed.

3.3 SEASON

- A. If the construction work is not completed during the normal planting season (beginning April 15 through September 1), the CONTRACTOR shall seed the entire area with an approved temporary vegetative cover, such as wheat, oats or rye grass to prevent erosion until the following spring at which time the CONTRACTOR will be required to return and prepare the area to be sodded as specified above and sod the entire area with Bermuda grass as specified above at no additional cost to the OWNER. All areas

which have eroded will at this time be brought back to original line and grade as directed by the ENGINEER.

3.4 WATER SUPPLY

- A. The CONTRACTOR must make provisions to obtain water for this operation at his own expense. It will be the CONTRACTOR'S responsibility to transport the water to the area where it is needed.

END OF SECTION 32 92 23

SECTION 33 05 07.13 – DIRECTIONAL BORE

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. The work specified in this section consists of furnishing and installing underground utilities using the directional boring (horizontal directional drilling, HDD) method of installation also commonly referred to as guided horizontal boring. This work includes all services, equipment, materials, and environmental protection and restoration.

1.2 QUALITY ASSURANCE

- A. The requirement set forth in this document specifies a wide range of procedural precautions necessary to ensure that the very basic, essential aspects of a proper directional bore installation are adequately controlled. Strict adherence shall be required under specifically covered conditions outlined in this specification. Adherence to the specifications contained herein, or the ENGINEER'S approval of any aspect of any directional bore operation covered by this specification, shall in no way relieve the CONTRACTOR or their ultimate responsibility for the satisfactory completion of the work authorized under the contract.

1.3 SUBMITTALS

- A. Work Plan: Prior to beginning work, the CONTRACTOR must submit to the ENGINEER a general work plan outlining the procedure and schedule to be used to execute the project. Plan should document the thoughtful planning required to successfully complete the project.
- B. Equipment: CONTRACTOR will submit specifications on directional boring equipment to be used to ensure that the equipment will be adequate to complete the project. Spare inventory shall be included.
- C. Material: Specifications on material to be used shall be submitted to the ENGINEER. Material shall include the pipe, fittings and any other item which is to be an installed component of the project.
- D. Personnel: Documentation of training and relevant experience of personnel shall be submitted.

PART 2 – EQUIPMENT REQUIREMENTS

2.1 GENERAL

- A. The directional boring equipment shall consist of a directional boring rig of sufficient capacity to perform the bore and pullback the pipe, a boring fluid mixing and delivery system of sufficient capacity to successfully complete the crossing, a guidance system to accurately guide boring operations along with trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with

sufficient supplies, materials, and spare parts on hand to maintain the system in good working order for the duration of this project.

2.2 BORING SYSTEM

- A. Boring Rig: The directional boring machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power boring operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations. The rig shall be grounded during boring and pull-back operations. Sufficient spares shall be kept on hand for any break downs which can be reasonably anticipated.
- B. Bore Head: The bore head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and boring fluid jets.
- C. Mud Motors (if required): Mud motors shall be adequate power to turn the required boring tools.
- D. Drill Pipe: Shall be constructed of high-quality, 4130 seamless tubing, grade D or better, with threaded box and pins. Tool joints should be hardened to 32-36RC.

2.3 GUIDANCE SYSTEM

- A. The Guidance System shall be of a proven type and shall be set up and operated by personnel trained and experienced with this system. The operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system in using a magnetic system.

2.4 BORING FLUID (MUD) SYSTEM

- A. Mixing System: A self-contained, closed boring fluid mixing system shall be of sufficient size to mix and deliver boring fluid composed of bentonite clay, potable water, and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. The boring fluid reservoir tank shall be of a sufficient capacity for that project. Mixing systems shall continually agitate the boring fluid during boring operations.
- B. Boring Fluids: Drilling fluid shall be composed of clean water and an appropriate additive. Water shall be from a clean source with a pH of 8.5 – 10. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No hazardous additives may be used. Boring fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of the bore wall.

- C. Delivery System: The mud pumping shall be capable of delivering the boring fluid at a constant pressure. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used boring fluid and boring fluid spilled during operations shall be contained and properly disposed of. A berm, minimum of 12 inches high, shall be maintained around boring equipment, boring fluid mixing system, entry and exit pits and boring fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess boring fluid from containment areas to storage facilities.

2.5 OTHER EQUIPMENT

- A. Pipe Rollers: Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe while being hydro-tested and during pull back operations. Sufficient number of rollers shall be used to prevent excess sagging of pipe.
- B. Pipe Reamers / Pullers: Hydraulic or pneumatic pipe rammers or pullers may only be used if necessary and with the authorization of the ENGINEER.

Other devices or utility placement systems for providing horizontal thrust other than those previously defined in the preceding sections shall not be used unless approved by the ENGINEER prior to commencement of the work. Consideration for approval will be made on an individual basis for each specified location. The proposed device or system will be evaluated prior to approval or rejection on its potential ability to complete the utility placement satisfactorily without undue stoppage and to maintain line and grade within tolerances prescribed by the particular conditions of the project.

PART 3 – OPERATIONS

3.1 GENERAL

- A. The ENGINEER must be notified 48 hours in advance of starting work. The directional bore shall not begin until the ENGINEER is present at the job site and agrees that proper preparations for the operation have been made. The ENGINEER approval for beginning the installation shall in no way relieve the CONTRACTOR of the ultimate responsibility for the satisfactory completion of the work as authorized under the contract. It shall be the responsibility of the OWNER to provide inspection personnel at such time as appropriate without causing undue hardship by reason of delay to the CONTRACTOR.

3.2 PERSONNEL REQUIREMENTS

- A. All personnel shall be fully trained in their respective duties as part of the directional boring crew and in safety. Training shall be provided specific to the project if any potential hazards may be encountered which have not already been included in the personnel's training.

3.3 BORING PROCEDURE

- A. Site Preparation: Prior to any alterations to the work site, CONTRACTOR shall photograph or videotape the entire work area, including entry and exit points. One

copy shall be given to the ENGINEER and one copy shall remain with the CONTRACTOR for a period of one year following completion of the project.

The work site, as indicated on the drawings, within right-of-way, shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made. The CONTRACTOR shall confine all activities to the designated work areas.

- B. Bore Path Survey: Entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on the drawings. If CONTRACTOR is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.
- C. Environmental Protection: CONTRACTOR shall place silt fence between all boring operations and any drainage, wetland, waterway, or other area designated for such protection by contract documents, state, federal and local regulations. Additional environmental protection necessary to contain any hydraulic or boring fluids spills shall be put in place, including berms, liners, turbidity curtains and other measures. CONTRACTOR shall adhere to all applicable environmental regulations. Fuel or oil may not be stored in bulk containers within 200 feet of any water body or wet land.
- D. Utility Locates: CONTRACTOR shall notify all companies with underground utilities in the work area via the state or local "one call" to obtain utility locates. Once the utilities have been located, CONTRACTOR shall physically identify the exact location of the utilities by vacuum or hand excavation, when possible, in order to determine the actual location and path of any underground utilities which might be within 20 feet of the bore path. CONTRACTOR shall not commence boring operations until the location of all underground utilities within the work area have been verified.
- E. Safety: CONTRACTOR shall adhere to all applicable State, Federal and local safety regulations and all operations shall be conducted in a safe manner. Safety meetings shall be conducted at least weekly with a written record of attendance and topic submitted to the ENGINEER.
- F. Pipe: Pipe shall be connected together in one length prior to pull-back operations. If space permits, pipe will be placed on pipe rollers before pulling into bore hole with rollers spaced close enough to prevent excessive sagging of pipe.
- G. Pilot Hole: Pilot hole shall be drilled on bore path with no deviations greater than 5% of depth over a length of 100 feet. In the event that pilot dies deviate from the bore path more than 5% of depth in 100 feet, CONTRACTOR will notify ENGINEER and the ENGINEER may require CONTRACTOR to pull back and re-drill from the location along bore path before the deviation.

In the event that a boring fluid fracture, inadvertent returns or return loss occurs during pilot hole boring operations, CONTRACTOR shall cease boring, wait at least 30 minutes, inject a quantity of boring fluid with a viscosity exceeding 120 seconds as measured by a Marsh funnel and then wait another 30 minutes. If mud fractured or return loss continues, CONTRACTOR will cease operations and notify ENGINEER. ENGINEER and CONTRACTOR will discuss additional options and work will then proceed accordingly.

- H. Reaming: Upon successful completion of pilot hole, CONTRACTOR will ream bore hole to a minimum of 25% greater than outside diameter of pipe using the appropriate tool. CONTRACTOR will not attempt to ream at one time more than the boring equipment and mid-system are designed to safely handle.
- I. Pull Back: After successfully reaming bore hole to the required diameter, CONTRACTOR will pull the pipe through the bore hole. In front of the pipe will be a swivel. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations, CONTRACTOR will not apply more than the maximum safe pipe pull pressure at any time.

In the event that pipe become stuck, CONTRACTOR will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If pipe remains stuck, CONTRACTOR will notify ENGINEER. ENGINEER and CONTRACTOR will discuss options and then work will proceed accordingly.
- J. Pipe Testing: Following successful pull back of pipe, CONTRACTOR will hydro test using potable water in accordance with ODEQ permits test requirements. A calibrated pressure recorder will be used to record the pressure during the test period. This record will be presented to the ENGINEER.

3.5 SITE RESTORATION

- A. Following boring operations, CONTRACTOR will de-mobilize equipment and restore the work site to original condition. All excavations will be backfilled and compacted to 95% of original density. Landscaping will be restored to original.

3.6 RECORD KEEPING, AS BUILT

- A. CONTRACTOR shall maintain a daily project log of boring operations and a guidance system log with a copy given to the ENGINEER at completion of the project. As-built drawings shall be certified as to accuracy by the CONTRACTOR.

END OF SECTION 33 05 07.13

SECTION 33 11 00 - WATERLINE AND SANITARY SEWER SPECIFICATIONS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This division shall consist of the material and construction specification of water distribution lines, sanitary sewer lines, appurtenances, and related work, at the locations and grades as set out on the plans or established by the ENGINEER.

1.2 SUBMITTALS

- A. Submittals shall be in accordance with Section 01 33 00 "Submittal Procedures" and shall include:
 - 1. Shop Drawings:
 - a. Drawings shall show complete physical description and performance capabilities of the equipment, including, but not necessarily limited to dimensions, flange ratings, weights, materials of construction, assemblies, sectional views.
 - b. Hydraulic calculations and CV characteristics certifying the valve can meet all the design conditions attached to this specification.
 - 2. Operation and Maintenance Manuals: Manuals shall be prepared by the equipment manufacturer and shall also incorporate appropriate final certified shop drawings. Manuals may be the manufacturer's standard instructions but shall be supplemented as necessary to cover any special feature not included in standard material. O&M manuals shall include storage instructions, valve installation and adjustment procedures and troubleshooting procedures. Manuals shall be provided in hard copy and digital format fully indexed.

PART 2 - APPLICABLE SPECIFICATIONS

2.1 DESCRIPTION

- A. The specifications, standards, and publications, including the latest amendments thereto, listed in these specifications by basic designation only, form a part of this specification to the extent indicated by the references thereto.
- B. Specification 03 30 00 – Cast-In Place Concrete
- C. Specification 31 23 33 – Trenching, Backfilling, & Compaction
- D. Specification 32 12 16.39 – Plant Mix Bituminous Bases and Surfaces
- E. Specification 33 05 07.13 – Directional Bore
- F. Specification 33 31 30 – Pipe Busting

PART 3 - CAST IRON AND DUCTILE IRON PIPE, FITTINGS AND VALVES

3.1 DESCRIPTION

- A. The work under this item shall include furnishing, hauling, placing, and jointing of Cast Iron and Ductile Iron Pipe in the trench in specific conformity with the lines and levels given. For all pipe, the AWWA Standard for Installation of Cast Iron Water Mains, AWWA Designation C-600 shall govern the installation as applicable. The method of bedding shall be in accordance with Specification 31 23 33 and as shown on the plan Standard Details. If the paint is damaged, the valve shall be cleaned by wire-brushing and given two coats of black asphalt paint.

3.2 PIPE AND FITTINGS

- A. Where Ductile Iron Pipe (DIP) three (3) inches in diameter and larger is specified or required, it shall conform to, and be tested in accordance with, the current American Standard Specification for Ductile Iron Pipe, Centrifugally Cast in metal molds or sand-lined molds, for water or other liquids, AWWA Designation C 151 (ANSI A21.51). Ductile iron pipe less than three (3) inches in diameter shall conform to the manufacturer's standards, either centrifugally or statically cast with a minimum thickness of 0.25 inches. The ductile iron (nodular cast iron) shall conform to ASTM Specification A536 with physical properties of Grade 60-40-18. Length of joints shall be either eighteen or twenty feet. The minimum standard thickness of each size pipe shall be as follows:

<u>Pipe Size</u>	<u>Thickness Class</u>
3" thru 4"	51
6" thru 24"	50
30" thru 54"	51

For larger diameter or deep cover, special design will be provided.

- B. Where Cast Iron Pipe (CIP) is specified or required, it shall conform to, and be tested in accordance with, the American Standard for Gray Iron Pipe Centrifugally Cast in Metal Molds for water or other liquids, AWWA Designation C106. Lengths shall be either eighteen feet or twenty feet. Strength of iron shall be 18/40 and the minimum standard thickness of each size pipe shall be as follows:

<u>Pipe Size</u>	<u>Thickness Class</u>
3" thru 10"	22
12"	23
14" thru 24"	24
30" thru 48"	25

- C. Where Cast Iron Pipe (CIP) and Ductile Iron Fittings are specified or required, they shall conform to, and be tested in accordance with the American Standard for Gray Iron and Ductile Iron Fittings, 3-inch through 48-inch for water and other liquids, AWWA Designation C110. Pressure rating shall be 250 psi. All sleeves shall be the longest of the lengths allowed.

- D. The work under this item shall include all of the requirements specified under the item

of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.

3.3 JOINTS

- A. Cast Iron and Ductile Iron Pipe and Fittings shall be jointed with any of the end types as specified below unless a particular end type is specified. Flange ends shall be used only where specifically noted on the drawings except that the valve connection end of all tapping sleeves shall be flanged.
- B. Push-on joints shall conform to, and be tested in accordance with, the American Standard for Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings, AWWA Designation C111.
- C. Mechanical joints shall conform to, and be tested in accordance with, the American Standard for Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings, AWWA Designation C111.
- D. Bell and spigot joints shall consist of square, braided, sterilized hemp and 99.73 percent pure lead caulking.
- E. Flange joints shall conform to the American Standard for Cast Iron Pipe Flanges and Flanged Fittings, A.S.A. Designation B.16.1.

3.4 LINING AND COATING

- A. All Cast Iron and Ductile Iron Pipe and Fittings shall be bituminous coated outside and cement-mortar lined inside with seal coat in accordance with American Standards for Cement Mortar Lining for Ductile Iron and Gray Iron Pipe and Fittings for Water, AWWA Designation C104.

3.5 VALVES

- A. All valves shall be rated for 250 psi working pressure.
- B. Valve boxes shall consist of a cast iron valve box, encased with a concrete collar over a section of 6-inch PVC pipe, SDR-35 typically, which is of adequate length enabling the valve box to be set at ground level as shown on the standard drawings.

3.6 GATE VALVES

- A. Where gate valves are specified or required, they shall conform to, and be tested in accordance with, the AWWA Standard for Gate Valves, 3-inch through 48-inch NPS for Water and Sewage Systems, AWWA Designation C500. Valves shall have double disc parallel seats, non-rising stem, vertical mounting "O" ring stem seal, counterclockwise opening, and ends to fit the pipe or fitting to which attached.

3.7 BUTTERFLY VALVES

- A. Where butterfly valves are specified or required, they shall conform to, and be tested in accordance with the AWWA Standard for Rubber-Seated Butterfly Valves, AWWA Designation C504. Valves shall have operators which are side mounted with plumb, non-rising stems, counterclockwise opening, and have mechanical joint connections of the size shown on the plans. The operator shall be mounted so that the square operating nut on the valve can be operated from the top.

3.8 AIR RELIEF VALVES

- A. Where air relief valves are specified or required, the valve shall be heavy-duty combination air release and vacuum type for 300 psi water working pressure, tested to 300 psi unless otherwise specified, two-inch size. Body, cover, and baffle shall be cast iron. All internal parts to be either highest quality stainless steel or bronze, and the inside of valve coated with rust inhibitor. Air relief valves shall be set so that the square operating nut on the valve can be operated from the top. Construction standards for air relief valve vaults shall be the same as for manholes.

3.9 CHECK VALVES

- A. Where check valves are specified or required, they shall conform to, and be tested in accordance with the AWWA Standard for Swing Check Valves for Ordinary Water Works Service, AWWA Designation C508. They shall be horizontally mounted, single disc, swing type with a full diameter passage providing minimum pressure loss. Valves shall be of the non-slamming type designed for the future installation of outside lever and weight. Disc faces and seat rings shall be bronze. Ends shall fit the pipe or fitting to which attached (push-on, mechanical, bell and spigot, or flanged). Construction standards for check valve vaults shall be the same as for manholes.

3.10 TAPPING VALVES

- A. Tapping valves shall have the same features as above double disc gate valves and shall have piloted flange or centering lip on the valve flange to fit the tapping sleeve flange.

3.11 FIRE HYDRANTS

- B. Fire hydrants shall conform to the AWWA Standard for Dry-Barrel Fire Hydrants, AWWA Designation C502 as to design, composition, quality of materials, workmanship and shall be manufactured by Mueller, American, M & H, or approved equal by ENGINEER.
- C. All fire hydrants shall be 6" mechanical joint connection, 5-1/4" valve openings

furnished with two 2-1/2" nozzles, and one 4-1/2" pumper connection, with National Standard threads. Two 2-1/2" nozzles shall be spaced 180 degrees apart, with the 4-1/2" pumper nozzle centered between them.

- D. Hydrants shall be of the compression type and shall have incorporated in their design a special section or bolts which intentionally have a lower breaking point than the balance of the unit (traffic flange).
- E. Hydrants shall have a 1-1/2" pentagon shaped operating nut, open left and shall be sized for 3-1/2 feet depth of bury.
- F. All nozzles shall be equipped with chained caps provided with gaskets made of suitable plastic or neoprene.
- G. All fire hydrants shall be painted with two coats of Pittsburg, first line, or approved equal paint. Colors are to be designated by the OWNER'S Fire Department to conform with color-coding system.
- H. Where fire hydrant extensions are specified or required, they shall be of the proper design to accommodate the make of fire hydrant installed.

3.12 CONSTRUCTION

- A. Proper implements, tools and facilities satisfactory to the ENGINEER shall be provided and used by the CONTRACTOR for the safe and convenient performance of the work. All pipe, valves and hydrants shall be carefully lowered into the trench piece by piece by means of a derrick, ropes, or other suitable tools or equipment, in such a manner as to prevent damage to water main materials and protective coatings and linings. Under no circumstances shall water main materials be dropped or dumped into the trench. If damage occurs to any pipe or water main accessories in handling, the damage shall be immediately brought to the ENGINEER'S attention. The ENGINEER shall prescribe corrective repairs or rejection of the damaged items. All pipe and fittings shall be carefully examined for cracks and other defects while suspended above the trench immediately before installation in final position. Defective pipe or fittings shall be laid aside for inspection by the ENGINEER, who will prescribe corrective repairs or rejection. All lumps, blisters, and excess coating shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell shall be wire brushed and wiped clean and dry and free from oil and grease before the pipe is laid.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. During laying operations, no debris, tools, clothing, or other materials shall be placed in the pipe. As each length of pipe is placed in the trench, the spigot end shall be centered in the bell and pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material tamped under it except at the bells. Precautions shall be taken to prevent dirt from entering the joint space.

1. Joining of Push-On Joint Pipe: The inside of the bell and the outside of the spigot

end shall be thoroughly cleaned to remove oil, grit, excess coating and other foreign matter. The circular rubber gasket shall be flexed inward and inserted in the gasket recess of the bell socket.

A thin film of gasket lubricant shall be applied to either the inside surface of the gasket or the spigot end of the pipe or both. Gaskets lubricant shall be as supplied by the pipe manufacturer and approved by the ENGINEER.

The spigot end of the pipe shall be entered into the socket with care used to keep the joint from contacting the ground. The joint shall then be completed by forcing the plain end to the bottom of the socket with a forked tool, jack-type tool or other device approved by the ENGINEER.

Pipe that is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint. Field-cut pipe lengths shall be filed or ground to resemble the spigot end of such pipe as manufactured.

2. Joining of Mechanical-Joint Pipe: The outside of the spigot and inside of the bell of mechanical-joint pipe shall be thoroughly cleaned to remove oil, grit, excess coating and other foreign matter from the joint, and then a thin film of gasket lubricant shall be applied to either the inside surface of the gasket or the spigot end of the pipe or both. Gasket lubricant shall be as supplied by the pipe manufacturer and approved by the ENGINEER.

The cast-iron gland shall be coated with the lubricant and placed on the spigot end with the thick edge toward the gland. The entire section of the pipe shall be pushed forward to seat the spigot end in the bell. The gasket shall then be pressed into place within the bell; care shall be taken to locate the gasket evenly around the entire joint.

When tightening bolts, the gland shall be brought up toward the pipe flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. This shall be done by partially tightening the bottom bolt first then the top bolt, next the bolts at either side, and last, the remaining bolts. This cycle should be repeated until all bolts are within the range of torques as shown below:

Bolt Size (Inches)	Range of Torque (Ft. – Lb.)	Length of Wrench (Inches)
5/8	40 – 60	8
3/4	60 – 90	10
1	70 – 100	12
1 1/4	90 – 120	14

The torque loads may be applied with torque-measuring or torque-indicating wrenches, which may also be used to check the application of approximate torque loads applied by men trained to give an average pull on a definite length or regular socket wrench. If effective sealing is not attained at the maximum torque indicated, the joint should be disassembled, thoroughly cleaned, and reassembled. Overstressing of bolts to compensate for poor installation practice shall not be allowed.

3. For waterlines, all fittings or specials included as pipe shall be blocked in accordance with the attached Standard Details.
 4. For sanitary sewers, a joint between cast iron pipe and vitrified clay pipe or reinforced concrete pipe shall be made with special adapters as approved by the ENGINEER. If adapters are not available, the joint shall be made as instructed by the ENGINEER and encased with concrete one foot (1 ft.) each side of the joints and six inches (6) in thickness.
- I. Fire hydrants shall be located as shown or as directed to provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians.
1. When placed behind the curb, the hydrant barrel shall be set so that no portion of the pumper or hose nozzle cap will be closer than three (3) feet nor more than six (6) feet from the face of the curb.
 2. When set in the lawn space between the curb and the sidewalk, no portion of the hydrant or nozzle cap shall be within six (6) inches of the sidewalk.
 3. All hydrants shall stand plumb and shall have their nozzles parallel with, or at right angles to the curb, with the pumper nozzle facing the curb, and centerline nozzles at least eighteen (18) inches above the ground.
 4. Each hydrant shall be connected to the main with a six (6) inch ductile iron branch controlled by an independent six (6) inch gate valve, unless otherwise specified.
 5. Each hydrant shall be placed upon a slab of stone or concrete not less than six (6) inches thick and fifteen (15) inches square. The rear side of the hydrant, opposite the pipe, shall be blocked with concrete or stone, firmly wedged between the hydrant and the vertical face of the end of the trench of undisturbed earth or it shall be tied to the pipe with suitable straps or metal tension rods as shown on the standard drawings or as directed by the ENGINEER.
 6. Dry walls shall be constructed of crushed stone or coarse gravel having a volume of approximately one-half cubic yard and shall be placed beneath and around the drain ports of the hydrant so the hydrant will properly drain when closed.
 7. Fire hydrant extensions shall be required to bring the fire hydrant up to the existing or proposed grade of the surrounding areas, whereby an 18-inch minimum distance from the ground level to the center of the pumper nozzle may be obtained as shown on the standard drawings.

3.13 METHOD OF PAYMENT

- A. Cast Iron and Ductile Iron Pipe (CIP and DIP) shall be measured for payment by the linear foot of pipe of the size specified in the proposal and shown on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the center line of the pipe. No additional payment shall be made for vertical bends in the pipe, fittings used with drop manholes, fittings or specials not included in this specification, or for concrete blocking.
- B. Deductions will not be made for bends or specials.

3.14 BASIS OF PAYMENT

- A. Accepted quantities of Cast Iron and Ductile Iron Pipe (CIP and DIP) measured as provided above, will be paid for at the contract unit price for:

Cast Iron Pipe Lineal Feet

Ductile Iron Pipe. Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 4 - STEEL PIPE AND FITTINGS

4.1 DESCRIPTION

- A. The work under this item shall include furnishing, hauling, placing, and jointing of steel pipe in the trench in specific conformity with the lines and levels given. For all lines, the AWWA Standard for Installation of Cast Iron Water Mains, AWWA Designation C-600 shall govern the installation, as applicable. The method bedding shall be in accordance with Specification 31 23 33 and as shown on the attached Standard Details. The drawings show the plan and grade for the pipeline. The CONTRACTOR shall submit detail drawings to the ENGINEER for approval, showing his proposed method of laying the pipe to these grades. All pipelines to be crossed shall be located before these drawings are prepared. Fittings or specials included as pipe shall be blocked in accordance with the attached Standard Details

4.2 PIPE AND FITTINGS

- A. Where steel pipe is specified or required, it shall conform to the AWWA Standard for Steel Water Pipe 6-inches and larger, AWWA Designation C200. Only the following mill pipes specified under AWWA C200 shall be acceptable: ASTM A139, Grades B and C; ASTM A53, Grade B; ASTM A135, Grade B. Only the following steel plate fabricated under ASTM A134 shall be acceptable: ASTM A36, ASTM A572.
- B. All pipe shall be hydrostatically tested to 80% of the minimum yield point with the hydrostatic test pressure indicated on shop fabrication drawings. AWWA Designation C200 shall govern the testing. Pipe length shall be not less than 35 feet per joint, except for specials unless otherwise noted. There shall be no more than one longitudinal or girth seam per section. Nominal pipe diameter and steel thickness shall be as specified on the drawings. The diameter shown is the required inside diameter of steel pipe if coal tar lining is used or inside diameter of lining if mortar lining is used.
- C. All pipe shall be manufactured by an established manufacturer who has had at least three (3) years' experience in successfully building this type of pipe. Openings for air valves, main connections, and blow-off connections must be provided with suitable reinforcements around the opening, welded to the body of the pipe. Openings of the sizes shown on the drawings shall be furnished with steel blind flanges of proper strength to withstand the working pressure of the line where no other provision is made for closing the openings. The pipe shall have ends for slip joints for field welding,

beveled ends for field welding, beveled ends for field butt welding, or plain ends for mechanically coupled field joints.

- D. Twenty-four inch (24") or smaller pipe shall be manufactured with ends of true circular shape, free from indentations, projections, or roll marks for a distance of eight inches (8") from the end of the pipe. This shall be done by hydraulic expansion or some other method satisfactory to the ENGINEER. The outside diameter of the pipe shall be true enough in dimension to permit the passage for a distance of eight inches (8") from the end of the pipe a ring gauge with a bore three-thirty seconds (3/32") of an inch larger than the outside diameter of the pipe.
- E. Where steel fittings or special fittings are specified or required, they shall conform to all of the steel pipe specification requirements and to the AWWA Standard for Dimensions for Steel Water Pipe Fittings, AWWA Designation C208. Where fittings and specials are fabricated from mill pipe, they shall be fabricated from pipe hydrostatically tested to 80% of the pipe steel yield point with mitered joints dye checked for welding flaws. Where fittings and specials are fabricated from plate, they shall be hydrostatically tested to 80% of the minimum plate steel yield point. Changes in line and grade shall be made by steel specials or in the joints. Steel specials shall be used wherever the angle exceeds ten degrees (10°).
- F. Where field cutting of steel pipe is permitted, pipe shall be cut by sawing. The inside lining shall be removed for a minimum of eight inches each side of the cut and the pipe surface shall be cleaned and brushed to bright metal. After welding, the inside lining shall be replaced in accordance with AWWA C203.
- G. All steel blind flanges supplied in accordance with Section 405 shall be ASTM A36 Steel, 5/8-inch thick with approved gaskets and bolts. All bolts shall be carbon steel ASTM A307 Grade A only, in accordance with AWWA C207.
- H. The work under this item shall include all of the requirements specified under the item of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.

4.3 JOINTS

- A. Steel Pipe and fittings shall be jointed with any of the end types as specified below unless a particular end type is specified. Flange ends shall be used only where specifically noted on the drawings.
- B. Welded joints shall conform to, and be tested in accordance with, the AWWA Standard

for Field Welding of Steel Water Pipe, AWWA Designation C206.

- C. Mechanically coupled joints shall consist of Dresser Couplings, Style 38, or equal, or as specified on the drawings.
- D. Flanged joints shall conform to the AWWA Standard for Steel Pipe Flanges for Waterworks Service Size 4-inch through 144-inch, AWWA Des. C207, Class E.

4.4 LINING AND COATING

- A. Steel pipe and fittings shall be lined in accordance with the AWWA Standard for Cement Mortar Protective Lining and Coat for Steel Water Pipe, AWWA Designation C205, or the AWWA Standard for Coal-Tar Enamel Protective Coatings for Steel Water Pipe, AWWA Designation C203. The exterior of all underground pipe shall be cleaned, primed, and coated with coal-tar enamel, fibrous glass mat, and a bonded asbestos felt wrapper, and with either a whitewash coating or a final wrap of kraft paper, and the exterior of all above ground pipe shall be cleaned, primed, and painted, all in accordance with the AWWA Standard for Coal-Tar Enamel Protective Coatings and Linings for Steel Water Pipe, AWWA Designation C203, or in accordance with the AWWA Standard for Chlorinated Rubber-Alkyd Paint System for the Exterior of Above Ground Steel Water Piping.
- B. If mechanical couplings are used for field joints, the ends of the pipe shall be primed and enameled before the pipe is laid. If field welding is used, the pipe joints shall be furnished with the inside lining and outside coating held back twelve inches on each end for field welding. All of the lining and coating, including any field touch-up work, shall be done under the direction of the manufacturer of the lining and coating to the satisfaction of the ENGINEER. The lining at the joints on welded pipe may be patched with a minimum of two (2) coats of a coal tar or epoxy-based paint which shall be compatible with the interior lining and which shall impart no taste or odor to the water in the lines.

4.5 CONSTRUCTION

- A. If joints are field-welded, they shall develop the full strength of the pipe. The CONTRACTOR shall file with the ENGINEER a description of the method of welding which he proposes to use, the name of the individual or company who will do the welding, and a statement regarding the previous experience of such individual or company in this particular line of work. If requested, coupons shall be cut across the field welds and tested by an approved testing laboratory. The line may be welded continuously with provisions for slack in the line, or in sections to be lowered in the trench and connected by a position weld.
- B. If joints are to be mechanically coupled, sections up to 240 feet may be coupled and lowered carefully into the ditch. Electrical continuity shall be provided at all joints. Preparation for, protection of, and repair of pipe coating and lining, and coating of mechanical couplings shall conform to the applicable section of these specifications.

4.6 METHOD OF PAYMENT

- A. Steel pipe shall be measured for payment by the linear foot of pipe specified in the proposal and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe, fittings used with drop manholes, fittings or specials included as pipe, or for concrete blocking.

4.7 BASIS OF PAYMENT

- A. Accepted quantities of steel pipe measured as provided above, will be paid for at the contract unit price for:

STEEL PIPE Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 5 - REINFORCED CONCRETE PIPE AND FITTINGS

5.1 DESCRIPTION

- A. The work under this item shall include furnishing, hauling, placing and jointing of reinforced concrete pipe (RCP) in the trench in specific conformity with the lines and levels given.

5.2 PIPE AND FITTINGS

- A. Where reinforced concrete pipe (RCP) and fittings are specified or required for waterlines, they shall conform to and be tested in accordance with the AWWA Standard for Prestressed Concrete Pressure Pipe, Steel Cylinder Type, for Water and Other Liquids, AWWA Designation C301. All pipe shall be manufactured by an established manufacturer who has had at least three years' experience in successfully building this type of pipe. All specials and fittings shall be either of Type A or Type B and must be built to the details furnished by the manufacturer and approved by the ENGINEER. Each special and each length of straight pipe shall be plainly marked to indicate the head for which the pipe is designed and to indicate where the pipe will be used by reference to the layout drawings.
- B. Where reinforced concrete pipe (RCP) and fittings are specified or required for sanitary sewers, they shall conform to and be tested in accordance with the specifications for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe, ASTM Designation C76, Class as shown on the drawings. No lengths of pipe shall be less than eight feet. All concrete pipe shall be coated inside with two (2) coats of a coal-tar base paint (Standard Inertol®, or approved equal), with a twenty-four hour drying period between coats.

5.3 JOINTS

- A. Reinforced concrete pipe and fittings for waterlines shall be jointed according to AWWA Standard for Prestressed Concrete Pressure Pipe Steel Cylinder Type, for Water and Other Liquids, AWWA Designation C301.
- B. Reinforced concrete pipe and fittings for sanitary sewer shall be jointed with a single natural rubber or neoprene gasket and cement mortar formed by a diaper. It shall be formed in a continuous ring of suitable cross sections and of such size as to assure a watertight joint. Each length of pipe shall be provided with bell-and-spigot ends formed in the concrete wall. The spigot end shall contain a groove so that the gasket will be enclosed and compressed on four surfaces when the joint is in final position. All jointing materials shall be used in accordance with the manufacturer's instructions and subject to approval of the ENGINEER.

5.4 CONSTRUCTION

- A. For waterlines, the AWWA Standard for Installation of Cast Iron Water Mains, AWWA designation C-600, shall govern the installation as applicable. The method of bedding shall be in accordance with Specification 31 23 33 and as shown on the attached Standard Details. The drawings show the plan and grade for the pipeline. The CONTRACTOR shall submit detailed drawings to the ENGINEER for approval, showing the proposed method of laying the pipe to these grades. All pipelines to be crossed shall be located before these drawings are prepared. The ends of the pipes to be jointed shall be cleaned immediately prior to joining and the rubber gasket thoroughly lubricated with a thin film of gasket lubricant before it is placed in position on the spigot end.
- B. Gasket lubricant shall be as supplied by the pipe manufacturer and approved by the ENGINEER. Extreme care shall be taken in moving the spigot end of the pipe into the bell end of previously laid pipe. If the gasket is damaged or moved out of place, the new pipe shall be removed, and a new gasket applied before rejoining. Any lubricant remaining on the exposed concrete surfaces inside or outside the pipe shall be completely removed. Fittings or specials included as pipe shall be blocked in accordance with the attached Standard Details.
- C. For sanitary sewers, the methods of laying pipe, foundation, and grade specified under Pipe, Vitrified Clay, shall apply. All pipe shall be installed with the mark "C-76" visible on the top of the pipe. The ends of the pipes to be jointed shall be cleaned immediately prior to joining and the rubber gasket thoroughly lubricated with gasket lubricant before it is placed in position on the spigot end. Extreme care shall be taken in moving the spigot end of the pipe into the bell end of the previously laid pipe. If the gasket is damaged or moved out of place, the new pipe shall be removed, and a new gasket applied before rejoining.
- D. For all lines, after the pipe has been jointed, a band at least 5-1/2 inches wide shall be placed around the outside of the pipe at the joint. This band shall serve as a form for placing 1:1 cement mortar grout in the external recess formed by the face of the groove and the shoulder of the tongue. If a reinforced paper joint bank is used, it shall be drawn up tight around the pipe and the backfill tamped against it up to the spring line before pouring the grout. If a cloth band is used, it shall be wired around the outside

of the pipe, and the grout poured before backfilling. On all pipes, the joint space remaining on the inside of the pipe shall be filled with a stiff mixture of 1:1 cement mortar which shall be troweled in place to produce a continuous, smooth, flush surface across the joint.

5.5 METHOD OF PAYMENT

- A. Reinforced Concrete Pipe (RCP) shall be measured for payment by the linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe, fittings used with drop manholes, fittings or specials included as pipe, or for concrete blocking.

5.6 BASIS OF PAYMENT

- A. Accepted quantities of Reinforced Concrete Pipe (RCP), measured as provided above, will be paid for at the contract unit price for:

REINFORCED CONCRETE PIPE (RCP) Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 6 - THERMOPLASTIC POLYVINYL CHLORIDE (PVC) WATER PIPE AND FITTINGS

6.1 DESCRIPTION

- A. Thermoplastic Polyvinyl Chloride (PVC) water pipe 6 to 12-inches in size shall be allowed in the distribution system of the OWNER. The AWWA Standard for the installation of PVC water mains, AWWA Designation C-605 shall govern the installation, as applicable.

6.2 PIPE AND FITTINGS

- A. Where thermoplastic polyvinyl chloride (PVC) water pipe is specified or required, it shall conform to the AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch through 12-inch, for water, AWWA Designation C900. PVC pipe shall conform to the dimensions shown in Table 2 of AWWA C900, Dimensions and Pressure Classes for Dimension Ratio (DR) for PVC 1120 Pipe with Cast Iron Pipe Equivalent ODS. The minimum DR shall be in accordance with the plans and the minimum working pressure rating shall be 150 psi.
- B. Fittings for PVC pipe 8-inches in diameter and smaller shall be Cast Iron Short Body Fittings in accordance with AWWA C110 specification for Cast Iron Fittings, 2-inch through 48-inch, for Water and Other Liquids. All fittings shall be designed and rated for 250 psi water working pressure.

- C. The work under this item shall include all of the requirements specified under the item of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.

6.3 JOINTS

- A. Jointing of plastic pipe shall be accomplished by push-on type joints. Push-on joints consisting of a rubber "O" ring shall be used. The CONTRACTOR shall furnish to the ENGINEER details of the proposed joint in triplicate for approval before any such jointing material is delivered to the job site.

6.4 CONSTRUCTION

- A. Pipe shall be laid to the lines and grades established by the ENGINEER. The bottom of the trench shall be relatively uniform and in no case shall pipe be laid on rock. Where rock is encountered, Class "A" bedding shall be required.
- B. Long plastic pipelines, over three hundred feet (300 ft.) in length without an abrupt change in direction, shall be "snaked" in the trench to provide for expansion and contraction. Snaking shall be equivalent to the pipe touching opposite sides of a twenty-four inch (24) wide trench within a distance of eighty feet (80 ft.). It is recommended that, during warm weather, whenever practical, pipelines be filled with cold water or allowed to cool overnight before backfilling trench. Push-on joints shall be made with extreme care and by following the manufacturer's recommendation as to installation procedures. If the design of the joint permits for linear expansion of the pipe, the trench width may be reduced. Adequate thrust blocks as approved by the ENGINEER will be required at all bends, tees, and crosses.

6.5 METHOD OF PAYMENT

- A. Thermoplastic Polyvinyl Chloride (PVC) water pipe shall be measured for payment by the linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe.

6.6 BASIS OF PAYMENT

- A. Accepted quantities of Thermoplastic Polyvinyl Chloride (PVC) water pipe, measured as provided above, will be paid for at the contract unit price for:

THERMOPLASTIC POLYVINYL CHLORIDE (PVC) PIPE Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 7 - TYPE PSM POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS

7.1 DESCRIPTION

- A. Type PSM Polyvinyl Chloride (PVC) sewer pipe ranging in size from 4 inches to 15 inches, may be installed within the OWNER'S collection system, as approved by the ENGINEER. The work under this item shall include furnishing, hauling, placing, and joining of PVC sewer pipe within the trench in specific conformity with lines and levels given. For all pipe, the ASTM Standard 2321-89 "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications" shall govern with respect to installation of the pipe. The method of bedding shall be in accordance with PART 5 of this specification and any exceptions listed below, and as shown on the attached standard details.

7.2 PIPE AND FITTINGS

- A. Where Type PSM polyvinyl chloride (PVC) sewer pipe is specified or required, it shall conform to ASTM Standard D3034-94 "Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings". Nominal pipe diameter may be from 4 inches to 15 inches in size. All PVC sewer pipe shall have a minimum pipe stiffness of 115 psi and shall have a Standard Thermoplastic Pipe Dimension Ratio (SDR) in accordance to the plans. The pipe shall be made of PVC plastic having a cell classification of 12454-B or 12454-C or 12364-C or 13364-B (with minimum tensile modulus of 3450 MPa (500,000 psi) as defined in ASTM Standard D1784. The pipe shall be clearly marked at intervals of 1.5 meters (5 ft.) or less, and the markings shall indicate manufacturer's name or trademark and code, nominal pipe size, the cell classification, the designation "Type PSM SDR-XX PVC Sewer Pipe", and the designation "Specification D3034". The fittings shall be marked with manufacturer's name or trademark, nominal size, the material designation "PVC", PSM, and the designation "Specification D3034".

7.3 JOINTS

- A. Jointing of plastic pipe shall be accomplished by push-on type joint, with an elastomeric seal conforming to ASTM Standard D3212-92 "Standard Specification for Joint for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals". The CONTRACTOR shall furnish to the ENGINEER details of proposed joint in triplicate for approval before any such jointing material is delivered to the job site.

7.4 CONSTRUCTION

- A. The pipe shall be laid on a firm foundation as required in over-excavated areas, and a bedding with a minimum thickness of 4 inches (6 inches in rock cuts). Haunching material shall be placed to the springline of the pipe and be installed in layers with a maximum thickness of 6 inches. The haunching material shall be worked around the pipe by hand, and the shovel slicing method to provide uniform support of the pipe. The initial backfill shall be placed in layers to a minimum depth of 6 inches to the top of the pipe and be placed in layers with a maximum thickness of 6 inches. All material for foundation, bedding, haunching and initial backfill shall be compacted to 85% or 95% of Standard Proctor as required according to the USCS soil classification system, and in conjunction with ASTM Standard D2321-89. Maximum particle size for all backfill material shall be 3/4 inch. All backfill shall be free from clods, lumps, boulders and frozen matter.
- B. Place pipe and fittings in the trench with the invert conforming to the required elevations, slopes and alignment. Provide bell holes in the pipe bedding, no larger than necessary, in order to ensure uniform pipe support. Fill all voids under the bell by working in bedding material. In special cases where the pipe is to be installed to a curved alignment, maintain angular "joint deflection" (axial alignment) or pipe bending radius, or both, within acceptable design limits.
- C. Comply with manufacturers recommendation for assembly of joint components, lubrication, and making of joints. When pipe laying is interrupted, secure piping against movement and seal open ends to prevent the entrance of water, mud, or foreign material.
- D. For elastomeric seal joints conforming to ASTM D3212-92 "Standard Specification for Joints for Drain and Sewer Plastic Pipe Using Flexible Elastomeric Seal", the pipe ends shall be marked to indicate insertion stop position and ensure that the pipe is inserted into pipe or fitting bells to this mark. Push spigot into bell using methods recommended by the manufacturer, keeping pipe true to line and grade. Protect end of the pipe during homing and do not use excessive force that may result in over-assembled joints or dislodged gaskets. If full entry is not achieved, disassemble and clean the joint and reassemble. Use only lubricant supplied or recommended for use by the pipe manufacturer. Do not exceed manufacturer's recommendation for angular "joint deflection" (axial alignment).
- E. Where coarse and open-graded material is placed adjacent to finer material and within anticipated ground water elevations, a geotextile filter fabric shall be placed around the bedding and initial backfill material to prevent the migration of the surrounding fines into the open voided area.
- F. After installation of the pipe has been completed and air tested, the CONTRACTOR shall pull a mandrel that has been machined to 5% of the inside diameter of the pipe from manhole to manhole. The pulling of the mandrel shall be performed no earlier than 30 days from the date of the air testing.

7.5 METHOD OF PAYMENT

- A. Type PSM Polyvinyl Chloride (PVC) sewer pipe shall be measured for payment by linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe or fittings used with drop manholes.

7.6 BASIS OF PAYMENT

- A. Accepted quantities of Polyvinyl Chloride (PVC) sewer pipe, measured as provided above, will be paid for at the contract price for:

Polyvinyl Chloride (PVC) Sewer Pipe Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 8 – HDPE PIPE AND FITTINGS

8.1 DESCRIPTION

- A. This specification covers the material, joining methods, and general installation practice for high density polyethylene pipe (HDPE) piping systems for use as indicated on the drawings. For all pipe, it must be installed in accordance with AWWA C901 and C906.

8.2 PIPE AND FITTINGS

- A. All materials shall be manufactured from a PE 4710 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material shall meet the specifications of ASTM D3350 with a minimum cell classification of 445474C or 445574C. HDPE pipe and fittings shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. HDPE products shall be homogenous throughout and free of visible cracks, holes, foreign inclusions, voids, or other injurious defects.
- B. Pipe shall be made of HDPE material with a minimum material designation code of PE 4710 and with a minimum Cell classification as noted in Section A. The polyethylene compound shall be suitably protected against degradation by ultraviolet light by means of carbon black of not less than 2 percent. The manufacturer of the HDPE resin shall certify the cell classification indicated.
- C. Pipe sizes 3" DIPS/4" IPS and larger shall have a manufacturing standards of ASTM F714, while IPS pipe 3" and smaller shall be manufactured to the dimensional requirements listed in ASTM D3035. Dimension Ratio (DR) and Outside Diameter (IPS/DIPS) shall be as specified on plans.

- D. Pipe shall be manufactured by an ISO 9001 certified manufacturer. The pipe manufacturer shall have an ongoing Quality Control program for incoming and outgoing materials and shall assure that the pipe will meet the material requirements of this specification. HDPE resins for manufacturing of pipe shall be checked for density, melt flow rate, and decontamination. For potable water systems the facility shall have the necessary testing equipment to verify that pipe meets the AWWA and NSF standards. Pipe shall be checked for outside diameter, wall thickness, length, and surface finish on the inside and outside. The manufacturer's production facilities shall be open for inspection by the Owner or Engineer.
- E. All pipe may be color coded for the intended service. When required, the color coding shall be permanently co-extruded stripes on the pipe outside surface as part of the pipe's manufacturing process. Painting HDPE pipe to accomplish color coding is not permitted.
- F. All fabricated elbows, tees, reducing tees and end caps shall be produced and meet the requirements of ASTM F2206, as manufactured by ISCO Industries, Inc or other approved manufacturer holding an ISO 9001 quality system certificate. Each fitting will be marked per ASTM F2206 section 10 including the nominal size and fitting EDR, which will meet or exceed the pipe DR identified for the project. Fabricated fittings shall be manufactured using a data recording device to record fusion pressure and temperature and shall be stamped with unique joint number that corresponds to the joint report. A graphic representation of the temperature and pressure data for all fusion joints made producing fittings shall be maintained for a minimum of 5 years as part of the quality control and will be available upon request of owner. Test results to validate ASTM F2206 section 7.3 and 9 shall be provided to owner or owner's representative upon request.
- G. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans or accepted by ENGINEER.
- H. The work under this item shall include all of the requirements specified under the item of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.
- I. Bolted Connections
 - 1. Flanged and Mechanical Joint Adapters can be made to ASTM D3261. Flange adapters, if machined, may also meet the requirements of ASTM F2880. Flanges and MJ Adapters shall be fused onto the pipe and have a minimum pressure rating equal to or greater than the pipe unless otherwise specified on the plans.

2. Metallic back-up rings (Van-Stone style lap joint flanges), shall have a radius on the inside diameter of the bore so as to be compatible with AWWA C207 Class D (or B or E), ASME/ANSI B 16.5 Class 150, ASME/ANSI B 16.1 Class 125, or ASME/ANSI B16.47 Series A.
3. Flange assemblies shall be assembled and torqued according to PPI TN-38, "Bolt Torque for Polyethylene Flanged Joints."

J. Mechanical Fittings

1. The use of mechanical coupling and saddles shall be approved by the ENGINEER prior to installation. Mechanical fittings shall be designed for use an compatible with HDPE pipe.
2. Coupling without self-restraining capabilities (integrated serrated teeth or grippers) shall include a plan for external restraint or isolation from pipeline generated forces.
3. Mechanical saddles shall have wide straps for distribution of clamping loads. No U-Bolts shall be allowed.
4. When required by mechanical coupling manufacturer, pipe stiffeners shall be employed to support the interior wall of the HDPE. The stiffeners shall support the pipe's end and control the "necking down" reaction to the pressure applied during normal installation. The pipe stiffeners shall be formed of 304 or 316 stainless steel, with a wedged style design to fit the HDPE manufacturers published average inside diameter of the specific size and DR of the HDPE.

8.3 EQUIPMENT

- A. All fusion equipment, whether new or used, rented or owned, shall comply with the requirements of ISO 12176-1 "Equipment for Fusion Jointing Polyethylene Systems".
- B. Butt Fusion
1. Butt fusion equipment must be in satisfactory working order and the hydraulic system must be leak free. Heater plates shall be free from scrapes, gouges, and have a consistent clean coated surface. The pressure gauge and thermometer should be properly calibrated. When requested by the ENGINEER, records showing a maintenance service or inspection within 3 months prior to use for this project shall be provided.
 2. For 16" and larger pipe sizes, the butt fusion machine shall be capable of autonomously calculating the drag pressure and perform the shift sequence autonomously.

3. For 6" and larger pipe sizes, the pipe butt fusion machine shall be a self-contained hydraulic fusion machine capable of butt fusing HDPE pipe. The carriage must be removable from the chassis for in-ditch use. The machine must be compatible with an electronic data recording device. Accessories will include all butt fusion inserts for the specified range of pipe sizes, a pyrometer kit for checking the surface temperature of the heater, extension cord of appropriate gauge (25' minimum), and hydraulic extension hoses (minimum of four). The butt fusion machine will be McElroy, or approved equivalent.
 4. In areas where there may be insufficient space for layout of the entire length of fused pipe to be pulled-back, the Contractor shall utilize a continuous HDPE pipe fusion equipment such as a PolyHorse by McElroy or other means in order to fuse the length of pipe necessary for the installation.
- C. Electrofusion processors shall be maintained and calibrated per manufacturer's requirements and recommendations.

8.4 JOINTS

- A. All HDPE pipe shall be joined to by the heat fusion process which produces homogeneous, sealed, leak-tight joints. Tie-ins between sections of HDPE pipe shall be made by butt fusion whenever possible.
- B. Butt Fusion
1. The pipe shall be joined by the butt fusion procedure outlined in ASTM F2620 or PPI TR-33. All fusion joints shall be made in compliance with the pipe or fitting manufacturer's recommendations. Fusion joints shall be made by qualified fusion technicians per ASTM F3190. A record or certificate of training for the fusion operator must be provided that documents training to the fundamentals of ASTM F2620. Considerations should be given to and provisions made for adverse weather conditions, such as temperatures below freezing, precipitation, or wind, which is accepted by the owner/engineer. The use of a controlled cooling cycle procedure to reduce cooling time is acceptable only as part of a controlled cooling cycle procedure where testing demonstrates that acceptable joints are produced using the controlled cooling cycle procedure.
- C. Electrofusion
1. Electrofusion joining shall be done in accordance with the manufacturers recommended procedure. Other sources of electrofusion joining information are PPI TN 34 and PPI Municipal Advisory Board (MAB) Generic Electrofusion Procedure for Field Joining of 12 Inch and Smaller Polyethylene (PE) Pipe. The process of electrofusion requires an electric source, commonly called an electrofusion processor that has wire leads and a method to read electronically (by laser) or otherwise input the barcode of the fitting. The electrofusion processor must be capable of reading and storing the input parameters and the fusion results for later download to a record file. Qualification of the fusion technician shall be demonstrated by evidence electrofusion training within the past year on the equipment to be utilized for this project.

D. Data Recording

1. For 6" and larger pipe sizes, McElroy DataLogger or equivalent fusion data recorder shall be used to record all fusion welds on hydraulically operated fusion machines. The device shall be capable of meeting the requirements of ASTM F3124, "Standard Practice for Data Recording the Procedure used to Produce Heat Butt Fusion Joints in Plastic Piping Systems or Fittings". The device, or combination of devices, shall record the following variables of each fused joint:
 - i. Heater surface temperature- immediately before inserting the heater plate, measure with a pyrometer and manually enter into the weld record.
 - ii. Gauge pressure during the initial heat cycle
 - iii. Gauge pressure and elapsed time during the heat-soak cycle
 - iv. Heater removal (dwell) time
 - v. Gauge pressure and elapsed time during the fusing/cool cycle
 - vi. Drag pressure
 - vii. Pipe diameter and wall thickness
 - viii. Type of HDPE material (Specification and Classification) and manufacturer
 - ix. Fusion Machine Identification
2. The device shall record the operator name and a unique operator ID number, along with the date and time of each weld.
3. Records showing the device is up to date on all required calibration should be available for presentation when requested.
4. All fusion welds should be traceable to the report (via operator and weld ID) with an indentation weld stamp or by permanent paint marker/pen next to fusion weld.
5. A weld location map may be requested, prior to commencement of work, by the owner or owner's representative.

8.5 CONSTRUCTION

A. For direct burial, refer to Specification 31 23 33.

B. Pull-In Installation

1. Per ASTM F1804 and/or www.HDPEapp.com, the contractor shall determine and document the maximum proposed pull-in length and pull-in force for the pressure class and pipe diameter to be pulled into an open trench. Pull-in lengths will not exceed the maximum lengths for the class and diameter pipe. A commercially available load limiter (weak link) approved by the Engineer shall be used between the puller and the pipe.
2. Prior to pulling the pipeline, contractor shall place rollers or other approved devices beneath the pipe to avoid unnecessary damage and to reduce pipe drag.

3. Trenchless installations:

- i. For Horizontal Directional Drilling (HDD), refer to Specification 33 05 07.13 and ASTM F1962, PPI TR-46, PPI PE Handbook (Chapter 12).
- ii. For sliplining, refer to ASTM F585, PPI PE Handbook (Chapter 11).
- iii. For pipe bursting, refer to Specification 33 31 30 and PPI PE Handbook (Chapter 16)

C. Appurtenances

1. All appurtenances (tees, elbows, services, valves, air relief valves, fire hydrants, etc.), must be independently supported and shall not rely on the pipeline and its connections for this support. Excessive stresses may be encountered when appurtenances are inadequately supported.
2. Hydrant Assemblies shall be installed and field tested according to the requirements of AWWA M17.
3. Installation of Tracer Wire. When tracer wire is required, the Contractor shall install along the entire section of pipeline and along all service connections as listed below. The tracer wire shall be installed simultaneously with the polyethylene piping system. Tracer wire shall be installed by the Contractor once backfill has been placed and compacted to at least 12 inches above the top of the pipe and not more than 18 inches above the top of the pipe. Tracer wire shall be properly spliced at each end connection and each service connection. Care should be taken to adequately wrap and protect wire at all splice locations. No bare tracer wire shall be accepted. Provide Magnesium alloy anode for cathodic protection that conforms to the requirements of ASTM B843. Install tracer wire per local and manufacturer's requirements.

8.6 METHOD OF PAYMENT

- A. HDPE pipe shall be measured for payment by the linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe.

PART 9 – SEWER CONNECTION

9.1 DESCRIPTION

- A. The work under this item shall include all excavation, furnishing all materials required, construction, finishing, and backfilling of connections to existing mains, manholes, drop connections to manholes, special connections, service line connections, or plugs, as indicated on the drawings or as directed by the ENGINEER.

9.2 CONSTRUCTION

- A. Connections to existing manholes shall be made by cutting into the manhole at the specified grade, inserting the pipe, and encasing the joint with concrete. CONTRACTOR shall not break into any existing sewer unless the OWNER'S REPRESENTATIVE is present and the work done shall be under the direction of the OWNER'S REPRESENTATIVE. The manhole base shall be cut and reconstructed in such a manner that a proper invert section is maintained. All waste mortar, debris, and sharp edges shall be removed from the joints, bottom, and invert. CONTRACTOR shall remove and replace the manhole steps in the proper location and in accordance with the attached standard details if they are not properly located after the connection is made. Any and all diversion or pumping of water or sewage in a wet connection is included in this item.
- B. Methods of construction shall be the same for sewer service line reconnections as for main sewers. All reconnections shall be constructed in conformance with the Plumbing Code of the OWNER unless modified herein. New pipe used shall be of the same diameter as the existing line.
- C. Plugs shall be constructed of manhole brick and mortar, extending at least one foot into the line plugged from the manhole. The plug shall be watertight and troweled to a smooth finish on the interior of the manhole.
- D. At points indicated on the plans or by the ENGINEER, risers of the size indicated on the plans, or as required by the ENGINEER, shall be constructed. A 45-degree bell and spigot bend shall be jointed to the wye to a point level with lower side of bell of 45-degree bend. Pipe for risers shall be regular length joints of sewer pipe. Risers using full joints of pipe shall be set so that the top of riser is near to but not less than ten (10) feet below finished ground grade at rear of building location. If the OWNER desires, the CONTRACTOR may, at the OWNER's expense, extend risers to a point not less than six (6) feet below finished grade at rear of the building locations, but, in no case, shall there be less than four (4) feet of cover over riser.

When contained wholly on the public right-of-way, or within the boundaries of utility easements, risers may be laid on a slope of 45 degrees.

9.3 METHOD OF MEASUREMENT

- A. Connections will be measured for payment per each classification of connection as shown on the proposal. No additional payment will be made for excavation, backfilling, furnishing and placing concrete, removing and replacing manhole steps, or for diversion or pumping of water or sewage necessary to make the connection. Connections shown on the plans but not classified on the proposal shall be considered incidental to the work and will not be measured for payment but the cost shall be included in other items.

9.4 BASIS OF PAYMENT

- A. Accepted quantities measured as provided above will be paid for at the contract unit price as shown on the proposal for each connection which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 10 – WATER CONNECTION

10.1 DESCRIPTION

- A. The work under this item shall include all excavation, furnishing all materials required, construction, finishing, and backfilling of connections to existing mains, valves, special connections, service line connections, as indicated on the drawings or as directed by the ENGINEER.

10.2 CONSTRUCTION

- A. The drawing shows details of the various connections and they shall be made in accordance with the details or as directed by the ENGINEER. On water mains, the CONTRACTOR will make the pressure and wet connections to existing mains as shown on the drawing unless specifically noted otherwise. In making these connections all material, equipment, and personal necessary for the job shall be assembled at the site and all work possible shall be done before the service is interrupted. The order and time of the work will be under the jurisdiction of the ENGINEER. If deemed necessary, the ENGINEER may order the CONTRACTOR to make the connection at night so as to inconvenience the public as little as possible.

- B. Where called for on the plans, or by the specifications, tapping valves and sleeves shall be used to make connections with existing water mains. The CONTRACTOR, when ready to make any of these connections, will notify the ENGINEER 48 hours in advance. The CONTRACTOR shall furnish all material, labor and equipment to make the taps.

The tapping valves furnished shall be Mueller, American Flow, or approved equal and tapping sleeves furnished shall be Ford, Smith Blair, or approved equal satisfactory to the ENGINEER. The tapping sleeves shall be the bolted type, heavy duty, using iron bolts, cast iron or equal satisfactory to the ENGINEER.

- C. Service line connections for water services shall be constructed as shown on the standard drawings and materials shall be copper, brass, municipex, or approved equal by ENGINEER.
- D. The material and workmanship for brass goods shall be of the highest quality and shall interchange with brass goods presently in use by the owner. Brass goods shall conform to the same precise standards as described in AWWA Specifications Number C800 Standard Specifications for underground service line fittings.
- E. Brass goods shall contain 85 percent copper and 5 percent each of tin, lead, and zinc and shall be tested by hydrostatic pressure of 200 pounds per square inch. The bidder shall furnish a complete description of brass goods with his bid.

- F. Copper tubing shall be Type "K" soft annealed seamless tubing and shall conform to ASTM-B88 Standard Specification for Seamless Copper Water Tube.
- G. The coils of copper tubing shall be in individual packages. The CONTRACTOR shall furnish an affidavit that the copper tubing furnished complies with all specifications.
- H. Municipex pipe shall be in accordance with AWWA 904 and ASTM F876.

PART 11 – CASTINGS

11.1 GENERAL

- A. Castings for valve boxes, valve vaults, manholes, lamp holes, and other appurtenances shall conform to, and be tested in accordance with the specifications for Gray Cast Iron, ASTM Designation A48, Class 30. Design shall be according to the attached Standard Details. Frames and covers that are to be located within dedicated public right-of-way, or any other location subject to vehicular traffic, shall have all bearing surfaces machined so that fittings parts will not rattle or rock under traffic. All castings shall be subject to a hammer test before installation.

PART 12 - RIGHT-OF-WAY CLEARING AND RESTORING

12.1 DESCRIPTION

- A. Work under this item shall include the removal and reconstruction or replacement of all obstructions affected, other than those covered in this specification, by the construction of the project including, but not limited to fences, retaining walls, patios, barbecues, signs, mailboxes, outbuildings, landscaping, sidewalks, driveways, parking lot surfacing, curbs, and the like. Any such obstructions which are not to be reconstructed are so designed on the drawings. Such shall be removed and disposed of by the CONTRACTOR. All obstructions to be replaced or reconstructed shall be restored to substantially the same condition as existed prior to the construction, except as otherwise noted. All sidewalk, driveway, and parking lot replacement shall be of at least equal quality, thickness, compacted subgrade and base course, and surface course as that removed or damaged. The CONTRACTOR shall remove and dispose of all debris, restore the grade of the surface of the earth as reasonably as may be done to the grade existing prior to construction, and upon completion of the work shall leave the site in as neat, clean, and orderly condition as nearly as it was prior to construction as may be reasonably done.

12.2 MATERIALS AND TESTS

- A. Backfill materials under parking lots and driveways shall be in accordance with Specification 31 23 33 or as approved by the ENGINEER.
- B. Portland Cement Concrete shall be in accordance with Specification 03 30 00. All concrete placed in parking lots, driveways, sidewalks, and all other concrete structures within the right-of-way shall use high-early strength cement.
- C. Asphaltic Concrete - Bituminous pavement shall meet the requirements shown in Section 32 12 16.39.

- D. Sampling and Testing - Sampling of materials will be made in accordance with the appropriate methods specified in the corresponding section listed above. Tests will be conducted in accordance with the schedule of tests provided in the special provisions or as shown on the plans.

12.3 CONSTRUCTION

- A. Passable surfaces across or along the construction vicinity shall be maintained at all times with gravel, steel mat or plate, or temporary bituminous surfacing material where a sidewalk, driveway, or parking lot previously existed.
- B. Sidewalks, driveways, parking lots, and other paved areas, all or partially composed of concrete, asphaltic concrete, or bituminous material shall be saw cut, removed, and replaced to at least the standard trench width if the project crossing is at right angles to the obstruction. If a construction joint is within two (2) feet of any proposed sawed line, the cut shall be extended to the joint, or as directed by the ENGINEER. Curbs shall be tunneled under in all cases, unless otherwise approved in writing by the ENGINEER.
- C. Backfill under sidewalks, driveways, parking lots, and other paved areas shall be in accordance with Specification 31 23 33. All backfill shall be thoroughly compacted with sufficient moisture and by mechanical means to prevent settlement. Settlement or other failure of backfill or restored right-of-way shall be corrected immediately. The method of correction shall be as directed by the ENGINEER.
- D. Existing water and sewer lines: Wherever existing water or sewer lines are encountered, the CONTRACTOR shall protect the same from damage. In case damage does result, the CONTRACTOR shall, as directed by the ENGINEER, repair the same at his own expense.
- E. Vertical and horizontal separation of water and sewer lines: Where a sanitary sewer crosses any existing or proposed water main and is closer than 10-feet horizontally or 2-feet vertically the sanitary sewer shall be ductile iron pipe for a distance of 20-feet horizontally. If the sanitary sewer crosses above the water main, the sanitary sewer shall be ductile iron pipe and concrete encased. Where a sanitary sewer is constructed closer than 50 feet to a water well (existing or proposal) the sanitary sewer shall be ductile iron pipe.

Where a water main crosses any existing or proposed sanitary sewer and is closer than 10-feet horizontally or 2-feet vertically, the sanitary sewer shall be replaced for a distance of 20-feet horizontally with ductile iron pipe. If the water main crosses below the sanitary sewer, the sanitary sewer shall be replaced with ductile iron pipe and concrete encased.

- F. Existing structures which are to be abandoned shall be broken off or removed to a depth of not less than six (6) inches below the foundation grade of new structures. Any blasting or other operation which might endanger the new work shall be completed prior to the construction of any part of the new structure. After the removal of any existing structures, all excavations not to be occupied by new structures and all holes created shall be cleaned up and the site left in a neat and orderly condition.

- G. If an obstruction is of public ownership, the CONTRACTOR shall notify the appropriate agency, and obtain any necessary permit or license forty-eight (48) hours before beginning any operations affecting the obstruction. All work shall conform to the current standards and specifications of that agency and shall be approved by the agency before completion of the project. At the CONTRACTOR'S request, the ENGINEER will furnish information as to what licenses or permits are required.
- H. The CONTRACTOR shall notify all utility companies prior to beginning construction and shall provide an electrical or mechanical device or use such other means he may select, to locate any hidden utility line, oil or gas pipe line, water pipe line, sewer pipe line, telegraph and telephone line or other structures provided for in these specifications and locate such line or structures shown on the plans and any uncharted line or structure whether shown on the plans or not and protect, adjust to grade, disconnect and replace, relocate and replace, remove, provide supports during the construction and settlement of backfill and protect against freezing or unnecessary damage by the elements of existing utility lines, oil or gas pipe lines, water pipe lines, sewer pipe lines, telegraph and telephone lines, railroad right-of-way lines and other structures and shall pay all fees to County, City, State or Federal agencies which may be required in the performance of this work. In the event injury does result to any gas lines, power lines or poles, telephone lines or poles, etc., the CONTRACTOR shall, holding the OWNER entirely blameless, make proper restitution.

12.4 METHOD OF MEASUREMENT

- A. Remove and replace paved driveways, paved parking lots and other paved areas, except sidewalks, shall be measured by the square yard. This area will be derived by multiplying the length along the centerline of the pipe by the standard trench width and converting to square yards, unless otherwise approved by the ENGINEER.
- B. Remove and replace sidewalks shall be measured by the square foot, whereby the area was measured in the same manner as paved driveways in 12.3(B) above.
- C. Gravel and rock driveways, parking lots, and other areas will not be measured for payment, but rather shall be considered incidental to the work.
- D. Temporary materials required for maintenance of traffic through pavement cut locations will not be measured for payment.
- E. Compaction of backfill to 90% Standard Density in driveways, parking lots, etc. will not be measured for payment, and the cost of this work shall be included in other bid items.
- F. Other structures and obstructions shall not be measured for payment, unless shown on the proposal, and the cost of this work shall be included in other bid items.

12.5 BASIS OF PAYMENT

- A. Accepted quantities, measured as provided above will be paid at the contract unit price for:

Pavement repair, HES concrete Sq. Yd.

Pavement repair, asphaltic Sq. Yd.

Sidewalk repair, concrete Sq. Yd.

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 13 - STREET AND ALLEY, RIGHT-OF-WAY CROSSINGS

13.1 DESCRIPTION

- A. Work under this item shall consist of backfilling, compacting, and pavement repair, where applicable, of all trenches crossing streets and alleys, dedicated or proposed to be dedicated to the public in accordance with the lines, grades and dimensions shown on the plans or as directed by the ENGINEER.

13.2 MATERIALS AND TESTS

- A. Backfill materials and streets and alleys shall be in accordance with Specification 31 23 33.
- B. Portland Cement Concrete shall be in accordance with 03 30 00. All concrete placed within the right-of-way shall be high-early-strength (HES) cement.
- C. Asphaltic Concrete - Bituminous Pavement shall meet the requirements of Specification 32 12 16.39.
- D. Sampling and Testing - Sampling of materials will be made in accordance with the appropriate methods specified in the corresponding section listed above. Tests will be conducted in accordance with the schedule of tests provided in the special provisions or as shown on the plans.

13.3 CONSTRUCTION

- A. Compaction: The CONTRACTOR shall place the select soil in accordance with Specification 31 23 33.
- B. Pavement Removal: Removal of paved surfaces shall be in accordance with the standard drawings.
- C. Pavement Repair: Concrete and Bituminous Pavement shall be repaired in accordance with the standard drawings and the Standard Specifications for Streets and Alley Construction of the OWNER.

13.4 METHOD OF MEASUREMENT

- A. Compacted backfill in unpaved streets and alleys will be measured by the cubic yard. This volume will be derived by multiplying the length along the centerline of the pipe by the standard trench width and by the average depth of the trench and converting to cubic yards, unless otherwise approved by the ENGINEER.
- B. Compaction of backfill to 95% Standard Density in paved streets and alleys will not be measured for payment, and the cost of this work shall be included in removal and replacement of pavement.
- C. Remove and replace concrete and bituminous pavement will be measured by the square yard. This area will be derived by multiplying the length along the centerline of the pipe by the standard trench width plus 12-inches on each side of the trench and converting to square yards.
- D. Over-breakage (the removal of more paving than is specified in 4.4(C) above) will not be measured for payment but shall be repaired in accordance with these specifications at the expense of the CONTRACTOR.

13.5 BASIS OF PAYMENT

- A. Accepted quantities of the type specified on the proposal, measured as provided above, will be paid for at the contract unit price for:

Remove and replace pavement Sq. Yd.

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 14 - PIERS, REINFORCED CONCRETE

14.1 DESCRIPTION

- A. The work under this item shall include all materials, forming, pipe anchorage, construction and finishing of above ground standard reinforced concrete piers and below ground, restraining collar, reinforced concrete piers. Piers shall be located and constructed as shown on the drawings and the attached standard drawings.

14.2 MATERIALS AND TESTS

- A. Materials and testing shall be in accordance with Section 03 30 00.

14.3 CONSTRUCTION

- A. Forms shall be made to conform to the shape of the pier and securely braced. Reinforcing steel shall be bent as detailed and securely tied in place. Bearing area for the pipe shall be made to fit the outside diameter of the pipe and shall support the pipe at the proper grade. Any honeycomb or other unevenness in the concrete shall be patched with cement mortar immediately after form removal. Construction of piers shall be in accordance with Specification 03 30 00.

14.4 METHOD OF PAYMENT

- A. Reinforced concrete piers and restraining collars shall be measured by the number of units constructed. No additional payment will be made for excavation, forming, bracing, dewatering, backfilling, reinforcing steel, or pipe anchorage.

14.5 BASIS OF PAYMENT

- A. Accepted quantities of reinforced concrete piers, measured as provided above, will be paid at the contract unit price for:

Reinforced Concrete Pier, Standard EA.

Reinforced Concrete Pier, Restraining Collar EA.

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 15 - FIELD TESTS AND REVISIONS:

15.1 DESCRIPTION

- A. Field tests and revisions of water and sewer mains shall be successfully completed prior to final acceptance. All discrepancies shall be corrected by the CONTRACTOR to make a complete and workable system.

15.2 MATERIALS AND TESTS

- A. Sewer:

1. Alignment: After joints have been inspected and approved and trench backfilled as specified, the ENGINEER shall check alignment between manholes or manhole locations. Any misplaced pipes detected shall be corrected to line and grade at the CONTRACTOR'S expense.
2. Deflection: In accordance with OAC 252:656-5-5(a), CONTRACTOR shall perform deflection tests on all flexible pipe after the final backfill has been in place at least 30 days. Deflection must not exceed 5%. Tests must be run using a rigid ball or mandrel with a diameter equal to 95% of the inside diameter of the pipe, taking into account manufacturing tolerances. Tests must be performed without mechanical pulling devices. Tests must be in accordance with applicable ASTM standards.
3. Line Leakage Test: Leakage tests shall be required for all new construction in accordance with OAC 252:656-5-5(b). The leakage test shall be an exfiltration test, whereby a minimum positive head of two (2) feet shall be exerted on a section of line by plugging the lower end and filling the manhole upstream with water. The leakage outward shall not exceed 10 gallons per inch of pipe diameter per mile per day (10 gallons/inches/miles/day) for any section of the system. If infiltration is observed due to hydrostatic ground water leakage the infiltration shall be reduced so as not to exceed 10 gallons/inches/miles/day. The procedures listed in the Handbook of PVC Pipe, Uni-Bell PVC Pipe Association, 2001 may be used for PVC pipe. Pipe testing must meet the provisions for the applicable ASTM standard

for the test to be used.

4. Manhole Leakage Test: Leakage tests shall be required for all new construction in accordance with OAC 252:656-5-4(g)(7) and shall be performed per ASTM C1244.
5. Where test results, in the opinion of the ENGINEER, indicated construction deficiencies, the CONTRACTOR shall make all effort to locate same and make satisfactory corrections. Infiltration through manhole walls shall be corrected regardless of the results of these tests.

B. Water:

1. Hydrostatic and Leakage Test:

- a. PVC: Shall be in accordance with AWWA C605 procedures. After the pipe has been laid and backfilled, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic gauge pressure of 200 psi, for a duration of two hours, said pressure not to vary more than five pounds, except that PVC pipe shall be tested a design working pressure.
 - b. HDPE: Shall be in accordance with AWWA C906 procedures. After the pipe has been laid and backfilled, subject the pipe to a pressure of 1.5 times the design working pressure at the lowest point in the test section is used as the test pressure. Acceptance is found by reducing the test pressure by 10 psi and monitoring the pressure for one hour. If the pressure remains steady – within five percent of the target value – for one hour, leakage is not indicated.
2. Each valved section of pipe shall be slowly filled with water and the specified test pressure, based on the elevation of the lowest point of the line of lowest point of the section under test, and corrected to the elevation of the test gauge shall be applied by means of a test pump connected to the pipe in a manner satisfactory to the ENGINEER. The CONTRACTOR shall make arrangements for metering the amount of water used during the test.
3. The CONTRACTOR shall backfill all pipe and provide all reaction blocking before hydrostatic testing. It shall be the CONTRACTOR'S responsibility to locate and repair any and all leaks that may develop. The ENGINEER may direct the CONTRACTOR to leave certain joints and connections uncovered until testing has been completed.
- a. Before applying the specified test pressure, all air shall be expelled from the pipe. If hydrants or blow-offs are not available at high places taps at points of highest elevation shall be made before test is made and plugs inserted after the test has been completed. Any cracked or defective pipe, fittings, valves or hydrants discovered in consequence of this pressure test shall be removed and replaced with sound material and the test shall be repeated until satisfactory to the ENGINEER.
 - b. In conjunction with the hydrostatic test, a leakage test shall be conducted as detailed in Section 4 of ANSI/AWWA Specification C-600/605, a portion of which is stated below.
 - c. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within

5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{ND P^{1/2}}{7400}$$

in which "L" is the allowable leakage in gallons per hour; "N" is the number of joints in the length of pipe test; "D" is the nominal diameter of the pipe, in inches; and "P" is the average test pressure during the leakage test, in pounds per square inch gage. Allowable leakage per 1000 ft. of pipeline in gallons per hour at 200 psi for selected pipe diameters is listed below for 18-foot nominal lengths. Leakage tests for PVC pipe shall be at the design working pressure.

Nominal Pipe Diameter (Inches)	Allowable Leakage Per 1000 Feet of Pipeline (GPH)
2	0.22
3	0.33
4	0.44
6	0.65
8	0.87
10	1.09
12	1.31
Nominal Pipe Diameter (Inches)	Allowable Leakage Per 1000 Feet of Pipeline (GPH)
16	1.74
18	1.96
20	2.18
24	2.61
30	3.27
36	3.92
42	4.58
48	5.23
54	5.88

- d. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons/hours/inches of nominal valve size shall be allowed. When hydrants are in the test section, the test shall be made against the closed hydrant. Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than that specified, the CONTRACTOR shall, at his own expense, locate and repair the defect until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.
- e. In accordance with OAC 252:626-19-2 (e), leakage must not exceed 10 gal/inch diameter per mile of pipe per 24 hours at 150 psi testing pressure.
4. Disinfection of Waterlines: All waterlines shall be flushed and disinfected, after testing and before being placed in service, by the methods detailed in AWWA C-601 except as modified herein.
 - a. Chlorine shall be introduced into the main in a liquid solution or as dry gas in a

continuous feed unless otherwise approved by the ENGINEER.

- b. The results of the disinfection procedure shall produce a residual of a minimum of ten parts per million (10 ppm) of chlorine in the portion of the main farthest from the point of application, after a period of twenty-four (24) hours has elapsed, as well as any other portion of the main. Samples shall be taken at location determined by the ENGINEER for tests of residual chlorine.
5. Water and sewer lines shall be constructed at the locations shown on the plans or as directed by the ENGINEER. Planned locations, grades or depths shall be adhered to unless, in the opinion of the ENGINEER, actual field conditions dictate revisions thereof. When the ENGINEER considers it necessary to deviate from planned locations, the CONTRACTOR shall construct said water or sewer lines to new alignment and/or grades established by the ENGINEER or as directed by the ENGINEER, such directions, construction stakes showing alignment and depth of cut, or revised construction plans issued by the ENGINEER.

15.3 BASIS OF PAYMENT

- A. No extra payment will be made for construction to revised locations other than increased or decreased quantities of pipe, fittings, manholes, or other items tabulated on the proposal. No extra payment will be made for additional excavation required by deviations from planned alignment or grades. Leakage tests will not be measured for payment, but the cost shall be included in other bid items. The CONTRACTOR'S bid price for waterlines to include all costs of hydrostatic and leakage test and sterilization as no separate payment will be made for these items.

END OF SECTION 33 11 00

SECTION 33 12 17 – WATER METER BOX AND LID

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish, install all labor, materials, equipment, and services as required to complete all residential meter boxes and lids as specified herein.

1.2 DELIVERY, STORAGE, HANDLING

- A. Individual equipment components shall be crated in structurally adequate packing containers to prevent damage during shipping, facilitate ease of handling and to provide suitable protection from weather for extended storage at the jobsite prior to installation. Packing containers shall be permanently labeled with appropriate equipment identification, shipping address and return address. Packing list shall be provided with equipment at the time of delivery.
- B. Electrical equipment shall be kept thoroughly dry at all times and shall be stored indoors. Equipment storage shall be protected and maintained in accordance with the manufacturer's recommendations. Equipment shall not be stored directly on the ground. Equipment to be installed inside shall be stored inside.
- C. The CONTRACTOR shall utilize equipment and tools of adequate size suitable for unloading, transporting, storing and supporting the equipment during installation. Caution shall be employed to prevent equipment damage resulting from abrupt contact with other materials or equipment.

PART 2 - PRODUCTS

2.1 ACCEPTABLE SUPPLIERS

- A. Carson Industries, LLC
- B. DFW Plastics, Inc.
- C. ENGINEER approved equal

2.2 DIMENSIONS

- A. Box Requirements
 - 1. Box shall be round.
 - 2. Material shall be plastic.
 - 3. DFW 800 A.B. Body.
- B. Lid Requirements
 - 1. Lid shall be round (anti-float).
 - 2. Material shall be plastic.

3. DFW 18 AMR-AF1EQAF (anti-float) .

PART 3 - EXECUTION

3.1 GENERAL

- A. The GENERAL CONTRACTOR shall assume full responsibility for coordination of the entire project, including verification all structures, piping, coating systems and equipment components are compatible. The GENERAL CONTRACTOR shall initially operate each equipment system and shall make all necessary adjustments so that each system is placed in proper operating condition.
- B. Equipment and materials utilized for this project must be approved by the ENGINEER prior to installation. Approval for installation or incorporation in this project will be made only after submittal or manufacturer's shop and installation drawings, test results or other data as specified herein.
- C. Installation of equipment shall be in full conformance with the manufacturer's shop drawings and requirements as approved by the ENGINEER. Wherever a conflict arises between manufacturer's instructions and the contract documents, the contractor shall follow the ENGINEER'S decision at no additional cost to the OWNER.

END OF SECTION 33 12 17

SECTION 33 12 18 – METER RISER

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish, install all labor, materials, equipment, and services as required to complete all residential meter settings as specified herein.

1.2 DELIVERY, STORAGE, HANDLING

- A. Individual equipment components shall be crated in structurally adequate packing containers to prevent damage during shipping, facilitate ease of handling and to provide suitable protection from weather for extended storage at the jobsite prior to installation. Packing containers shall be permanently labeled with appropriate equipment identification, shipping address and return address. Packing list shall be provided with equipment at the time of delivery.
- B. Electrical equipment shall be kept thoroughly dry at all times and shall be stored indoors. Equipment storage shall be protected and maintained in accordance with the manufacturer's recommendations. Equipment shall not be stored directly on the ground. Equipment to be installed inside shall be stored inside.
- C. The CONTRACTOR shall utilize equipment and tools of adequate size suitable for unloading, transporting, storing and supporting the equipment during installation. Caution shall be employed to prevent equipment damage resulting from abrupt contact with other materials or equipment.

PART 2 – PRODUCTS

2.1 ACCEPTABLE SUPPLIERS

- A. Uponor North America
- B. SharkBite®
- C. ENGINEER approved equal

PART 3 - EXECUTION

3.1 GENERAL

- A. The GENERAL CONTRACTOR shall assume full responsibility for coordination of the entire project, including verification all structures, piping, coating systems and equipment components are compatible. The GENERAL CONTRACTOR shall initially operate each equipment system and shall make all necessary adjustments so that each system is placed in proper operating condition.

- B. Equipment and materials utilized for this project must be approved by the ENGINEER prior to installation. Approval for installation or incorporation in this project will be made only after submittal or manufacturer's shop and installation drawings, test results or other data as specified herein.
- C. Installation of equipment shall be in full conformance with the manufacturer's shop drawings and requirements as approved by the ENGINEER. Wherever a conflict arises between manufacturer's instructions and the contract documents, the CONTRACTOR shall follow the ENGINEER'S decision at no additional cost to the OWNER.
- D. Meters shall be brought and set to grade with PEX pipe utilizing metal ring compression crimping.

END OF SECTION 33 12 18

SECTION 33 13 00 - DISINFECTION**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. This section covers the requirements for disinfecting waterlines or structures that will hold or carry potable water. Before the use of water is permitted from any portion of newly constructed waterline or structure that will hold or carry potable water, it shall be disinfected and flushed or cleaned.

1.2 SUBMITTAL

- A. The CONTRACTOR shall submit the following: Chlorine residuals immediately after the chlorine application.
 - 1. Chlorine residuals after the 24-hour retention period, but before the chlorinated water is flushed.
 - 2. Chlorine residuals after the chlorinated water is flushed.
 - 3. Results of the bacteriologic quality tests conducted after the waterline or structure is disinfected and flushed.

PART 2 - PRODUCTS**2.1 MATERIAL**

- A. The waterline or structure shall be disinfected by the use of liquid chlorine gas water mixture.

PART 3 - EXECUTION**3.1 FLUSHING AND CLEANING**

- A. Prior to disinfection, all dirt and foreign matter shall be removed by a thorough flushing or cleaning of the newly laid pipeline or newly constructed structure.

3.2 CHLORINE APPLICATION

- A. A chlorine gas water mixture shall be applied by means of a solution feed chlorinating device. The rate of the chlorine gas water mixture flow shall be in such proportion to the rate of water entering the pipe or structure that the chlorine dose applied to the water entering the pipe or structure shall be 50 to 100 parts per million.
- B. The treated water shall be retained in the pipe or structure at least 24 hours, and then flushed to waste.
- C. The chlorine residual shall not be less than 10 ppm at any point in the pipe or structure at the end of the retention period.

- D. During the application of the chlorine and during the retention period, all necessary precautions, such as closing valves, shall be taken to prevent the chlorinated water from flowing back into the line supplying the water.
- E. As an alternate and supplement to the above, the CONTRACTOR shall use any of the methods described in the latest revisions of AWWA C-601 and AWWA B-100.

3.3 BACTERIOLOGIC TESTS

- A. After final flushing and before the waterline or structure is placed in service, samples shall be collected from the end of the line or as directed and tested for bacteriologic quality and shall show the absence of coliform organisms on two (2) consecutive days as per ODEQ 252:626-19-2(f).

END OF SECTION 33 13 00

1. HORIZONTAL/VERTICAL CONTROL
HORIZONTAL DATUM IS BASED ON THE OKLAHOMA STATE PLANE COORDINATE SYSTEM (NORTH ZONE) NAD 83. VERTICAL DATUM IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)
2. BASIS OF BEARINGS:
BEARINGS ARE BASED ON GRID NORTH (N00°00'00"E)

KIOWA STREET

BM #1
CUT "X" ON CONC. CURB
N: 734117.535
E: 2298216.053
ELEV.=1011.09'

INDEPENDENCE STREET

BM #2
CUT "X" ON CONC. SIDEWALK
N: 734691.222
E: 2298150.036
ELEV.=1019.03'

BM #3
CUT "X" ON CONC. CURB
N: 734737.264
E: 2297422.727
ELEV.=1022.06'

BM #4
CUT "X" ON CONC. SIDEWALK
N: 734741.245
E: 2296673.734
ELEV.=1039.18'

BM #5
CUT "X" ON CONC. CURB
N: 734683.145
E: 2295598.600
ELEV.=1085.71'

BM #6
CUT "X" ON CONC. CURB
N: 734731.182
E: 2294979.576
ELEV.=1090.32'

N. CENTER AVE

BM #7
CUT "X" ON CONC. SIDEWALK
N: 734684.459
E: 2294263.200
ELEV.=1090.10'

BM #8
CUT "X" ON CONC. CURB
N: 734053.174
E: 2294273.322
ELEV.=1088.35'

BM #9
CUT "X" ON CONC. CURB
N: 733507.829
E: 2294317.755
ELEV.=1081.07'

<u>COMPANY NAME</u>	<u>CONTACT NAME</u>	<u>PHONE NUMBER</u>
SHAWNEE UTILITIES	SHAWNEE PUBLIC WORKS	405-273-1960
OG&E ENERGY CORPORATION	RAE ANN LAWRENCE, P.E. SENIOR LAND MANAGEMENT COORDINATOR	405-553-5785 (O) 405-388-8599 (C)
OG&E ENERGY CORPORATION	TIM THOMPSON	405-401-7229
AT&T OKLAHOMA	JOE ANDERSON	539-444-1026
OKLAHOMA NATURAL GAS	ALEXANDRIA MARSHALL	405-551-6889
BLUEPEAK	JERRY LEIBY	JERRY.LEIBY@MYBLUEPEAK.COM

----- 1200 -----	EXISTING CONTOUR
----- 1200 -----	PROPOSED CONTOUR
-----	SECTION LINE
-----	QUARTER SECTION LINE
-----	RIGHT-OF-WAY (EXISTING)
-----	RIGHT-OF-WAY (PROPOSED)
-----	EXISTING ROAD
-----	PROPOSED ROAD
X-----X	FENCES
-----	POWER OVERHEAD
PUG-----	POWER UNDERGROUND
TUG-----	TELEPHONE UNDERGROUND
G-----	GAS LINE
W-----	WATER LINE
SS-----	SANITARY SEWER LINE
=====	STORM SEWER (EXISTING)
=====	STORM SEWER (PROPOSED)



- (1) AN EFFORT HAS BEEN MADE TO LOCATE AND SHOW APPROXIMATE LOCATION OF UNDERGROUND UTILITY LINES. BURIED UTILITIES ARE NOT NECESSARILY SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PRESERVE ALL UTILITIES.
- (2) CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES WITHIN WORK ZONE PRIOR TO CONSTRUCTION.

Permit Number: WL000063230358
Date Received: May 11 2023

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES
3	PAY QUANTITIES & NOTES
4	STORMWATER MANAGEMENT PLAN
5	SURVEY DATA
6	OVERALL MAP
7-14	LINE 1 P&P
15	LINE 1A & LINE 1B P&P
16-17	LINE 2 P&P
18-20	LINE 3 P&P
22-24	WATER DETAILS
25-29	SPECIAL DETAILS
30	EROSION CONTROL DETAIL

APPROVED

May 25 2023

Rocky W. Chen, P.E.

Water Quality Division

Alan Davis

D. Adam Divine, P.E.

Construction Permitting Section

PREPARED BY



MICHAEL TAYLOR, P.E.
OKLAHOMA REGISTERED PROFESSIONAL ENGINEER NO. 27655
COWAN GROUP ENGINEERING, LLC
OKLAHOMA CERTIFICATE OF AUTHORIZATION NO. 6414
EXPIRES JUNE 30, 2024

WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

TITLE SHEET

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	22-223
DATE	4/28/2023

REVISIONS

SHEET NUMBER

Friday, April 28, 2023 11:17:04 AM

GENERAL CONSTRUCTION NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE, FEDERAL, AND LOCAL STANDARDS AND SPECIFICATIONS AND THE REQUIREMENTS OF THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY. WHERE IN CONFLICT THE MOST STRINGENT REQUIREMENT SHALL APPLY.
2. ANY CONSTRUCTION ITEMS THAT ARE NOT LISTED IN THE SUMMARY OF QUANTITIES SHALL BE CONSIDERED INCIDENTAL CONSTRUCTION ITEMS. THE COST OF INCIDENTAL CONSTRUCTION ITEMS SHALL BE INCLUDED IN THE COST OF OTHER BID ITEMS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH ALL PUBLIC AND/OR PRIVATE UTILITY COMPANIES IN THE VICINITY OF CONSTRUCTION.
4. EXISTING UTILITIES AND THEIR LOCATIONS, AS SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION OBTAINABLE FOR DESIGN. LOCATION INFORMATION HAS BEEN OBTAINED FROM THE VARIOUS UTILITY COMPANIES AND IS EITHER FROM COMPANY RECORD DRAWINGS OR COMPANY PROVIDED FIELD LOCATIONS. THE PLAN LOCATIONS SHOWN ARE NOT GUARANTEED. ADDITIONAL EXISTING UTILITIES MAY ALSO BE ENCOUNTERED.
5. RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES AND EXCESS EXCAVATION WHICH IS TO BE WASTED ON SITES TO BE PROVIDED BY THE CONTRACTOR. THESE SITES SHALL BE APPROVED BY THE ENGINEER AS TO SUITABILITY. ALL DISPOSAL SITES MUST BE APPROVED BY THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOOD PLAIN SHALL REQUIRE THE NECESSARY PERMITS. ANY MATERIAL DUMPED IN THE WATERS OF THE UNITED STATES OR WETLANDS IS SUBJECT TO U.S. CORP OF ENGINEERS PERMITTING REGULATIONS. ANY MATERIAL BURIED OR STOCKPILED BEYOND APPROVED CONSTRUCTION LIMITS WOULD REQUIRE ADDITIONAL ARCHAEOLOGICAL INVESTIGATIONS AND STATE APPROVAL.
6. A COPY OF THE EROSION CONTROL SITE PLANS AND THE STORM WATER POLLUTION PREVENTION PLAN MUST BE ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE INSPECTOR UPON REQUEST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION , MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL EROSION CONTROL DEVICES DAMAGED DUE TO CONSTRUCTION.
7. CONTRACTOR SHALL PROVIDE BONDS AND PROOF OF INSURANCE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
8. CONSTRUCTION STAKING AND TESTING SHALL BE PROVIDED BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL GIVE ALL PROPERTY OWNERS AND/OR TENANTS OF DEVELOPED PROPERTY DIRECTLY ABUTTING CONSTRUCTION OF THIS PROJECT MINIMUM OF TEN (10) DAYS NOTICE PRIOR TO START OF CONSTRUCTION.
10. THE CONTRACTOR SHALL AVOID TREE DAMAGE IF AT ALL POSSIBLE AND SHALL PRUNE ALL ROOTS DAMAGED DURING CONSTRUCTION ACTIVITIES
11. ALL WATER LINE MAINS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF FOUR (4) FEET, UNLESS OTHERWISE NOTED.
12. SHOP DRAWINGS FOR ALL PIPE MATERIALS INCLUDING BUT NOT LIMITED TO VALVES, FITTINGS, AND PIPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION BEGINS.
13. ALL DISTURBED AREAS SHALL HAVE 4” TOPSOIL AND SOLID SLAB SOD LAID. CONTRACTORS SHALL TAKE NECESSARY MEASURES TO RE-ESTABLISH SOD. PRICE BID TO INCLUDE COST OF (10–20–10) FERTILIZER, ESTIMATED AT 200 POUNDS PER 1000 SY. OF SODDING. PRICE BID ALSO TO INCLUDE COST OF WATERING, ESTIMATED AT 40 GALLONS PER SY.
14. WATER VALVES TO BE ABANDONED IN SIDEWALKS OR PAVEMENT SHALL BE CLOSED; POUR CONCRETE OVER VALVE, PULL VALVE BOX, AND REPAIR SIDEWALK OR PAVING.
15. CONTRACTOR SHALL CONDUCT PRESSURE TESTS AND DISINFECTION ON ALL WATER MAINS PRIOR TO CONNECTION TO EXISTING DISTRIBUTION SYSTEM.

PRESSURE AND LEAKAGE TESTS SHALL BE PERFORMED BY CONTRACTOR IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY OAC252:626–19–2(E) AND LATEST REVISION OF AWWA C906.

DISINFECTION TESTS SHALL BE PERFORMED BY CONTRACTOR IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY OAC252:626–19–2(F) AND LATEST REVISION OF AWWA STANDARD SPECIFICATIONS.

16. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC CONTROL IN ACCORDANCE WITH FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THE CONTRACTOR IS RESPONSIBLE FOR THE PROMPT REPLACEMENT AND/OR REPAIR OF ALL TRAFFIC CONTROL DEVICES AND APPURTENANCES DAMAGED OR DISTURBED DUE TO CONSTRUCTION. COST OF TRAFFIC CONTROL SHALL BE CONSIDERED INCIDENTAL AND INCLUDED IN THE COST OF OTHER BID ITEMS.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE REQUIRED 10 FOOT HORIZONTAL AND 2 FOOT VERTICAL SEPARATION BETWEEN SANITARY SEWER AND POTABLE WATER MAINS AND 5 FOOT HORIZONTAL AND 2 FOOT VERTICAL SEPARATION BETWEEN WATER MAINS AND OTHER UTILITIES
18. CONTRACTOR SHALL MAINTAIN WATER SERVICE DURING CONSTRUCTION. CONNECTION SHALL BE COORDINATED WITH OWNER AND COMPLETED IN A TIMELY MANNER TO MINIMIZE INTERRUPTION TO SERVICE.
19. ALL EXISTING WATER MAINS AND APPURTENANCES BEING ABANDONED BY ANY PROJECT ARE TO REMAIN THE PROPERTY OF SHAWNEE WATER DEPARTMENT, AND SHALL BE SALVAGED FOR THE SHAWNEE WATER DEPARTMENT.
20. IN INSTANCES WHERE FLOW LINES ARE NOT INDICATED ON THE DRAWINGS, MAIN SHALL BE CONSTRUCTED WITH A MINIMUM OF 4’ COVER, OR AS DIRECTED BY THE CITY ENGINEER AND IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY STANDARDS.
21. ALL EMBANKMENTS AND BACKFILL SHALL MEET THE STANDARD SPECIFICATION.
22. ANY CONSTRUCTION PROCEDURES NOT COVERED IN THE PLANS AND SPECIFICATIONS WILL BE EXECUTED IN ACCORDANCE WITH PROPER CONSTRUCTION TECHNIQUES AND SHALL BE APPROVED BY THE ENGINEER.
27. CONTRACTOR IS RESPONSIBLE FOR PROMPT REPLACEMENT OF ANY FENCE DISTURBED DURING CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL.

STATE OF OKLAHOMA
Department of Environmental Quality

APPROVED

May 25 2023

Rocky W. Chen, P.E.

Water Quality Division

Adam Divine

D. Adam Divine, P.E.

Construction Permitting Section



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CA# 6414 EXPIRES 6/30/2024

WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

GENERAL NOTES

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	22-223
DATE	4/28/2023

REVISIONS

SHEET NUMBER
2

G:\PROJECTS\22-223 SHAWNEE INDEPENDENCE WATERLINE\CAD\WTR\22-223 PAY QUANTITIES & NOTES.DWG

PAY QUANTITIES

BASE BID - LINE 1

ITEM #	ITEM	NOTES	UNIT	QUANTITY	AS-BUILT
1	MOBILIZATION		LS	1	
2	CLEARING AND GRUBBING		LS	1	
3	SOLID SLAB SOD	(3)(4)	SY	310	
4	STORMWATER POLLUTION PREVENTION PLAN	(2)	LS	1	
5	16" STEEL CASING (BORE)		LF	114	
6	8" HDPE DR-11 WATERLINE (BORE)		LF	201	
7	12" HDPE DR-11 WATERLINE (HDD)	(12)	LF	3,799	
8	6" HDPE DR-11 WATERLINE (TRENCHING)	(4)(5)	LF	21	
9	8" HDPE DR-11 WATERLINE (TRENCHING)	(4)(5)	LF	118	
10	12" HDPE DR-11 WATERLINE (TRENCHING)	(4)(5)	LF	146	
11	6" GATE VALVE & BOX		EA	11	
12	8" GATE VALVE & BOX		EA	4	
13	12" GATE VALVE & BOX		EA	12	
14	1" AIR RELIEF VALVE		EA	4	
15	6"x6" TAPPING SLEEVE & VALVE W/ BOX	(11)	EA	9	
16	8"x8" TAPPING SLEEVE & VALVE W/ BOX	(11)	EA	1	
17	12"x12" TAPPING SLEEVE & VALVE W/ BOX	(11)	EA	1	
18	HDPE WALL ANCHOR	(13)	EA	10	
19	FIRE HYDRANT ASSEMBLY	(8)	EA	10	
20	MECHANICAL JOINT FITTINGS	(6)	LB	5,157	
21	WATER SERVICE RECONNECTION (SHORT)		EA	11	
22	WATER SERVICE RECONNECTION (LONG)		EA	11	
23	LEAD SERVICE REPLACEMENT (SHORT)		EA	1	
24	LEAD SERVICE REPLACEMENT (LONG)		EA	1	
25	REMOVE & REPLACE CONCRETE PAVEMENT	(7)(9)	SY	10	
26	REMOVE & REPLACE CONCRETE DRIVE	(7)(9)	SY	60	
27	REMOVE & REPLACE ASPHALT PAVEMENT	(9)	SY	100	
28	REMOVE & REPLACE CONCRETE SIDEWALK	(10)	SY	145	
29	REMOVE & REPLACE INLET STRUCTURE		EA	1	
30	REMOVE EXISTING FIRE HYDRANT		EA	9	
31	CONSTRUCTION SIGNING AND TRAFFIC CONTROL		LS	1	
32	TEMPORARY EROSION AND SEDIMENT CONTROL	(1)	LS	1	
33	PRESSURE AND LEAKAGE TESTING		LS	1	
34	DISINFECTION AND TESTING		LS	1	

ADD ALT. 1

ALT. 1 - LINE 2

ITEM #	ITEM	NOTES	UNIT	QUANTITY	AS-BUILT
1	MOBILIZATION		LS	1	
2	CLEARING AND GRUBBING		LS	1	
3	SOLID SLAB SOD	(3)(4)	SY	20	
4	STORMWATER POLLUTION PREVENTION PLAN	(2)	LS	1	
5	12" HDPE DR-11 WATERLINE (HDD)	(12)	LF	991	
6	8" HDPE DR-11 WATERLINE (TRENCHING)	(4)(5)	LF	3	
7	12" HDPE DR-11 WATERLINE (TRENCHING)	(4)(5)	LF	8	
8	6" GATE VALVE & BOX		EA	1	
9	8" GATE VALVE & BOX		EA	1	
10	12" GATE VALVE & BOX		EA	2	
11	8"x8" TAPPING SLEEVE & VALVE W/ BOX	(11)	EA	1	
12	HDPE WALL ANCHOR	(13)	EA	4	
13	FIRE HYDRANT ASSEMBLY	(8)	EA	1	
14	MECHANICAL JOINT FITTINGS	(6)	LB	281	
15	REMOVE & REPLACE ASPHALT PAVEMENT	(9)	SY	11	
16	REMOVE & REPLACE CONCRETE SIDEWALK	(10)	SY	10	
17	REMOVE EXISTING FIRE HYDRANT		EA	1	
18	CONSTRUCTION SIGNING AND TRAFFIC CONTROL		LS	1	
19	TEMPORARY EROSION AND SEDIMENT CONTROL	(1)	LS	1	
20	PRESSURE AND LEAKAGE TESTING		LS	1	
21	DISINFECTION AND TESTING		LS	1	

PAY QUANTITY NOTES

- TEMPORARY EROSION AND SEDIMENT CONTROL SHALL CONSIST OF TEMPORARY MEASURES WITHIN THE PROJECT LIMITS AND MINIMIZE POLLUTION OF RIVERS, STREAMS, AND PRIVATE PROPERTIES. SUCH MEASURES MAY INCLUDE SILT FENCES, BERMS, DIKES, SLOPE DRAINS, BALE BARRIERS, SEDIMENT FILTERS, SEDIMENT BASINS, SILT FENCES, MULCHES, AND GRASSES.
- INCLUDES COST FOR STORMWATER POLLUTION PREVENTION PLAN DOCUMENTATION AND MANAGEMENT AS PER ODEQ STANDARDS.
- ALL DISTURBED NON-PAVED AREAS SHALL BE SOLID SLAB SODDED. INCLUDES COST OF WATERING AT 40 GALLONS PER SQUARE YARD, AND FERTILIZING 10-20-10 AT 10 LBS PER 1000 SQUARE FEET.
- QUANTITY IS CALCULATED USING THE STANDARD TRENCH WIDTH AS SHOWN ON WATER DETAILS SHEET NO EXTRA PAYMENT IS MADE FOR ANY ADDITIONAL TRENCH WIDTH OR SODDING.
- COST OF EXCAVATION AND BACKFILL INCLUDING COST OF BEDDING MATERIALS AS PER STANDARD WATER DETAILS SHALL BE INCLUDED IN THE COST OF PIPE. NO ADDITIONAL PAYMENT SHALL BE MADE.
- QUANTITY INCLUDES ALL FITTINGS INCLUDING BUT NOT LIMITED TO TEES, CROSS. WYE, SOLID SLEEVES, BENDS, REDUCERS, CAPS, AND PLUGS TO MAKE CONNECTIONS TO EXISTING OR NEW WATER LINES.
- CONCRETE USED FOR DRIVE PLACEMENT AND PAVING SHALL BE 3,500 PSI HIGH EARLY STRENGTH CONCRETE. PRICE BID TO INCLUDE THE SAW CUTS OF CONCRETE. EXPANSION JOINTS AND DOWELS.
- FIRE HYDRANT ASSEMBLY COMPLETE PRICE BID ITEM TO INCLUDE THE COST OF (3 L.F. OF 6" WATER LINE , 1-FIRE HYDRANT, 4-6" MEGALUG SERIES 2006 PV, 1-12" RISER IF REQUIRED).
- ESTIMATED QUANTITY. LOCATION, IF AND WHERE REQUIRED, TO BE DETERMINED BY THE ENGINEER. COST TO INCLUDE CURB AND GUTTER.
- CONTRACTOR TO REMOVE AND REPLACE CONCRETE SIDEWALK TO THE NEAREST CONTRACTION JOINT TO MATCH EXISTING PANELS.
- EXISTING WATERLINES ARE SHOWN AT APPROXIMATE LOCATIONS ON PLANS. CONTRACTOR TO FIELD LOCATE THE EXISTING WATERLINES. CONNECTION TO EXISTING WATERLINE SHALL INCLUDE ALL COSTS FOR LABOR AND MATERIAL TO LOCATE AND CUT EXISTING WATERLINE AND INSTALL THE REQUIRED VALVES AND FITTINGS CONNECTING THE NEW WATERLINE. NO ADDITIONAL PAYMENT SHALL BE MADE.
- COST TO INCLUDE HDPE FITTINGS.
- SHALL BE PLACED IN EVERY BORE PIT AND AT MINIMUM EVERY 400 FEET. SEE SPECIAL DETAIL SHEET 28.

ADD ALT. 2

ALT. 2 - LINE 3

ITEM #	ITEM	NOTES	UNIT	QUANTITY	AS-BUILT
1	MOBILIZATION		LS	1	
2	CLEARING AND GRUBBING		LS	1	
3	SOLID SLAB SOD	(3)(4)	SY	30	
4	STORMWATER POLLUTION PREVENTION PLAN	(2)	LS	1	
5	8" HDPE DR-11 WATERLINE (HDD)	(12)	LF	1,161	
6	6" HDPE DR-11 WATERLINE (TRENCHING)	(4)(5)	LF	19	
7	6" GATE VALVE & BOX		EA	2	
8	8" GATE VALVE & BOX		EA	2	
9	12"x8" TAPPING SLEEVE & VALVE W/ BOX	(11)	EA	1	
10	HDPE WALL ANCHOR	(13)	EA	4	
11	FIRE HYDRANT ASSEMBLY	(8)	EA	2	
12	MECHANICAL JOINT FITTINGS	(6)	LB	317	
13	WATER SERVICE RECONNECTION (SHORT)		EA	15	
14	WATER SERVICE RECONNECTION (LONG)		EA	12	
15	REMOVE & REPLACE CONCRETE PAVEMENT	(7)(9)	SY	40	
16	REMOVE & REPLACE CONCRETE DRIVE	(7)(9)	SY	20	
17	REMOVE EXISTING FIRE HYDRANT		EA	2	
18	CONSTRUCTION SIGNING AND TRAFFIC CONTROL		LS	1	
19	TEMPORARY EROSION AND SEDIMENT CONTROL	(1)	LS	1	
20	PRESSURE AND LEAKAGE TESTING		LS	1	
21	DISINFECTION AND TESTING		LS	1	

STATE OF OKLAHOMA
Department of Environmental Quality

APPROVED

May 25 2023

Rocky W. Chen, P.E.

Water Quality Division

Adam Divine

D. Adam Divine, P.E.

Construction Permitting Section



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WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

PAY QUANTITIES
& NOTES

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REVISIONS

SHEET NUMBER

3

STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: PROJECT LOCATED IN SECTION 8 & 17, T10N, R4E, I.M.
SHAWNEE, OKLAHOMA.

PROJECT DESCRIPTION: 6500 LF OF WATERLINE IMPROVEMENTS.

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES: PRIOR TO INITIATING SOIL DISTURBING ACTIVITIES, THE CONTRACTOR WILL STRIP, STOCKPILE, AND STABILIZE TOPSOIL. CLEAR AND GRUB ONLY IN AREAS NECESSARY, PRESERVING AS MUCH NATIVE VEGETATION AS POSSIBLE. INSTALL, MAINTAIN, AND/OR MOVE TEMPORARY SEDIMENT ITEMS AS PRACTICAL WITH CONSTRUCTION OPERATIONS. IF DIRECTED BY THE ENGINEER, PLANT TEMPORARY SEEDING. PLACE SALVAGED TOPSOIL AND DEVICES WHEN AN ACCEPTABLE VEGETATION COVER (AT LEAST 70%) HAS BEEN ATTAINED. AS SITE CONDITIONS WARRANT, THE CONTRACTOR MAY CHOOSE TO MODIFY THE TYPE OR ARRANGEMENT OF SPECIFIED PRACTICES TO IMPROVE THEIR EFFECTIVENESS AS APPROVED BY THE ENGINEER. THE CONTRACTOR WILL MAINTAIN A LOG OF THE DATES OF MAJOR SOIL DISTURBANCE ACTIVITIES AND ALSO THE DATES OF INSTALLATION OF EROSION CONTROL MEASURES.

SOIL TYPE: AYDELOTTE LOAM

TOTAL AREA OF THE CONSTRUCTION SITE: 4.0 ACRE

ESTIMATED AREA TO BE DISTURBED: 0.5 ACRE

OFFSITE AREA TO BE DISTURBED:
(FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA
PRE-CONSTRUCTION: 3.0 ACRE

TOTAL IMPERVIOUS AREA
POST-CONSTRUCTION: 3.0 ACRE

POST-CONSTRUCTION RUNOFF
COEFFICIENT OF THE SITE: C=0.5

LATITUDE & LONGITUDE
OF CENTER OF PROJECT: 35°20'50"N, 96°54'07"W

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: CANADIAN RIVER

SENSITIVE WATERS OR WATERSHEDS: YES NO X

303 (d) IMPAIRED WATERS: YES X NO

IF YES, LIST IMPAIRMENT: ENTEROCOCCUS

LOCATED IN A TMDL: YES X NO

LAKE THUNDERBIRD TMDL: YES NO X

MS4 ENTITY YES X NO

IF YES, LOCATION:

NOTE:
THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- X TEMPORARY SEEDING
- X PERMANENT SODDING, SPRIGGING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION BLANKET
- X PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

- STABILIZED CONSTRUCTION EXIT
- X TEMPORARY SILT FENCE
- TEMPORARY SILT DIKES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ROCK FILTER DAMS
- TEMPORARY SLOPE DRAIN
- PAVED DITCH W/ DITCH LINER PROTECTION
- TEMPORARY DIVERSION CHANNELS
- TEMPORARY SEDIMENT BASINS
- TEMPORARY SEDIMENT TRAPS
- TEMPORARY SEDIMENT FILTERS
- TEMPORARY SEDIMENT REMOVAL
- RIP RAP
- X INLET SEDIMENT FILTER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBAG BERMS
- TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- HAUL ROADS DAMPENED FOR DUST CONTROL
- X LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- X EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

CONTRACTOR TO REMOVE SEDIMENT WHEN TEMPORARY DEVICES ARE HALF FULL OR AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGE WAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:

A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC., THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEANING UP
- 104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
- 104.13 ENVIRONMENTAL PROTECTION
- 106.08 STORAGE AND HANDLING OF MATERIAL
- 107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
- 107.20 STORM WATER MANAGEMENT
 - 220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
 - 221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:

"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.



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WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE

POTTAWATOMIE COUNTY, OKLAHOMA

STORMWATER
MANAGEMENT
PLAN

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	22-223
DATE	4/28/2023

REVISIONS

SHEET NUMBER	4
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WATER SYSTEM IMPROVEMENTS
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

SURVEY DATA	
DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	22-223
DATE	4/28/2023
REVISIONS	
SHEET NUMBER	
5	



BM-1
KIOWA STREET
CUT "X" ON CONC. CURB
N: 734117.535
E: 2298216.053
ELEV.=1011.09'

BM-2
INDEPENDENCE STREET
CUT "X" ON CONC. SIDEWALK
N: 734691.222
E: 2298150.036
ELEV.=1019.03'

BM-3
INDEPENDENCE STREET
CUT "X" ON CONC. CURB
N: 734737.264
E: 2297422.727
ELEV.=1022.06'

BM-4
INDEPENDENCE STREET
CUT "X" ON CONC. SIDEWALK
N: 734741.245
E: 2296673.734
ELEV.=1039.18'

BM-5
INDEPENDENCE STREET
CUT "X" ON CONC. CURB
N: 734683.145
E: 2295598.600
ELEV.=1085.71'

BM-6
INDEPENDENCE STREET
CUT "X" ON CONC. CURB
N: 734731.182
E: 2294979.576
ELEV.=1090.32'

BM-7
N. CENTER AVE.
CUT "X" ON CONC. SIDEWALK
N: 734684.459
E: 2294263.200
ELEV.=1090.10'

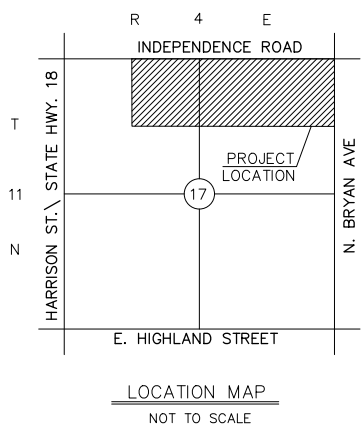
BM-8
N. CENTER AVE.
CUT "X" ON CONC. CURB
N: 734053.174
E: 2294273.322
ELEV.=1088.35'

BM-9
N. CENTER AVE.
CUT "X" ON CONC. CURB
N: 733507.829
E: 2294317.755
ELEV.=1081.07'



STATE OF OKLAHOMA
Department of Environmental Quality
APPROVED
May 25 2023
Rocky W. Chen, P.E.
Water Quality Division

D. Adam Divine, P.E.
Construction Permitting Section





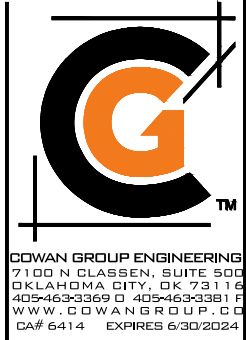
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WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

OVERALL MAP	
DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	22-223
DATE	4/28/2023
REVISIONS	
SHEET NUMBER	
6	

G:\PROJECTS\22-223 SHAWNEE INDEPENDENCE WATERLINE CAD\WTR\22-223 OVERALL MAP.DWG



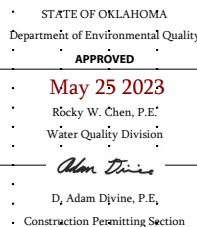
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

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SHEET NUMBER

7

~~Page 521 of 106~~





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WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

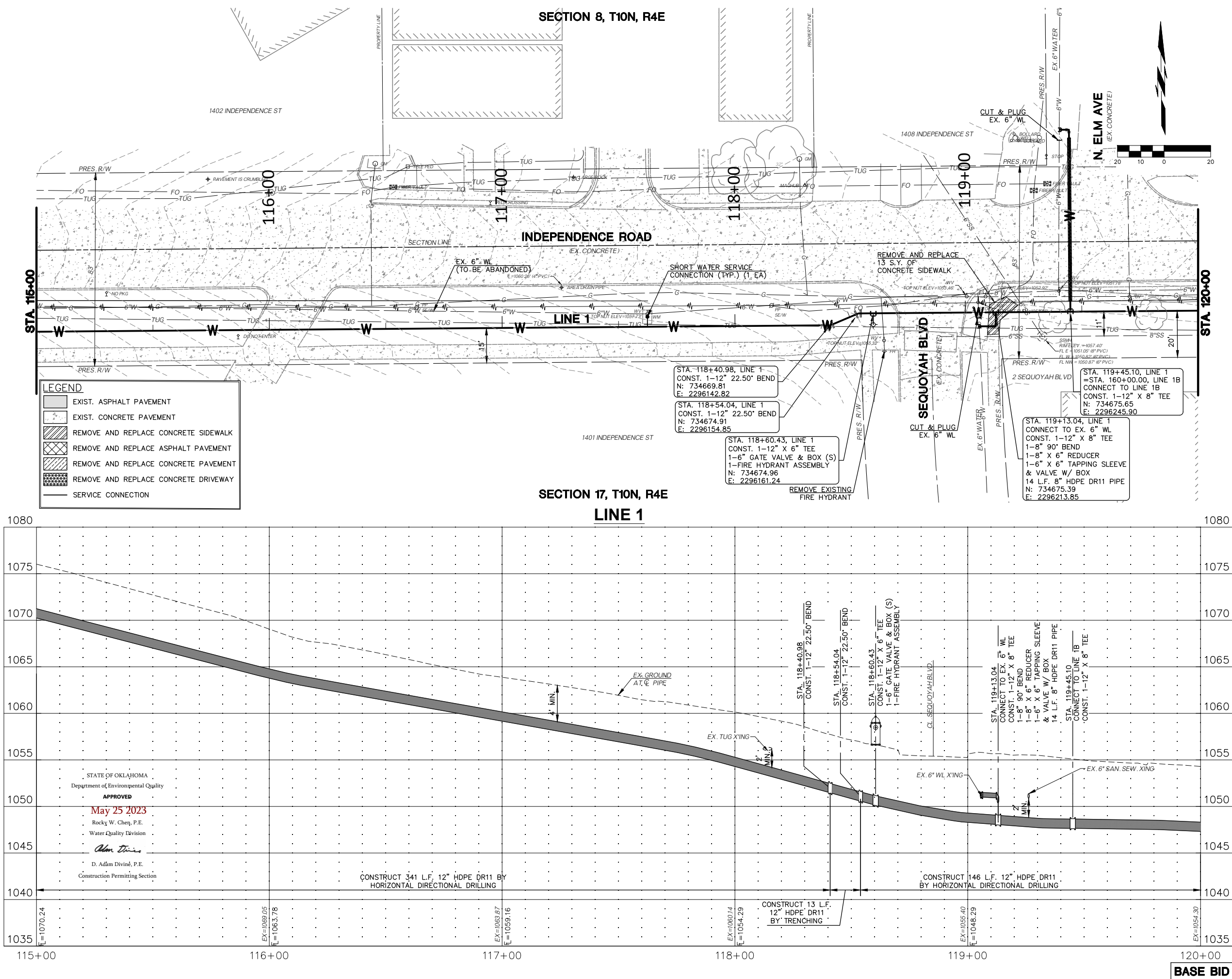
LINE 1 P&P
(4 OF 8)

DESIGNED BY	GMT
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REVIEWED BY	GMT
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REVISIONS

SHEET NUMBER

10



[illegible]

LINE 1

1060
1055
1050
1045
1040
1035
1030
1025
1020
1015

120+00 121+00 122+00 123+00 124+00 125+00

STATE OF OKLAHOMA
Department of Environmental Quality
APPROVED
May 25 2023
Rocky W. Chen, P.E.
Water Quality Division
Adam Divine
D. Adam Divine, P.E.
Construction Permitting Section

EX. GAS X'ING
2' MIN.
EX. FO X'ING
2' MIN.
EX. GROUND AT C PIPE
4' MIN.
EX. GAS X'ING
2' MIN.
EX. 6" WL X'ING
STA. 121+47.93
CONST. 1-12" 22.50' BEND
STA. 121+60.99
CONST. 1-12" 22.50' BEND
STA. 124+51.39
CONST. 1-12" X 6" TEE
1-6" GATE VALVE & BOX (N)
1-FIRE HYDRANT ASSEMBLY
STA. 124+64.67
CONNECT TO EX. 6" WL
CONST. 1-12" X 8" TEE
1-8" 90° BEND
1-8" X 6" REDUCER
1-6" X 6" TAPPING SLEEVE
22 L.F. 8" HDPE DR11 PIPE

CONSTRUCT 148 L.F. 12" HDPE DR11 BY
HORIZONTAL DIRECTIONAL DRILLING

CONSTRUCT 339 L.F. 12" HDPE DR11
BY HORIZONTAL DIRECTIONAL DRILLING

CONSTRUCT 13 L.F.
12" HDPE DR11
BY TRENCHING.

EX=1047.31
EX=1049.74
EX=1043.87
EX=1045.97
EX=1040.73
EX=1042.49
EX=1036.45
EX=1038.19
EX=1032.95
EX=1034.25

BASE BID

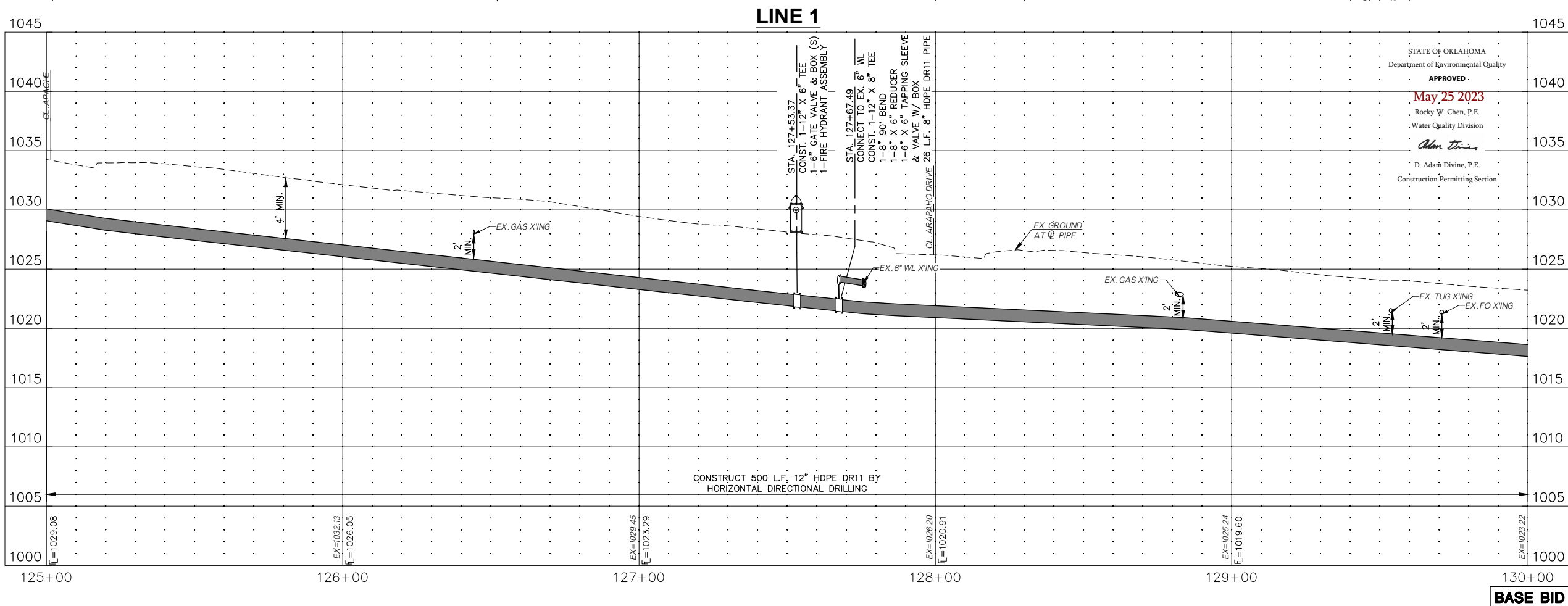
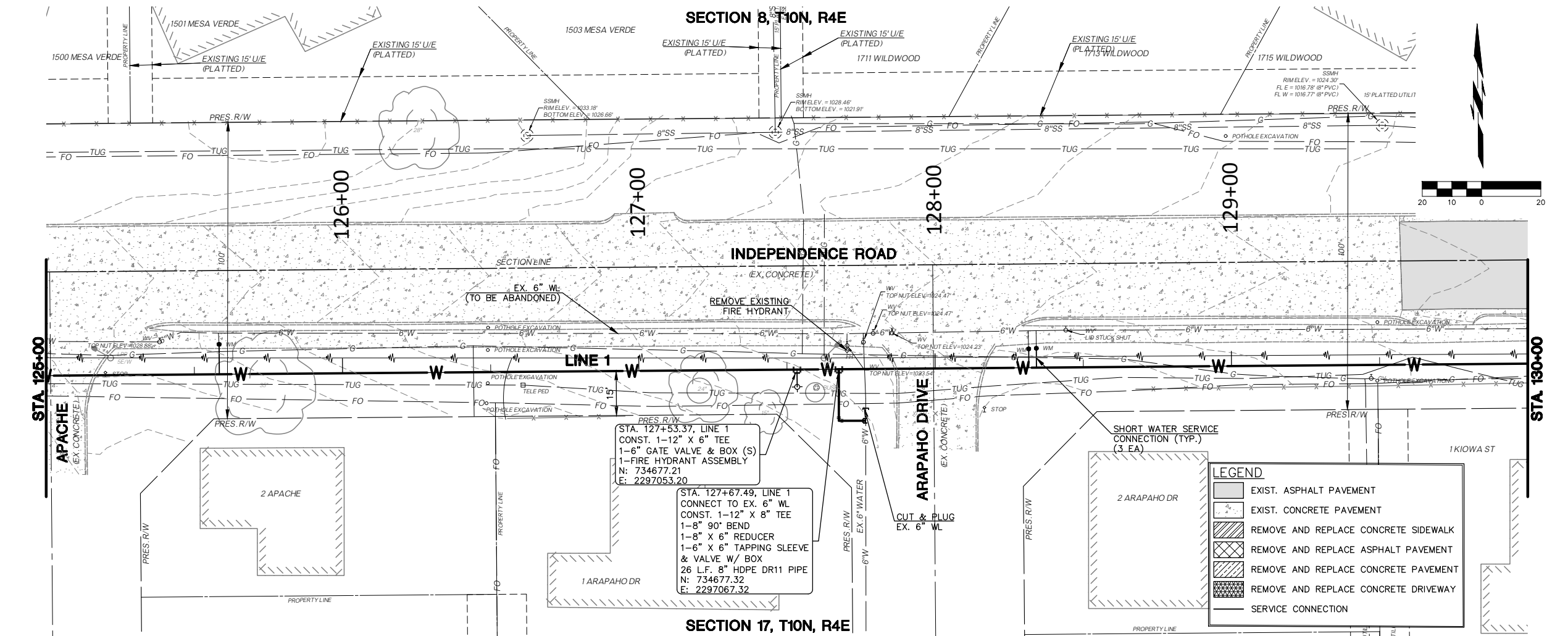
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

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DATE	4/28/2023

SHEET NUMBER

1

Friday, April 28, 2023 11:20:30 AM



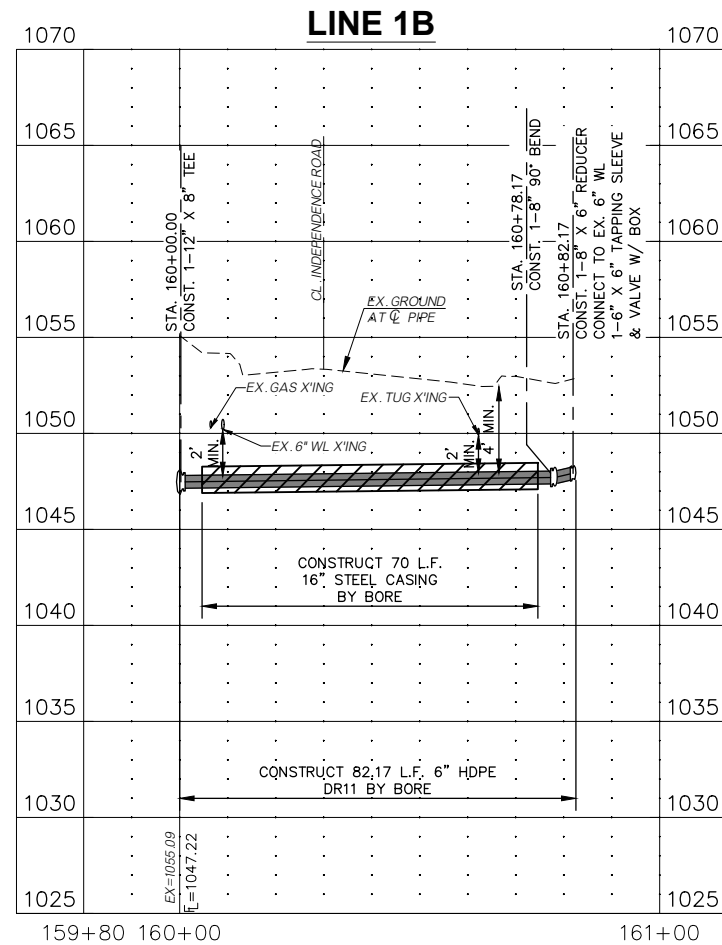
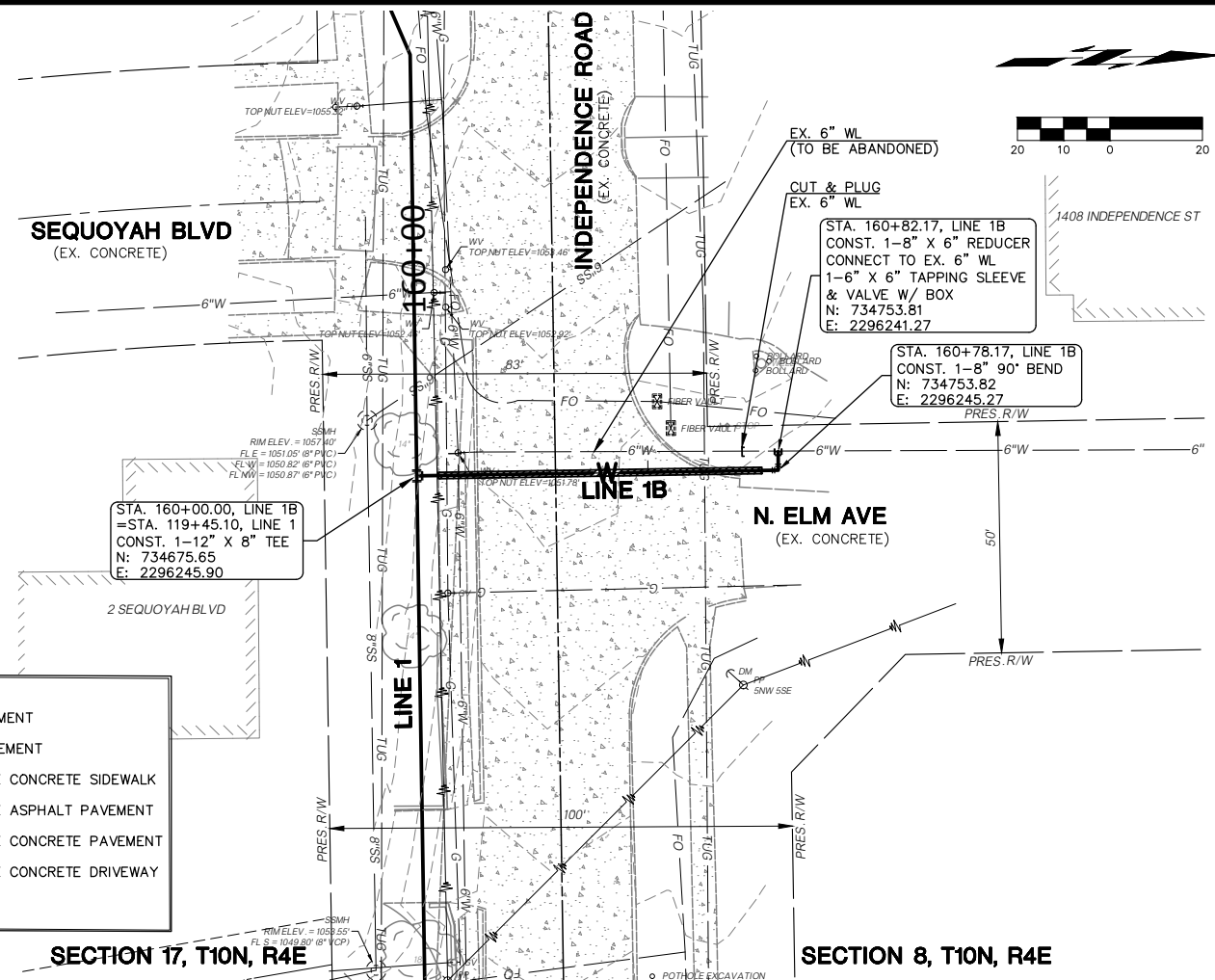
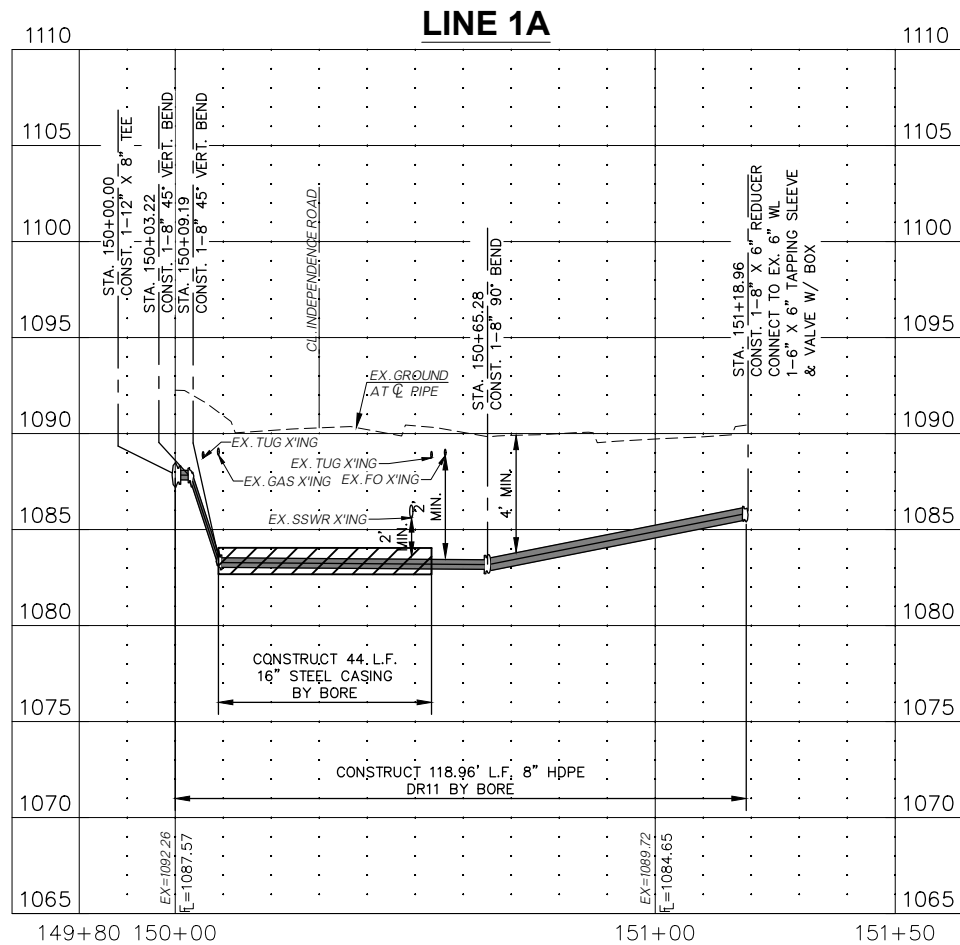
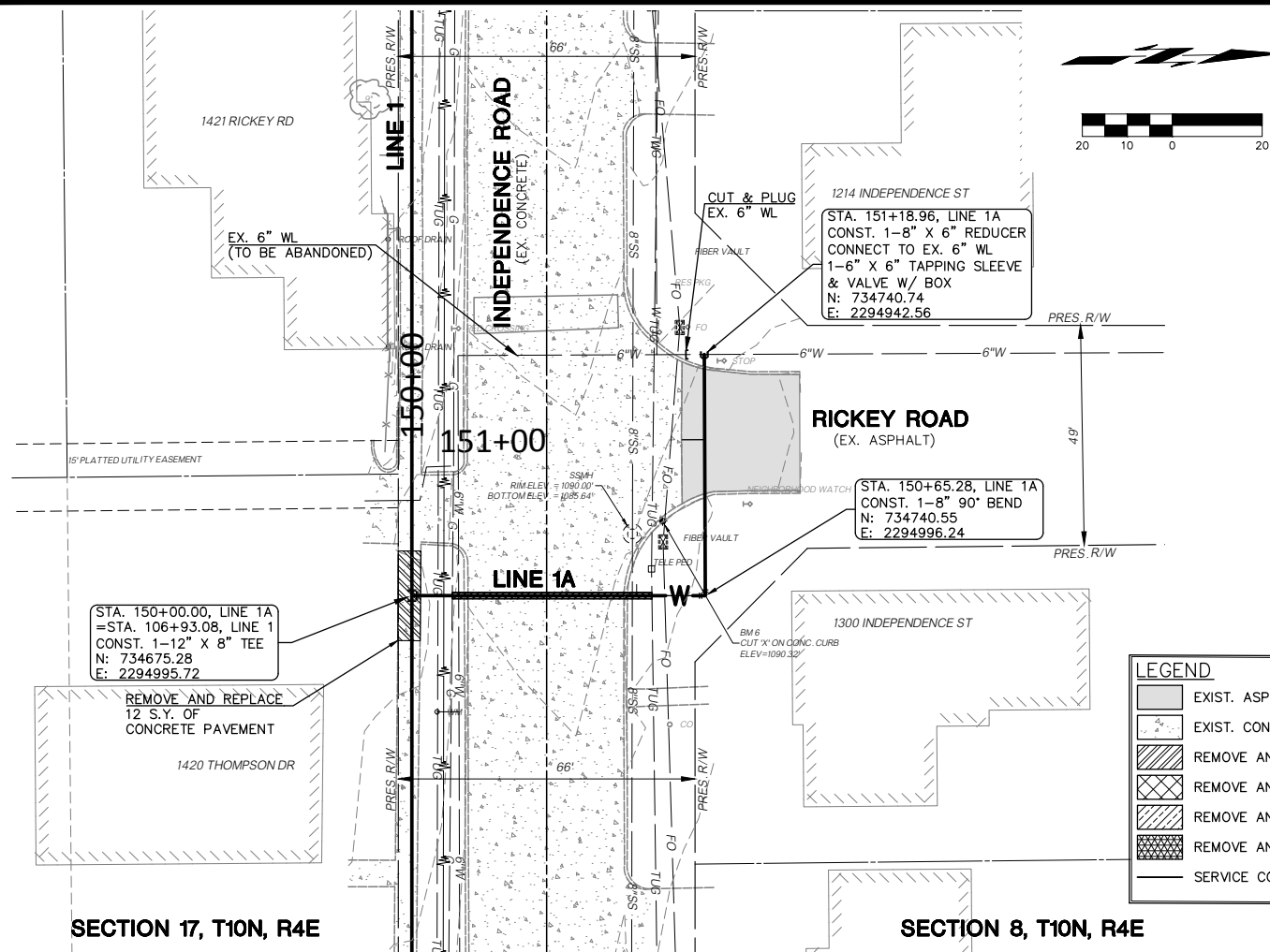


CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

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SHEET NUMBER

4



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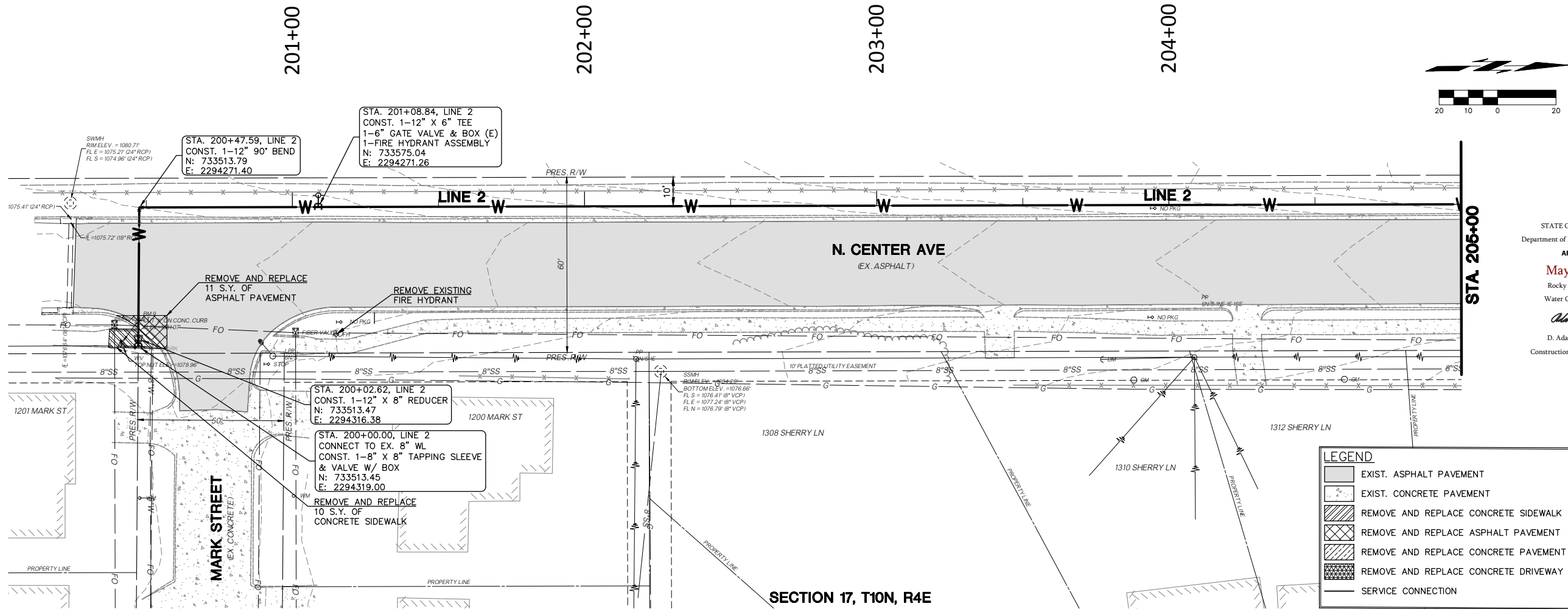
Adam Divine

D. Adam Divine, P.E.
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BASE BID

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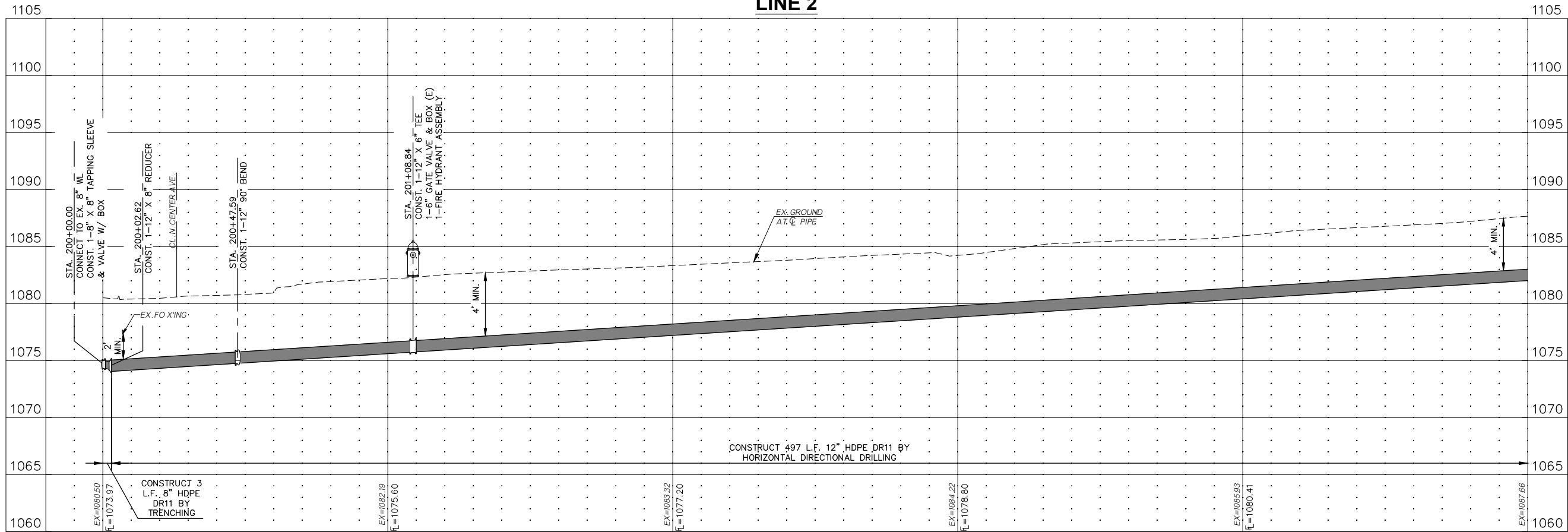
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Adam Divine
D. Adam Divine, P.E.
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LEGEND

- EXIST. ASPHALT PAVEMENT
- EXIST. CONCRETE PAVEMENT
- REMOVE AND REPLACE CONCRETE SIDEWALK
- REMOVE AND REPLACE ASPHALT PAVEMENT
- REMOVE AND REPLACE CONCRETE PAVEMENT
- REMOVE AND REPLACE CONCRETE DRIVEWAY
- SERVICE CONNECTION



ALT. 1

COWAN GROUP ENGINEERING
7100 N. CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
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WATER SYSTEM IMPROVEMENTS
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

LINE 2 P&P
(1 OF 2)

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16



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CA# 6414 EXPIRES 6/30/2024

WATER SYSTEM IMPROVEMENTS

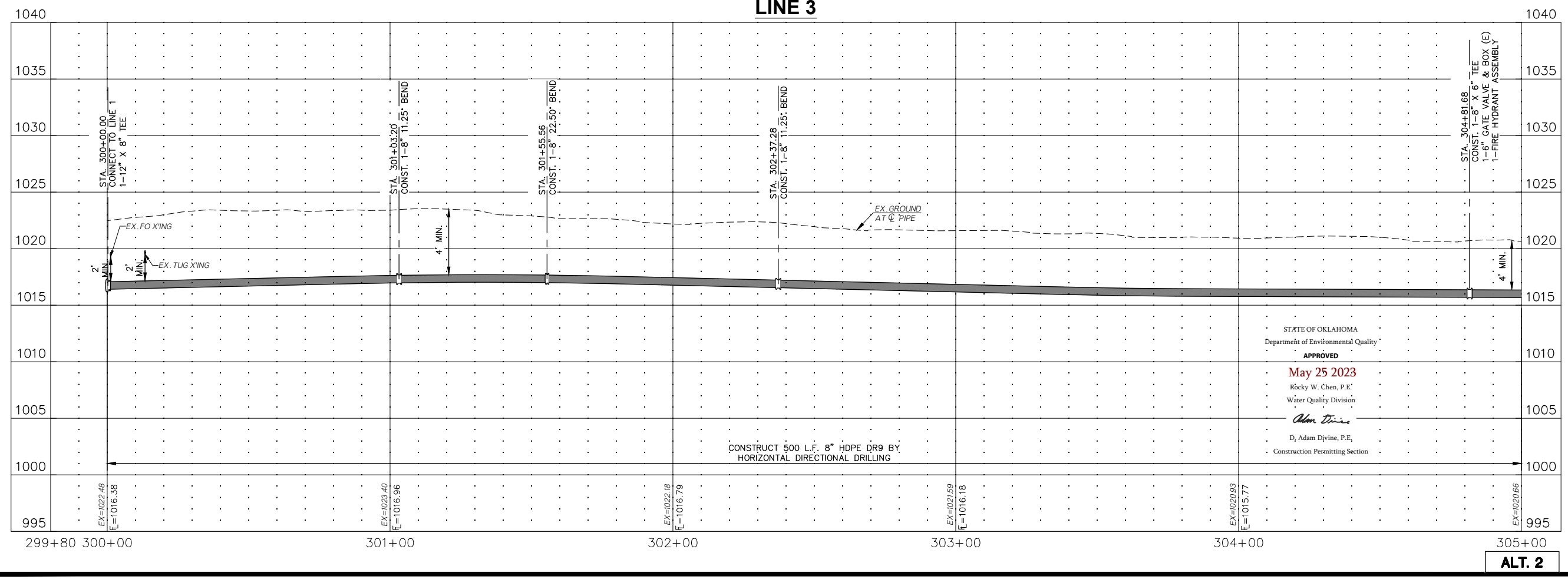
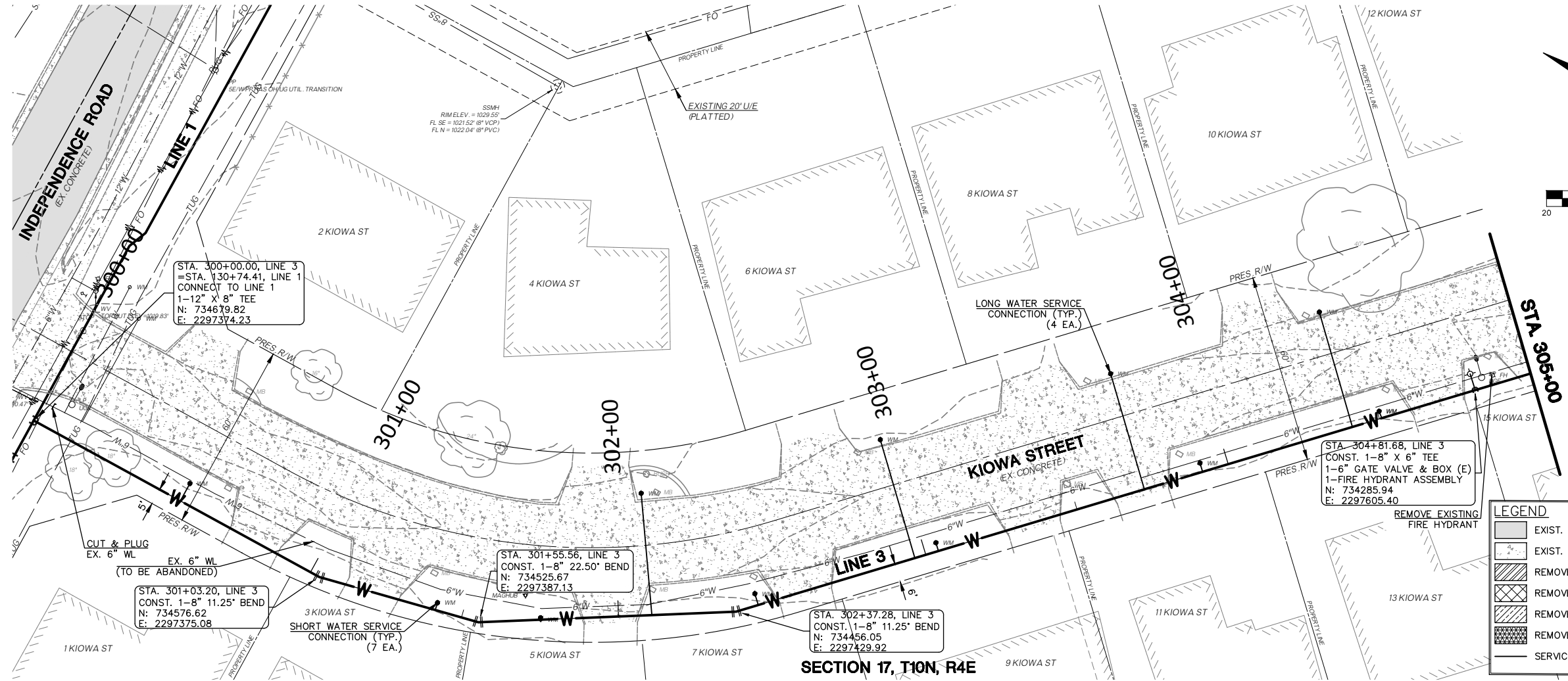
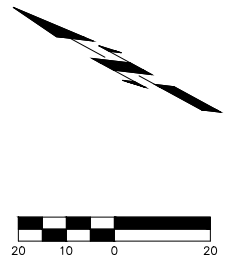
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

LINE 3 P&P (1 OF 3)

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REVISIONS

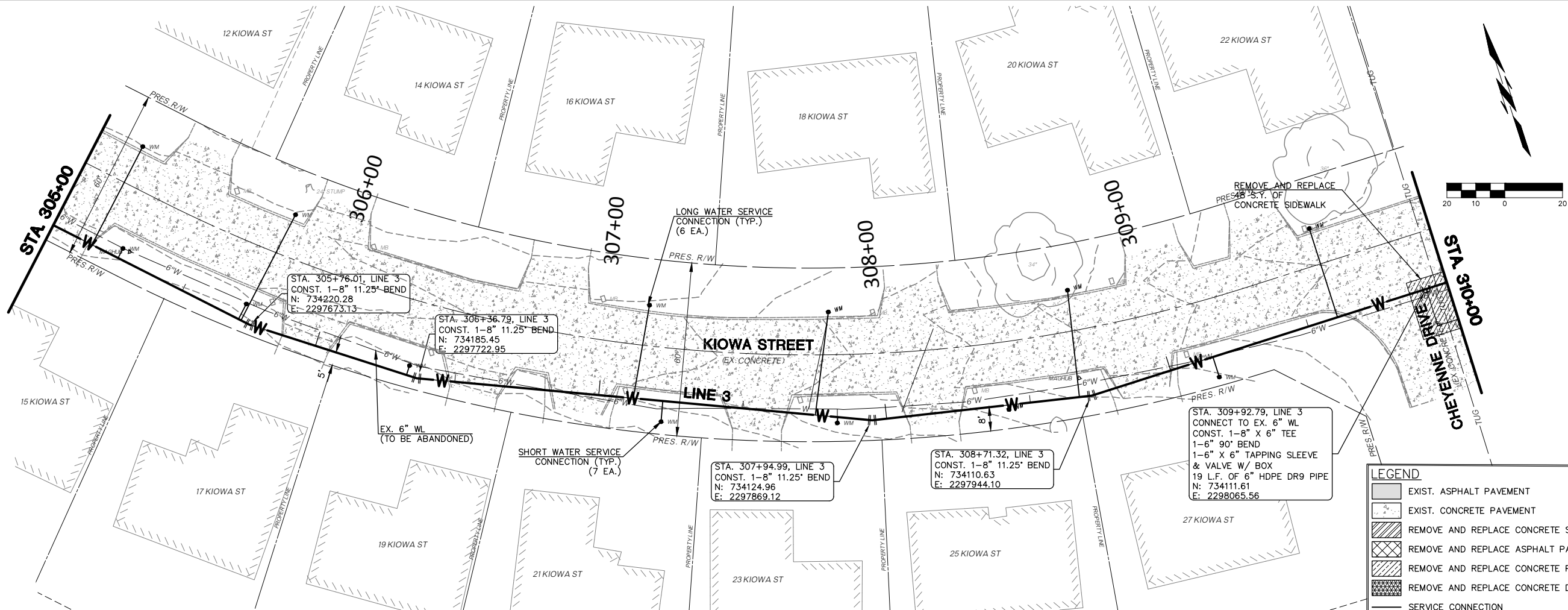
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Adam Dwyne
D. Adam Dwyne, P.E.
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CONSTRUCT 500 L.F. 8\"/>

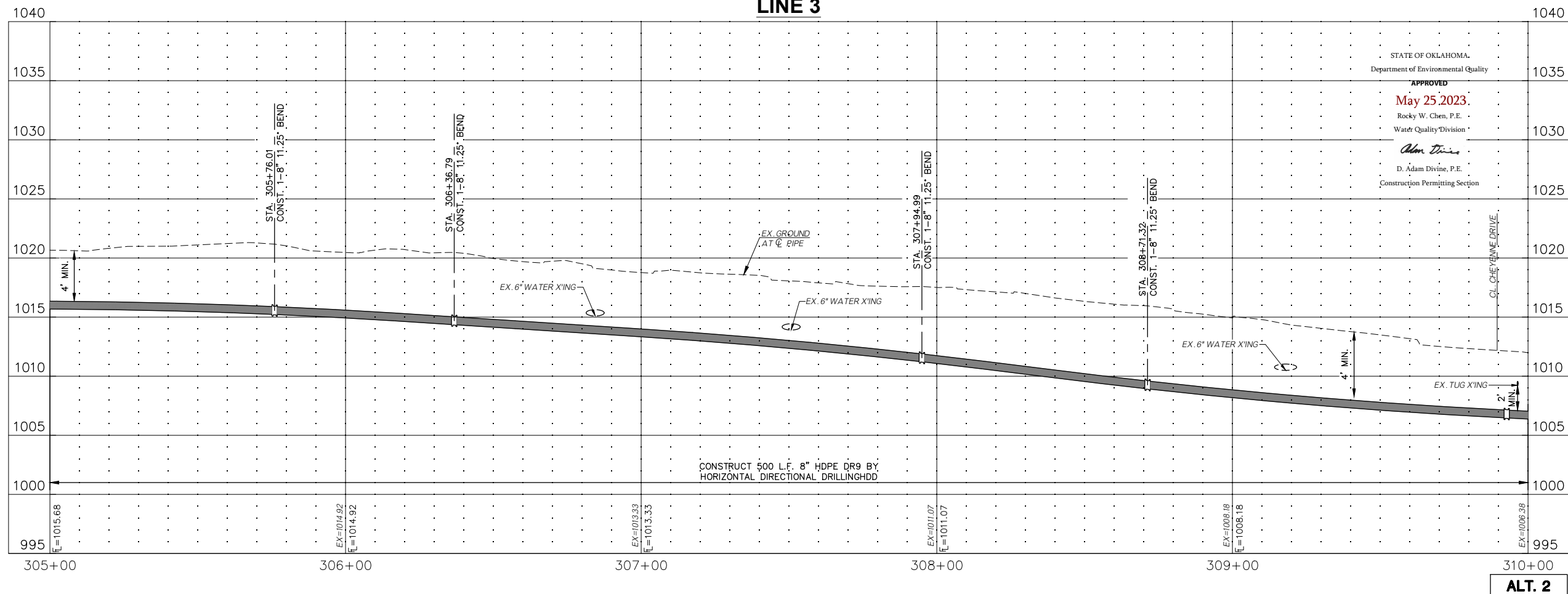
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SECTION 17, T10N, R4E

LINE 3

LEGEND	
	EXIST. ASPHALT PAVEMENT
	EXIST. CONCRETE PAVEMENT
	REMOVE AND REPLACE CONCRETE SIDEWALK
	REMOVE AND REPLACE ASPHALT PAVEMENT
	REMOVE AND REPLACE CONCRETE PAVEMENT
	REMOVE AND REPLACE CONCRETE DRIVEWAY
	SERVICE CONNECTION



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WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

LINE 3 P&P (2 OF 3)

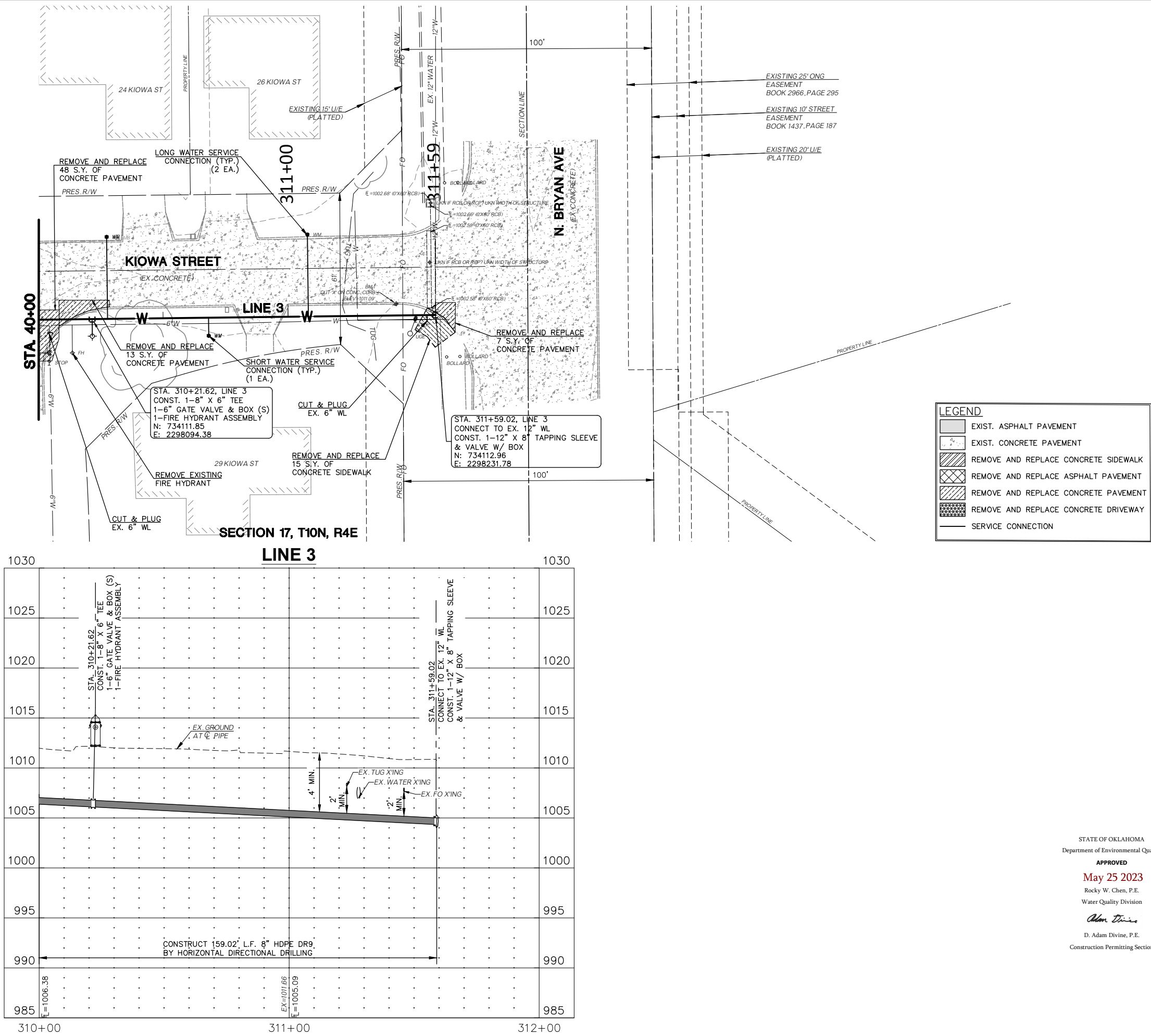
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19

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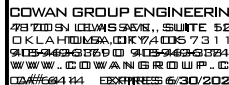
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WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

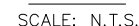
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SHEET NUMBER	
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ALT. 2

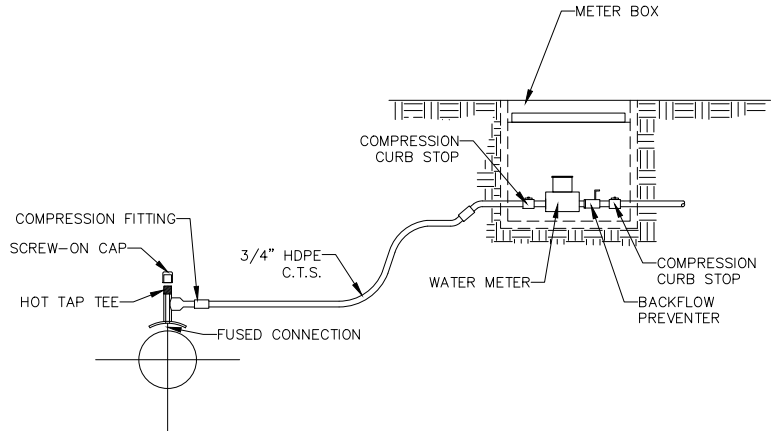


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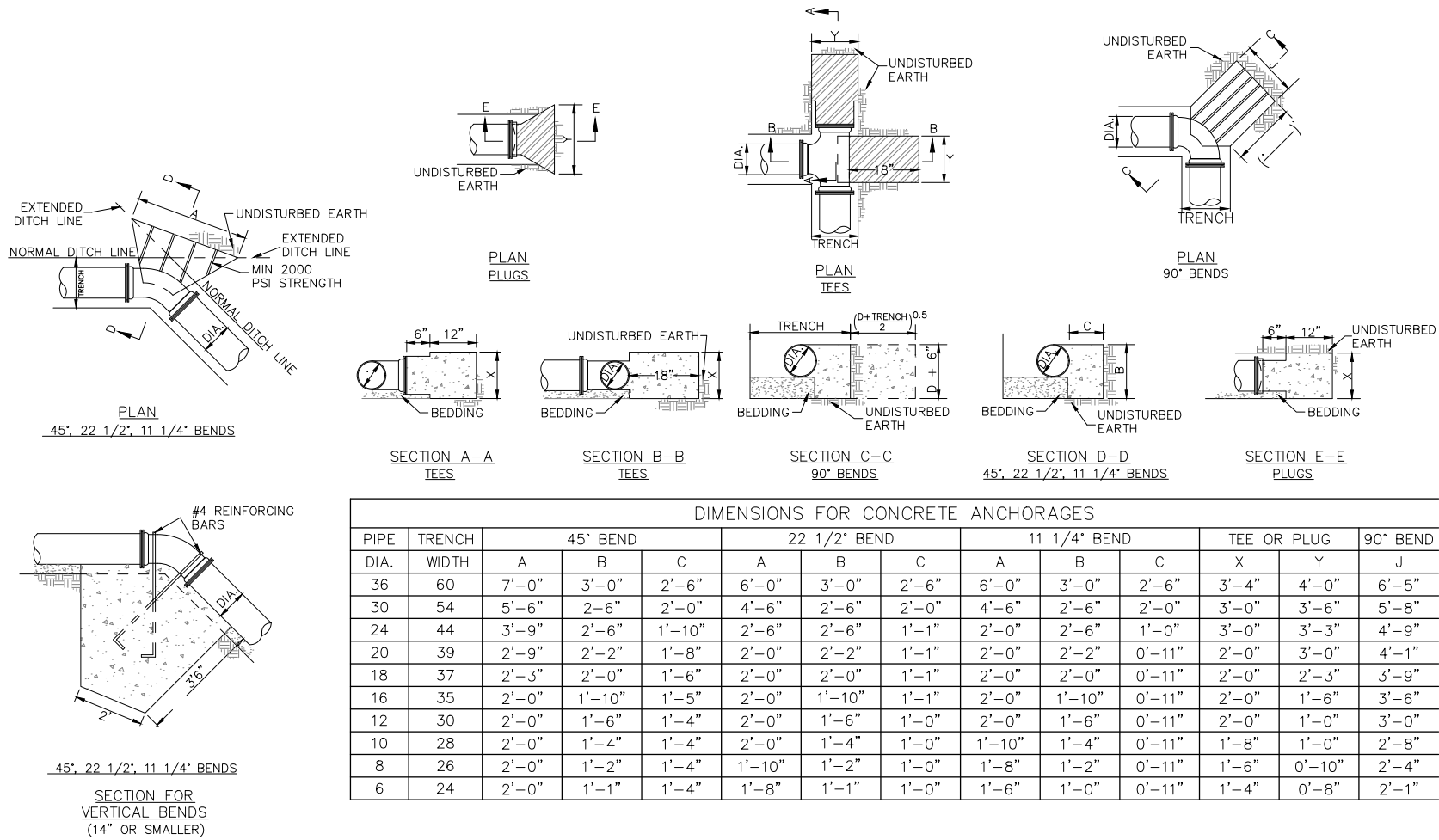
~~Page 535 of 106~~

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TYPICAL SERVICE LINE CONNECTION

SCALE: N.T.S.



THRUST BLOCKING



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513-443-5510 513-443-5524
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WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

WATER DETAILS
(2 OF 3)

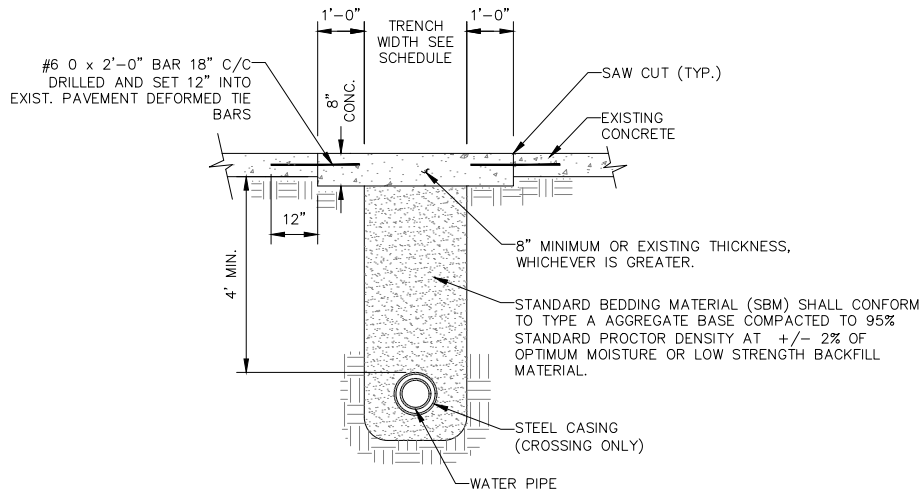
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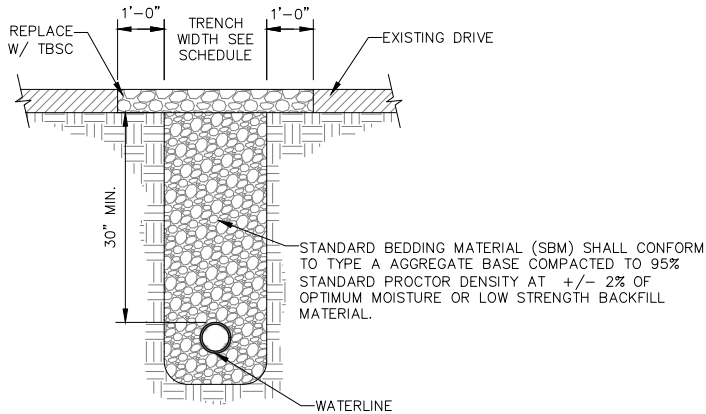
23

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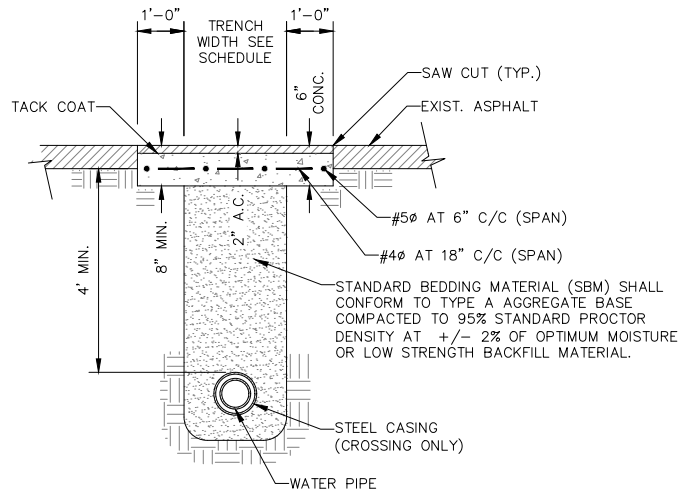
PAVING CUT AND PERMANENT REPAIR CONCRETE

SCALE: N.T.S.



DRIVE CUT AND PERMANENT REPAIR GRAVEL

SCALE: N.T.S.



PAVING CUT AND PERMANENT REPAIR ASPHALT

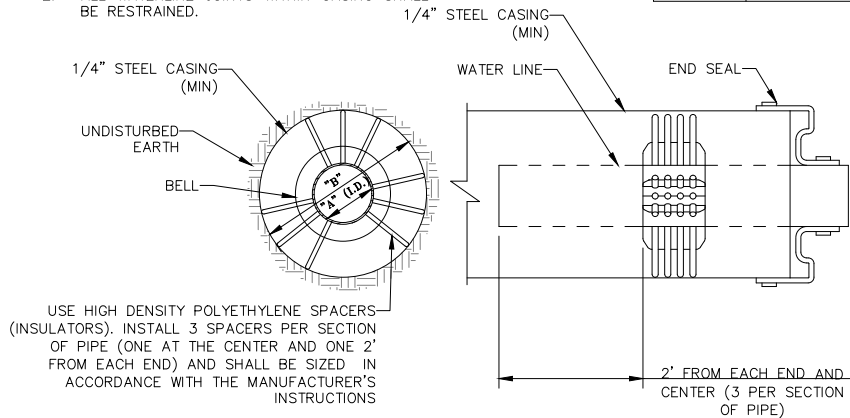
SCALE: N.T.S.

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NOTES:

1. CONSTRUCT WATER TIGHT PLUG AT EACH END OF CASING
2. ALL WATERLINE JOINTS WITHIN CASING SHALL BE RESTRAINED.

PIPE & STEEL CASING SCHEDULE	
PIPE DIA. "A"	CASING DIA. "B"
6"	14"
8"	16"
10"	18"
12"	18"
16"	22"
18"	24"
24"	32"

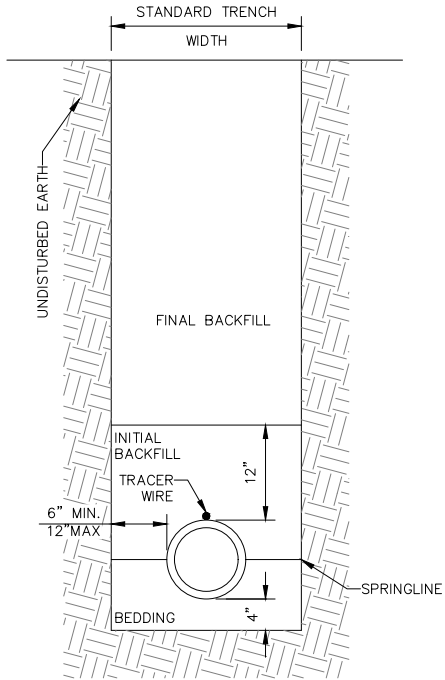


USE HIGH DENSITY POLYETHYLENE SPACERS (INSULATORS). INSTALL 3 SPACERS PER SECTION OF PIPE (ONE AT THE CENTER AND ONE 2' FROM EACH END) AND SHALL BE SIZED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS

STANDARD ROAD CROSSING BORE

SCALE: N.T.S.

INSIDE PIPE DIAMETER (IN.)	STANDARD TRENCH WIDTH (IN.)
6	18
8	24
10	30
12	30
15	36
18	36
21	42
24	42
27	48
30	48
36	54
42	60
48	66



NOTES:

1. STANDARD BEDDING MATERIAL (SBM), SHALL CONFORM TO TYPE A AGGREGATE BASE LOW STRENGTH BACKFILL MATERIAL.
2. SELECT FILL CONSISTS OF EXCAVATED MATERIALS FREE OF ROCKS LARGER THAN 2-1/2 INCHES, ORGANIC MATERIAL, RUBBISH, DEBRIS, AND ALL OTHER OBJECTIONABLE MATERIAL.
3. IF STONE IS DISCOVERED IN TRENCH, REMOVE ALL STONES FOUND IN THE TRENCH TO A DEPTH OF AT LEAST 6 INCHES BELOW THE BOTTOM OF THE PIPE.
4. COMPACTION REQUIREMENTS:
A. PAVED AREAS: 95% STANDARD PROCTOR DENSITY
B. NON-PAVED AREAS: 90% STANDARD PROCTOR DENSITY IF COVER DEPTH < 10'. 95% STANDARD PROCTOR DENSITY IF COVER DEPTH > 10'.

DESCRIPTION	PAVED AREAS		NON-PAVED AREAS	
	FLEXIBLE PIPE	RIGID PIPE	FLEXIBLE PIPE	RIGID PIPE
FINAL BACKFILL	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	EXCAVATED MATERIAL	EXCAVATED MATERIAL
INITIAL BACKFILL	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	COVER DEPTH ≤ 10' - SELECT FILL COVER DEPTH > 10' - STAND. BEDDING MATERIAL	SELECT FILL
BEDDING	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)

PIPE INSTALLATION

SCALE: N.T.S.



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9300 S. CEDARS BLVD., SUITE 500
OKLAHOMA CITY, OKLAHOMA 73116
505-443-9550 FAX 505-443-9551
WWW.COWANENGINEERING.COM
DWG# 22-223-001 DATE 6/30/2024

WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

WATER DETAILS (3 OF 3)

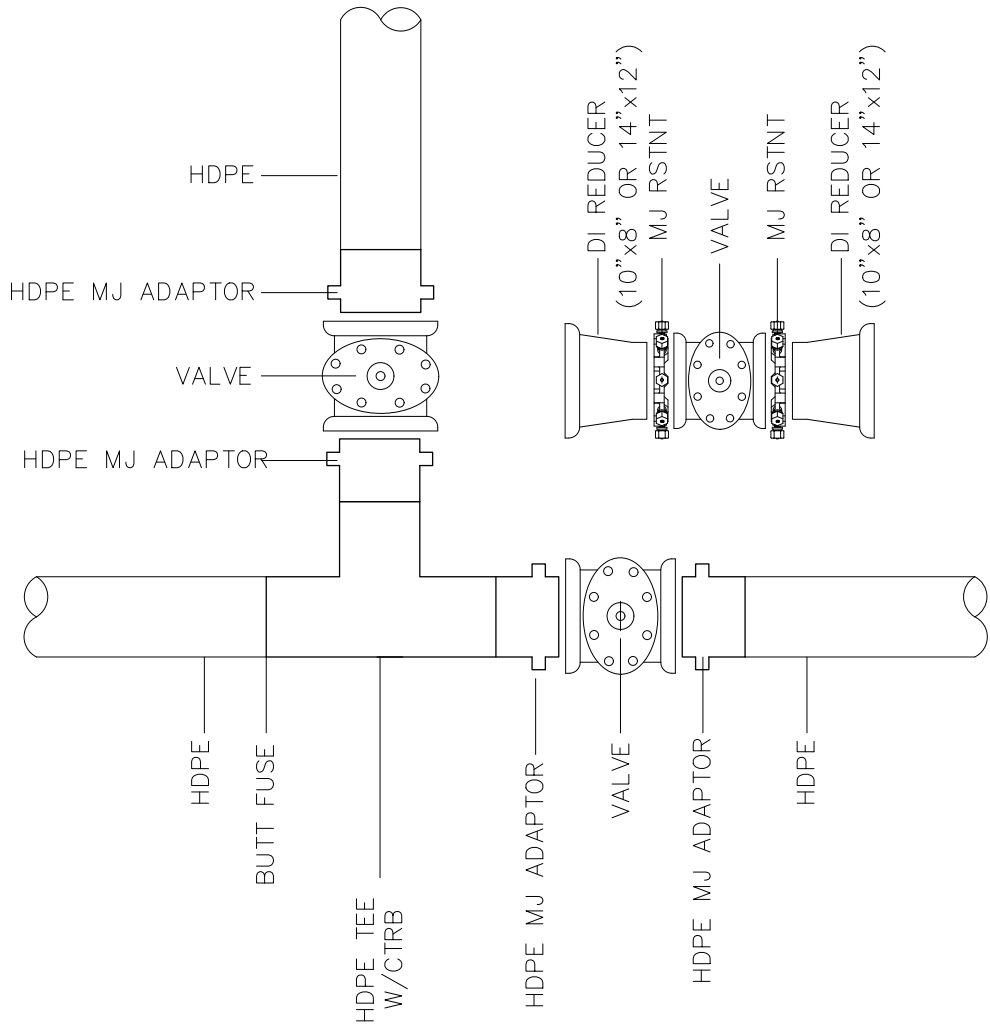
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HDPE TEE (HDPE MAIN / HDPE BRANCH)

WHEN HDPE MAIN IS CONNECTED TO DI FITTING, USE HDPE MJ ADAPTER AND DI REDUCER AS NECESSARY TO MAKE CONNECTION.

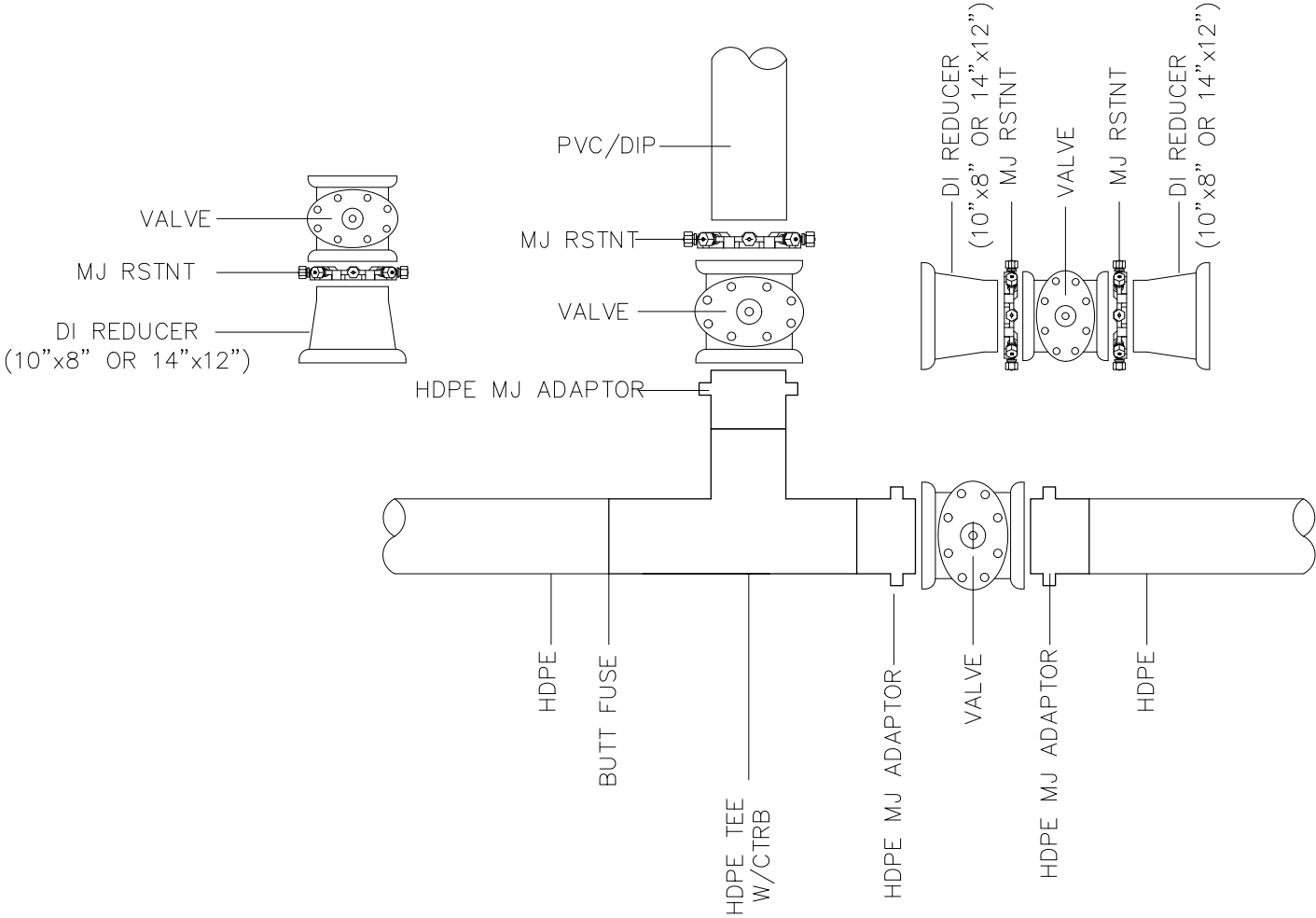
TYPICAL CONFIGURATIONS:

WHEN HDPE BRANCH IS 8", USE 8" GATE VALVE. USE 8" x 6" DI REDUCER AND 6" GATE VALVE ONLY WHEN CONNECTING TO 6" DIP/PVC.

WHEN HDPE BRANCH IS 10", USE 10" x 8" DI REDUCER AND 8" GATE VALVE.

WHEN HDPE BRANCH IS 12", USE 12" GATE VALVE.

WHEN HDPE BRANCH IS 14", USE 14" x 12" DI REDUCER AND 12" GATE VALVE.



HDPE TEE (HDPE MAIN / DIP OR PVC BRANCH)

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Construction Permitting Section

WATER SYSTEM IMPROVEMENTS
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

SPECIAL DETAILS
(1 OF 5)

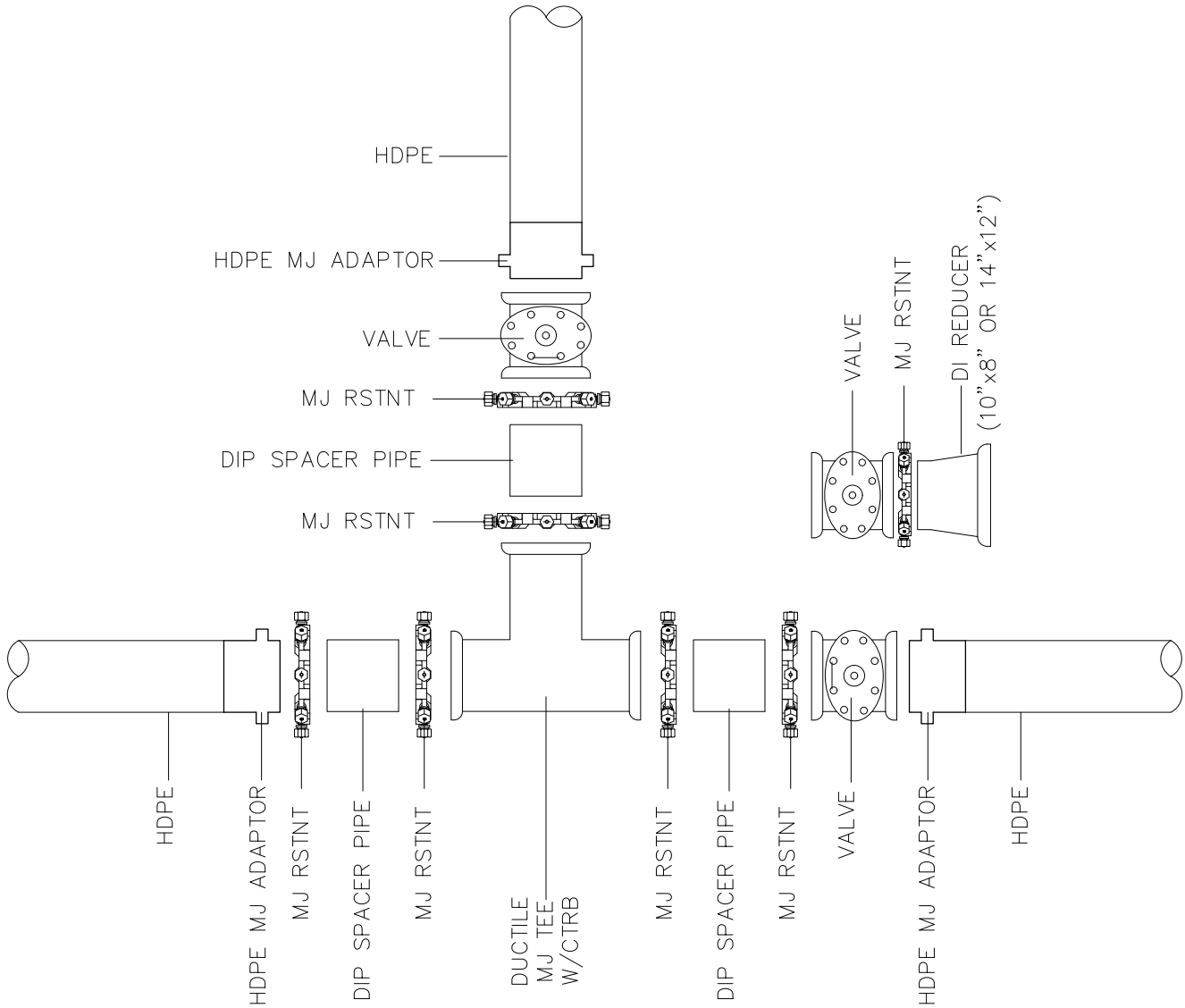
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25

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DI TEE (HDPE MAIN / HDPE BRANCH)

WHEN HDPE MAIN IS CONNECTED TO DI FITTING, USE HDPE MJ ADAPTER AND DI REDUCER AS NECESSARY TO MAKE CONNECTION.

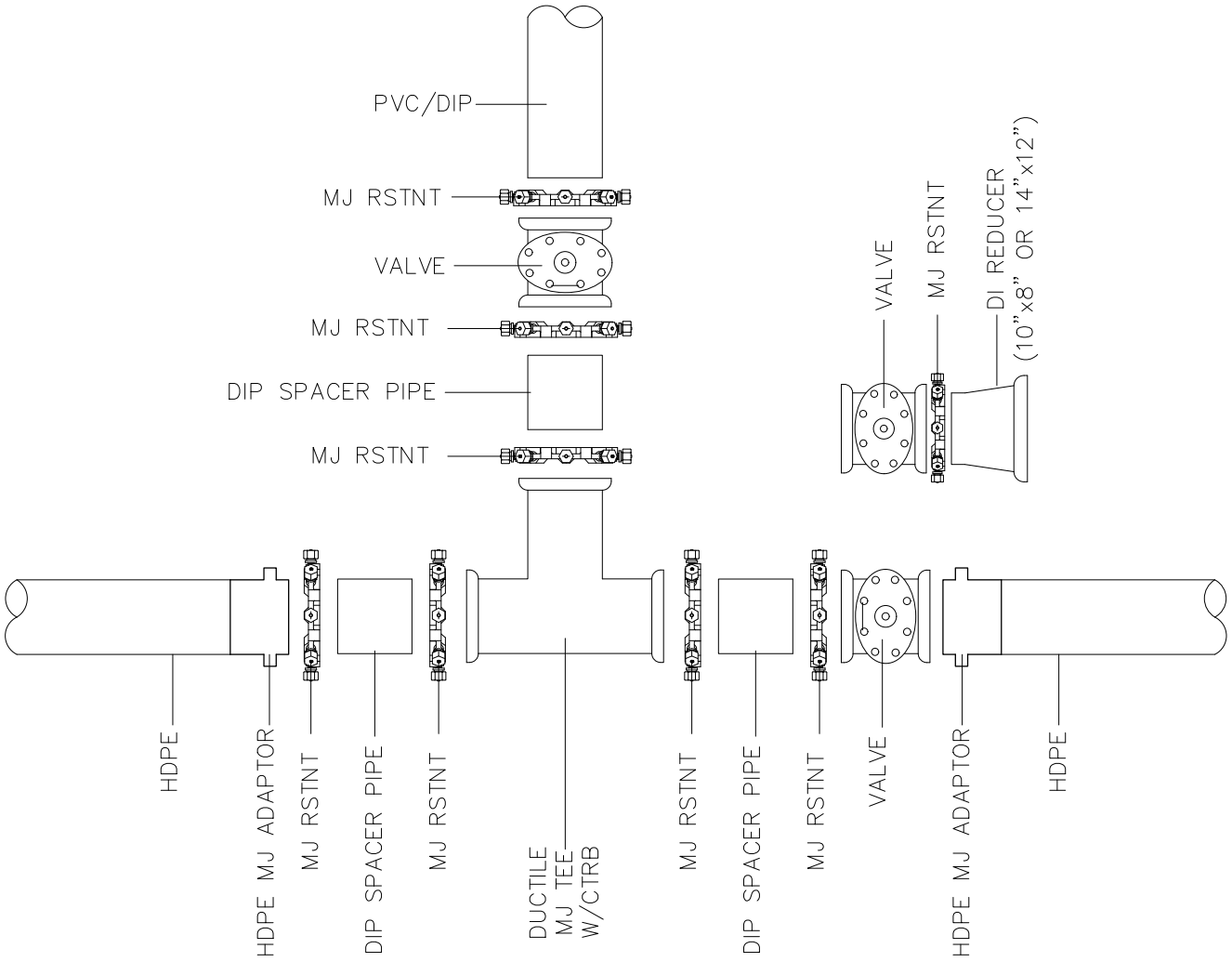
TYPICAL CONFIGURATIONS:

WHEN HDPE BRANCH IS 8", USE 8" GATE VALVE. USE 8" x 6" DI REDUCER AND 6" GATE VALVE ONLY WHEN CONNECTING TO 6" DIP/PVC.

WHEN HDPE BRANCH IS 10", USE 10" x 8" DI REDUCER AND 8" GATE VALVE.

WHEN HDPE BRANCH IS 12", USE 12" GATE VALVE.

WHEN HDPE BRANCH IS 14", USE 14" x 12" DI REDUCER AND 12" GATE VALVE.



DI TEE (HDPE MAIN / DIP OR PVC BRANCH)

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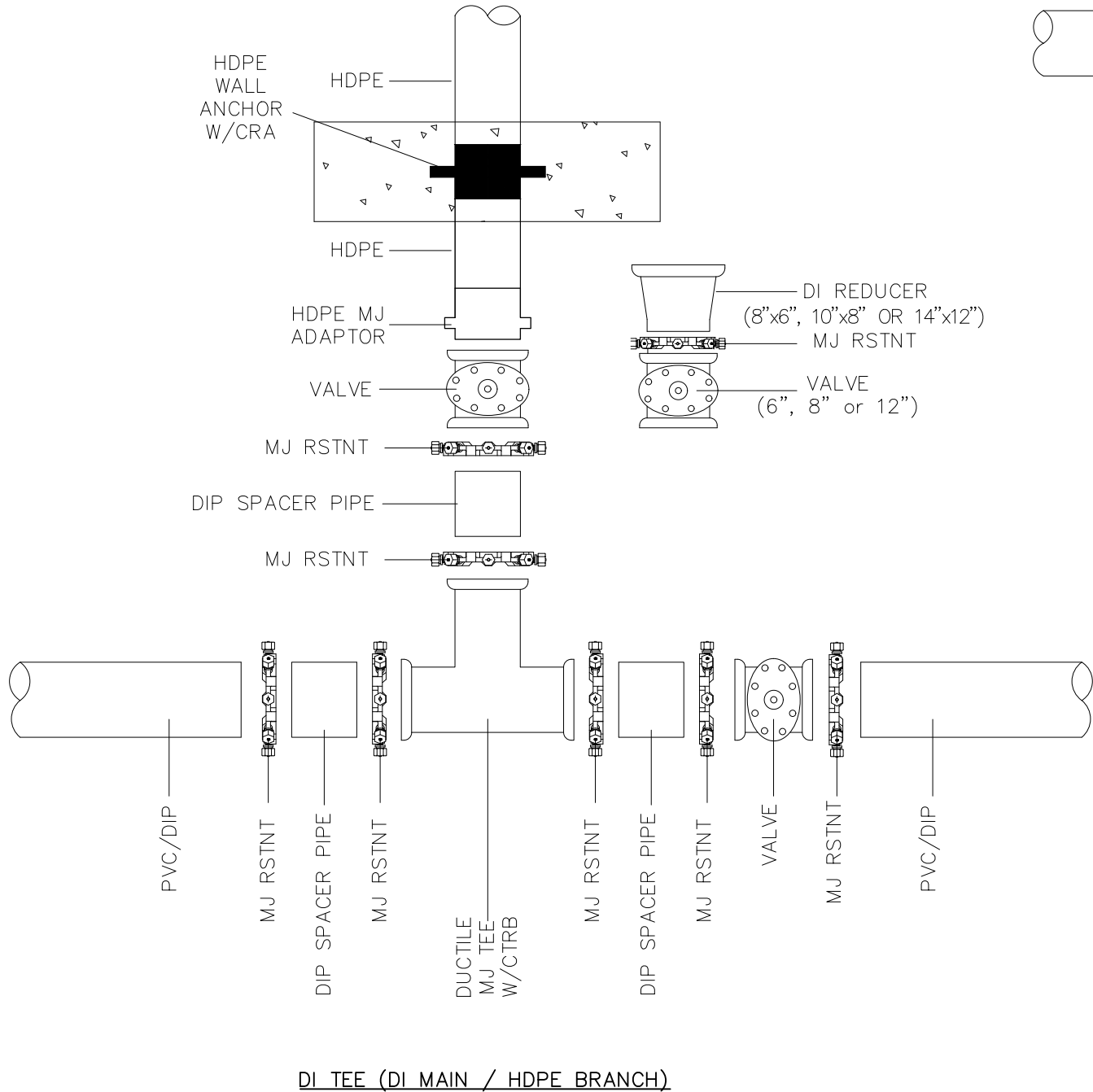
WATER SYSTEM IMPROVEMENTS
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

SPECIAL DETAILS
(2 OF 5)

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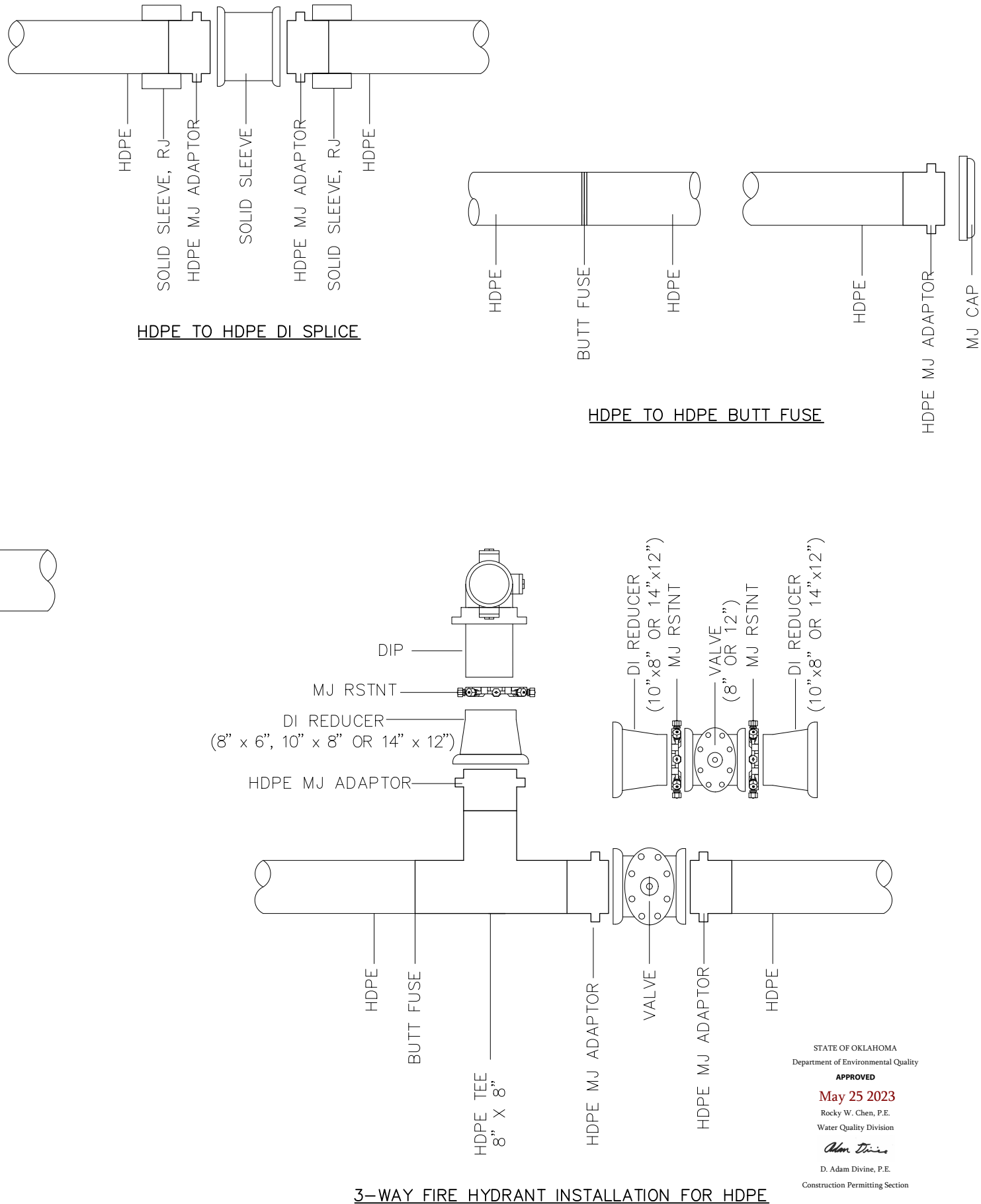
TYPICAL CONFIGURATIONS:

WHEN HDPE BRANCH IS 8", USE 8" GATE VALVE. USE 8" x 6" DI REDUCER AND 6" GATE VALVE ONLY WHEN CONNECTING TO 6" DIP/PVC.

WHEN HDPE BRANCH IS 10", USE 10" x 8" DI REDUCER AND 8" GATE VALVE.

WHEN HDPE BRANCH IS 12", USE 12" GATE VALVE.

WHEN HDPE BRANCH IS 14", USE 14" x 12" DI REDUCER AND 12" GATE VALVE.



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WATER SYSTEM IMPROVEMENTS

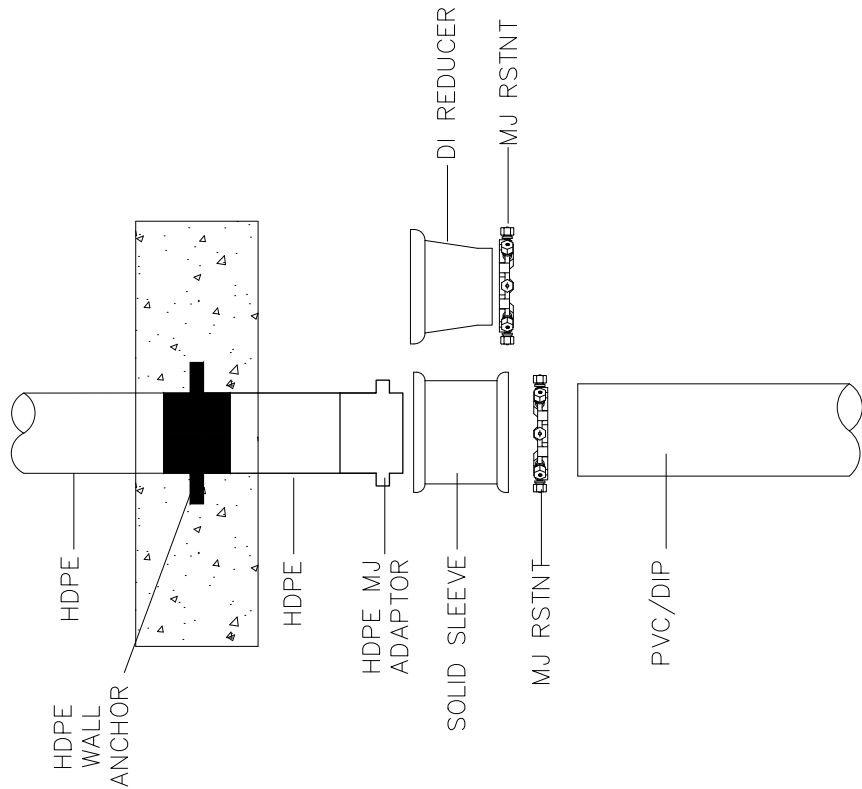
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

SPECIAL DETAILS (3 OF 5)

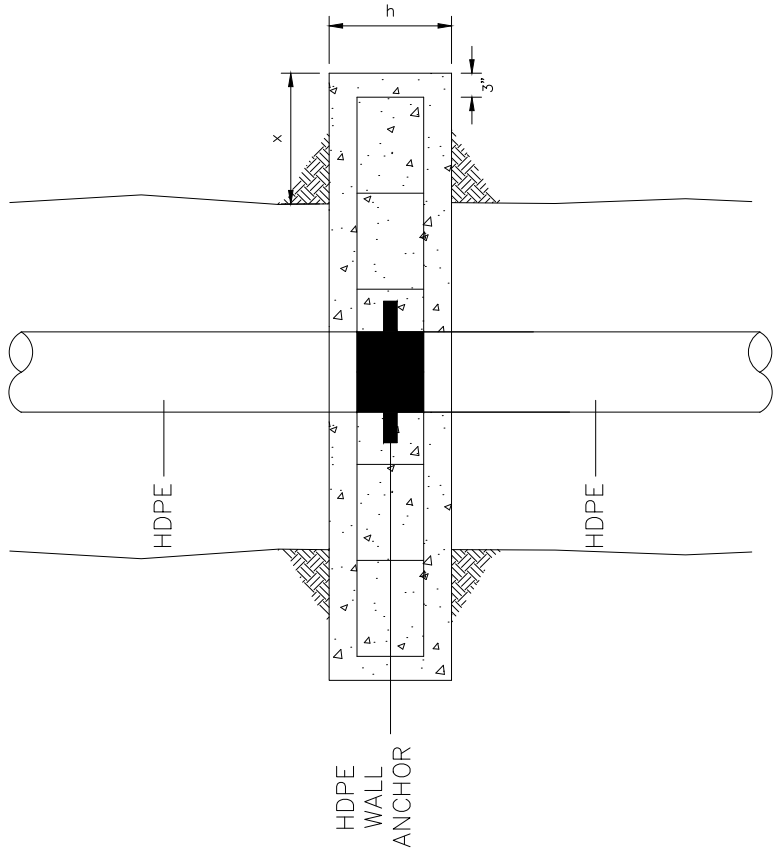
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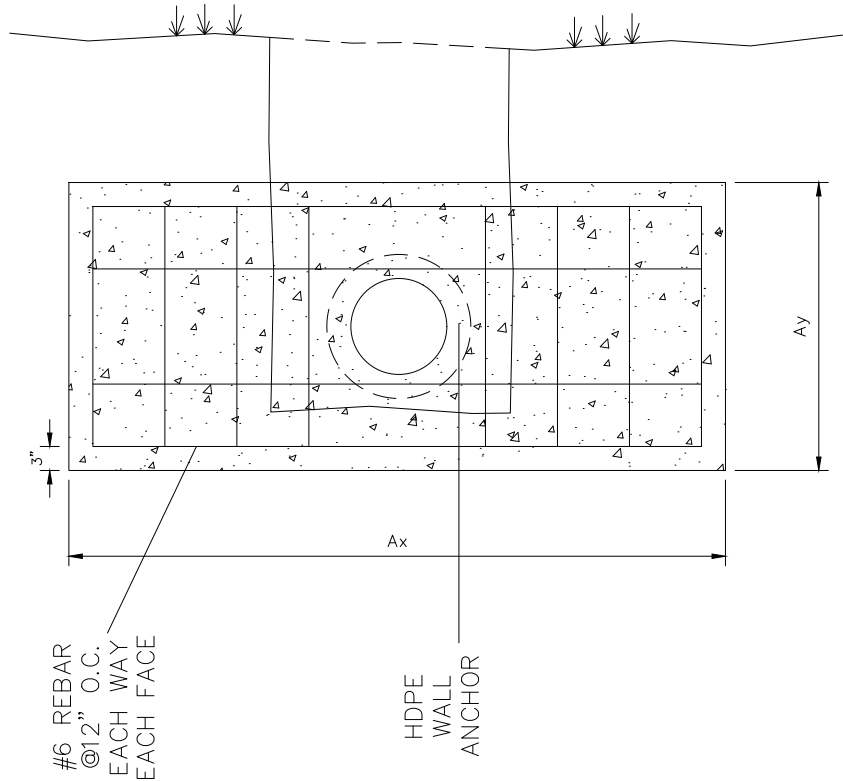
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27



HDPE TO DI/PVC SPLICE



HDPE WALL ANCHOR



DIPS PIPE SIZE (DR11)	PRESSURE	x (in)	Ax (in)	Ay (in)	Ab (sf)	h (in)	Vol (in)
8"	150 PSI	30	90	36	15	18	34
10"	150 PSI	36	102	42	221	18	45
12"	150 PSI	45	120	48	30	24	80
14"	150 PSI	54	144	54	40	24	108

THE MINIMUM SURFACE AREAS SHOWN ARE BASED ON A MAX STATIC PIPE PRESSURE OF 150 PSI AND ANN ALLOWABLE SOIL BEARING CAPACITY OF 1000 PSI. POLYETHYLENE PIPINS SYSTEM FIELD MANUAL FOR MUNICIPAL WATER APPLICATIONS 2009 EDITION.

THE DESIGN ENGINEER IS RESPONSIBLE FOR VERIFYING ASSUMPTION BASED ON ACTUAL SITE CONDITIONS. IF SITE CONDITIONS VARY FROM THE ASSUMPTIONS THE DESIGN ENGINEER SHALL PROVIDE A SITE SPECIFIC DESIGN.

THE MINIMUM LATERAL BEARING SURFACE AREA (Ab) AND APPROXIMATE VOLUME OF CONCRETE (Vol) SHALL BE SHOWN ON THE CONSTRUCTION PLANS FOR ALL CONCRETE WALL ANCHOR BLOCKS.

THE APPROXIMATE VOLUMES SHOWN ARE BASED ON THE MINIMUM DIMENSIONS IN THE TABLE.
A TRENCH WIDTH OF 30-INCHES (8"-12") OR 36-INCHES (14") AND 6" BEDDING UNDER THE PIPE ARE ASSUMED FOR BEARING CALCULATIONS (Ax, Ay, x AND y).

THE DESIGN ENGINEER SHALL ENSURE THE CONSTRUCTION OF THE CONCRETE WALL ANCHOR BLOCK SHALL NOT CONFLICT WITH OTHER UTILITIES.

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WATER SYSTEM IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

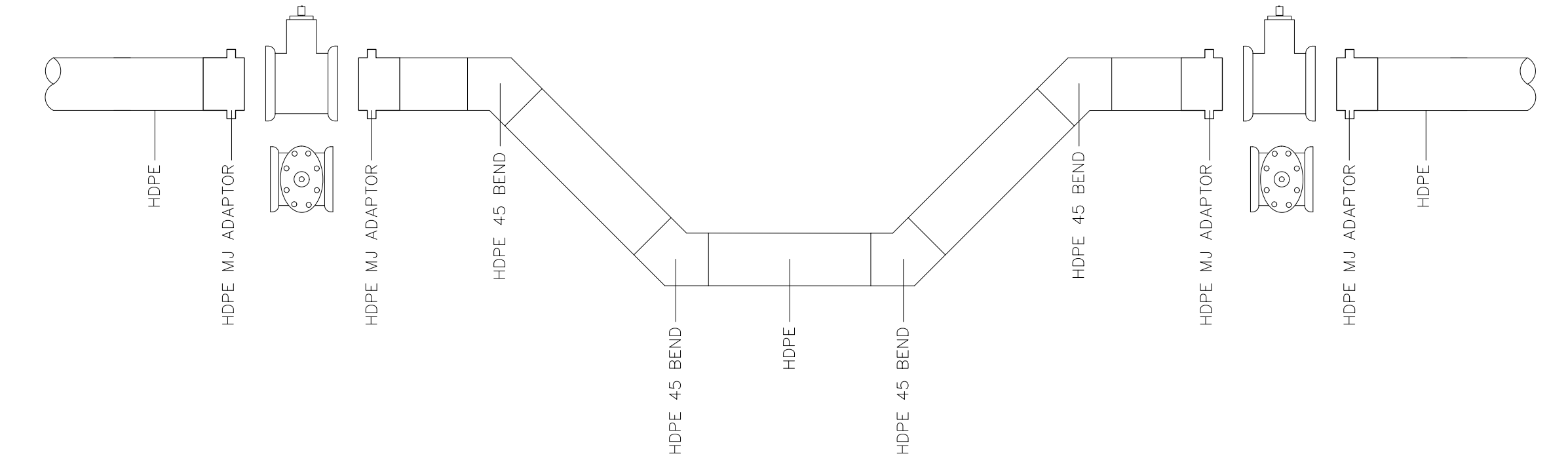
SPECIAL DETAILS
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HDPE HORIZONTAL / VERTICAL REALIGNMENT USING FITTINGS

WHEN HDPE MAIN IS CONNECTED TO DI FITTING, USE HDPE MJ ADAPTER AND DI REDUCER AS NECESSARY TO MAKE CONNECTION.

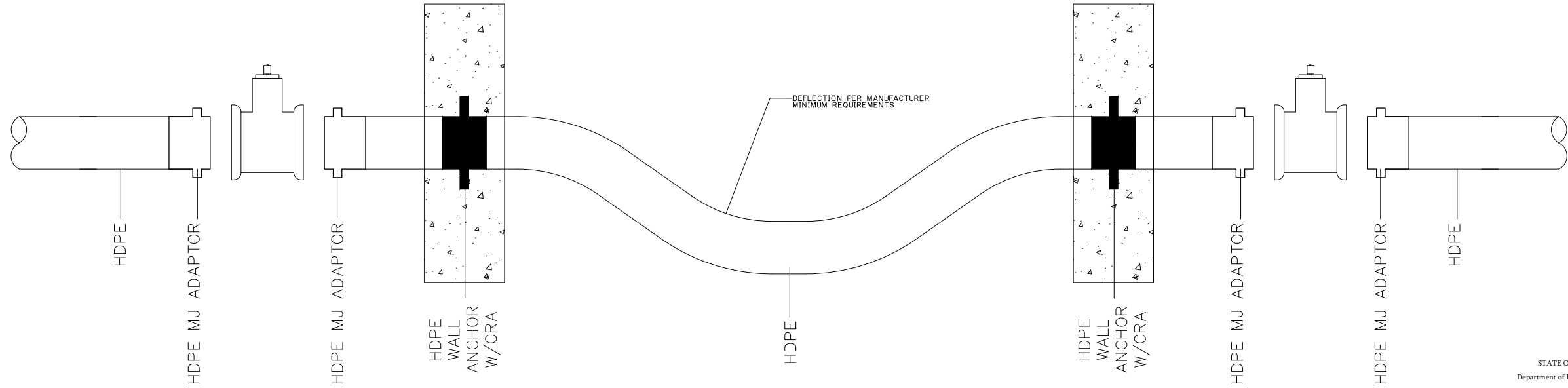
TYPICAL CONFIGURATIONS:

WHEN HDPE BRANCH IS 8", USE 8" x 6" DI REDUCER AND 6" GATE VALVE, OR USE 8" GATE VALVE

WHEN HDPE BRANCH IS 10", USE 10" x 8" DI REDUCER AND 8" GATE VALVE.

WHEN HDPE BRANCH IS 12", USE 12" GATE VALVE.

WHEN HDPE BRANCH IS 14", USE 14" x 12" DI REDUCER AND 12" GATE VALVE.



HDPE VERTICAL/HORIZONTAL REALIGNMENT USING DEFLECTION

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WWW.COWANGROUP.COM
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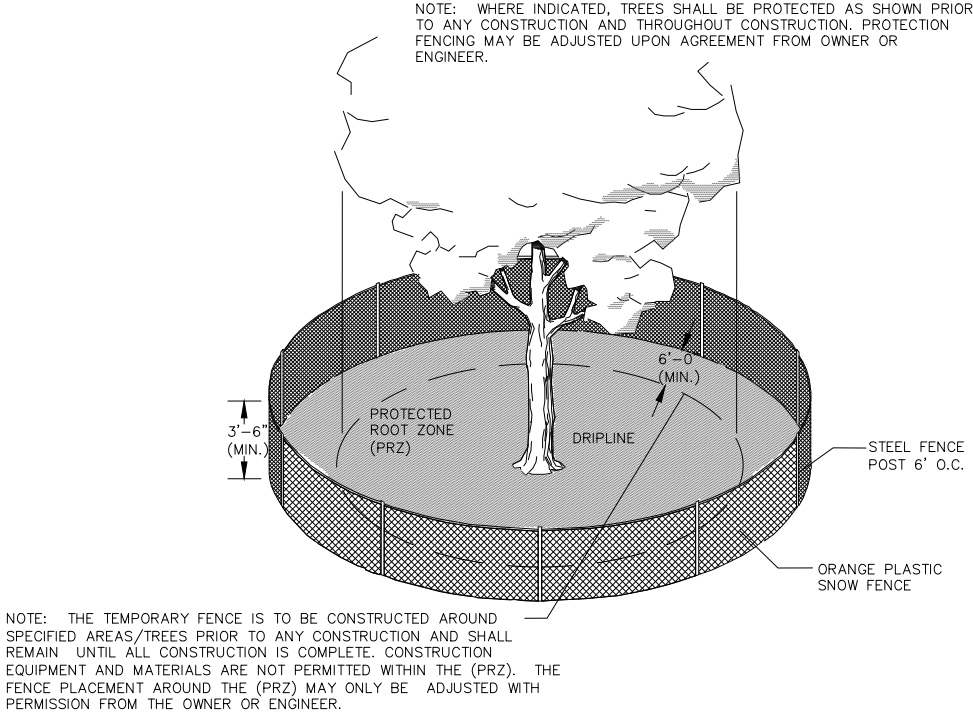
WATER SYSTEM IMPROVEMENTS
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

SPECIAL DETAILS
(5 OF 5)

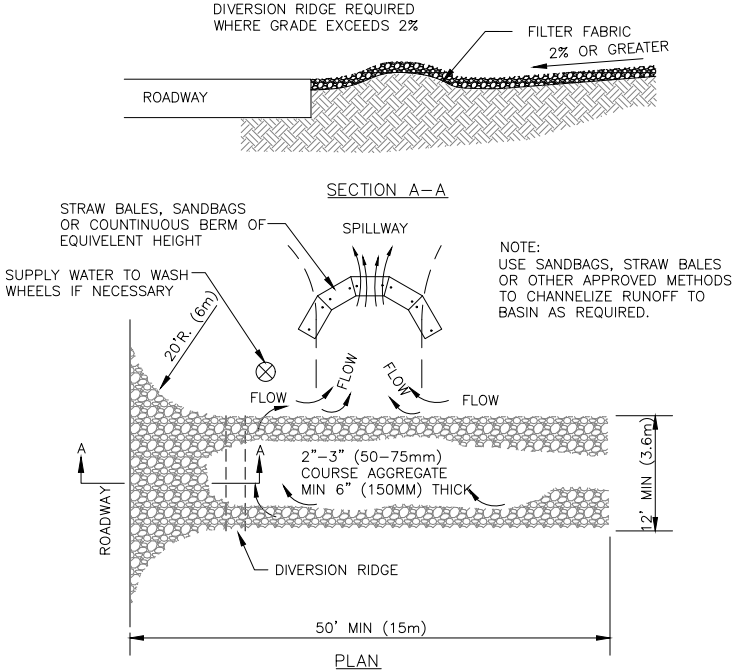
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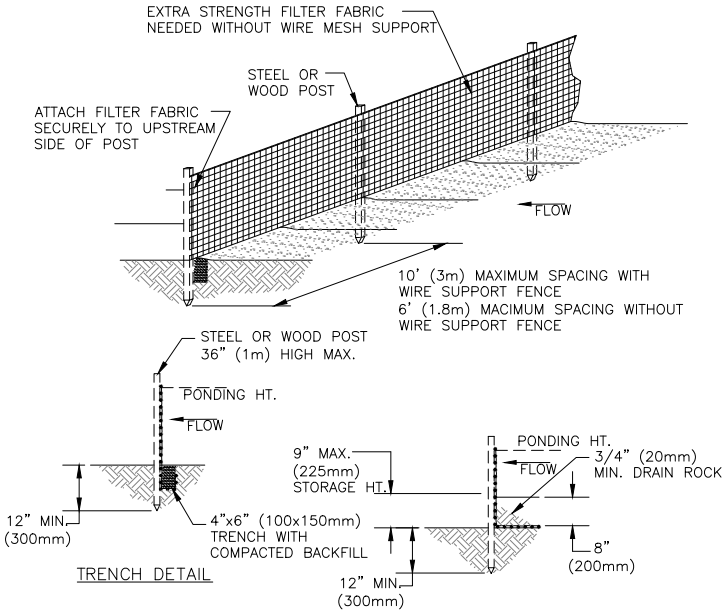


TREE PROTECTION DETAIL



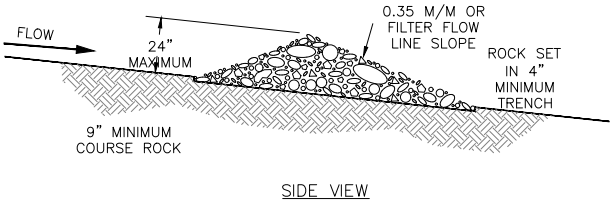
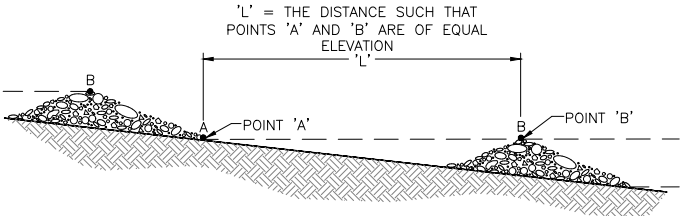
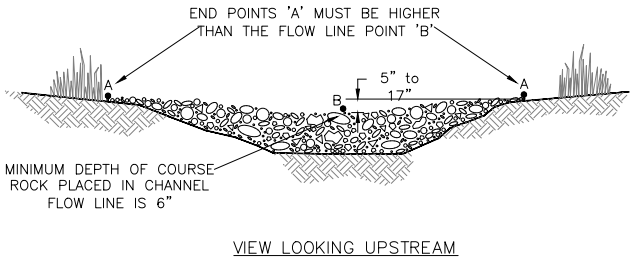
- NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMP. GRAVEL CONSTRUCTION ENTRANCE



- NOTES:
1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
 2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" (225mm) MAXIMUM RECOMMENDED STORAGE HEIGHT.
 3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

SILT FENCE



ROCK CHECK DAM

D-50 OF ROCK (MM)	DOWNSTREAM FLOWLINE SLOPE OF STRUCTURE (M / M)					
	0.35	0.30	0.25	0.20	0.15	0.10
MAXIMUM WATER DEPTH OVER ROCK (MM)						
75	15	18	20	25	33	48
150	30	36	41	50	66	100



COWAN GROUP ENGINEERING
7100 N. CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
405-463-3369
WWW.COWANGROUP.COM
CA# 6414 EXPIRES 6/30/2024

WATER SYSTEM IMPROVEMENTS
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

EROSION CONTROL DETAIL

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	22-223
DATE	4/28/2023

REVISIONS

SHEET NUMBER	30
--------------	----



September 6, 2023

Seth Barkhimer, Director of Engineering
City of Shawnee
222 N Broadway Avenue
Shawnee, OK 74801

Reference: Shawnee Independence Avenue Waterline
Engineer's Recommendation for Award
ARPA Number: ARP-23-0026-G

Dear Mr. Barkhimer:

Pursuant to the bid opening held on August 21, 2023, attached please find the bid tabulation for the subject project. The bid consisted of four (4) responsive bidders.

The apparent low bidder for the subject project is Circle B Underground, LLC, with the following base bid amount:

Base Bid	\$ 1,291,791.00
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An additional alternate one and two were included in the bid schedule for the inclusion of additional waterline replacements. The amount of the alternate bids were as follows:

Alternate One	\$ 255,951.00
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Alternate Two	\$ 236,020.00
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Therefore, the total bid including the add alternates one and two would be as follows:

Total Bid	\$ 1,783,762.00
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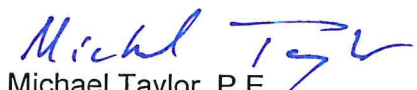
The apparent low bidder of \$1,783,762.00 (Base Bid plus Alternate One and Two) for the subject project is Circle B Underground, LLC. Pursuant to the review of the bid package, bonds, and bid tabulation, the low bid is accurate and complete.

After careful review and consideration, Cowan Group Engineering recommends the City of Shawnee award the subject contract to the low bidder, Circle B Underground, LLC at \$1,783,762.00.

Should you have any questions, please contact the undersigned at 405.463.3369.

Sincerely,

COWAN GROUP ENGINEERING, LLC


Michael Taylor, P.E.
Project Manager

cc: file

Advertisement for Bids

Notice is hereby given that the City of Shawnee (hereinafter called the "Owner") will receive sealed bids at the City Clerk's Office, 16 W. 9th Street, Shawnee, Pottawatomie County, Oklahoma until 4pm the 18th day of September, 2023 for the Thompson Heights Waterline.

Funding for this project is provided through American Rescue Plan Act (ARPA) grant program. As such, compliance with Labor Standards Contract Provisions is mandatory. Compliance with the Davis Bacon Act is mandatory **if the total project cost exceeds \$10,000,000 (ten million dollars)**.

All bids received at said time will be opened at the City Commission meeting at 6PM and evaluated for completeness and correctness. All work shall be performed, and all construction and materials used and furnished shall be in accordance with the Plans and Specifications prepared by Cowan Group Engineering, and on file in the office of the City Clerk, 16 W. 9th Street, Shawnee, OK 74802-1448.

The Bid Packet and Contract Documents for this project may be examined at the following locations:

1. The City Clerk's Office, 16 W. 9th Street, Shawnee, OK 74802-1448.
2. Cowan Group Engineering, 7100 N. Classen, Suite 500, Oklahoma City, OK 73116

Hard copy plans and specifications may be obtained by the prospective bidders at these locations for \$100.00. No documents will be mailed until payment is received in full.

Complete digital project bidding documents are available for a non-refundable fee of \$50.00 by going to www.cowangroup.co, navigating to the Bid Documents page, and by entering Quest Project # 8558234 on the website's project search page. Please contact QuestCDN.com at 952.233.1632 or info@questcdn.com for assistance in free membership registration, downloading and working with this digital project information.

Each bidder shall accompany his original bid, filed with the City Clerk's Office with a certified or Cashier's Check on a solvent bank located in Oklahoma, or a Bidder's Bond, in the amount of five (5) percent of the amount bid, as a guarantee of his ability to perform the contract bid upon, and that he will enter into a written contract with the Owner to perform said work and/or furnish said materials in accordance with said Plans and Specifications and furnish the required bonds according to the Public Competitive Bidding Act of 1974.

The Owner will retain the deposit for liquidated damages in case the successful bidder fails to enter in said contract and furnish the required bonds provided for in the specifications within the time required. Deposit of the unsuccessful bidders will be returned upon the execution of the Contract and required bonds.

Each bidder shall accompany his bid with a sworn statement in writing that the bidder has not directly or indirectly entered into an agreement, expressed or implied, with any other bidder concerning the price or amount of such bid or any bids, the limiting of the bids or bidders, the paying to anyone any money for promotion expenses, the parceling or farming out to any bidder or bidders or other persons of any part of the contract or any part of the subject matter of the bid or of the profits thereof.

Construction, Maintenance and Statutory Payment Bonds in the amount of 100% of the contract price are required for this project. These bonds must be obtained from a Corporate Surety licensed in Oklahoma and approved by the Owner and Consulting Engineer. The bidder shall state in the proposal the name and address of the Surety or Sureties who will sign this bond in case the contract is awarded. The Maintenance Bond required will guarantee the repair of all damage due to improper materials or workmanship for a period of one (1) year after the acceptance of the work by the Owner.

This project is to be financed by the ARPA grant program managed by the Oklahoma Water Resources Board (OWRB) and shall be referred to as Project No. ARP-23-0188-G. The following requirements and regulations must be complied with:

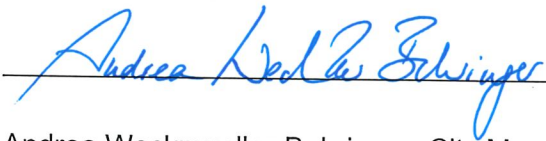
- A. "Equal Opportunity in Employment: All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age or physical handicap. Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended."
- B. "Each bidder must fully comply with the requirements, terms and conditions of the Environmental Protection Agency's Disadvantaged Business Enterprise Requirements, which have been adopted for the OWRB ARPA program, and include employing the six (6) good faith efforts and soliciting disadvantaged business enterprises during the performance of this contract. Requirements are contained in OWRB's Guidance and Procedures, ARP-267. The bidder commits itself to following the good faith efforts to solicit disadvantaged business enterprises contained herein and all other requirements, terms, and conditions of these bid conditions by submitting a properly signed bid."
- C. **If the total project cost exceeds \$10,000,000 (ten million dollars)** "Davis Bacon Act wage rules shall apply. All laborers and mechanics employed by contractors and sub- contractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of Chapter 31 of Title 40, United States Code and 29 CFR parts 1,3, and 5. The Department of Labor provides all pertinent information related to compliance with labor standards, including prevailing wage rates and instructions for reporting. More information is available at <http://www.sam.gov/>" and <https://www.dol.gov/agencies/whd/government-contracts/construction>
- D. System for Award Management (SAM) registration is required for all Applicants and Awardees (Entities, Prime Contractors, Subcontractors, Vendors) in order to receive funds from the ARPA program. SAM replaced the Central Contractor Registration/Federal Agency Registration, Online Representations and Certifications Application, and Excluded Parties List System. Applicants and awardees are required to complete a one-time free registration to provide basic information relevant to procurement and financial transactions. On April 4, 2022, the unique entity identifier used across the federal government changed from the DUNS Number to the Unique Entity ID (generated by SAM.gov). Registrants must retain an active status to be eligible for ARPA funding. Applicants and Awardees can go to SAM.gov to complete the registration process.

The bids filed with the City Clerk's Office will be opened and considered by the Owner, at a meeting to be held in The City of Shawnee Commission Chambers, 16 W. 9th Street, Shawnee, OK 74802, on the day of Monday September 18th, 2023 at 6pm. Bids received past 4pm on the stated date prior to the Bid Opening will be returned.

The contract is to be awarded to the lowest, responsive, responsible bidder. The Owner reserves the right to correct any non-material clerical errors in the bidding as allowed under Oklahoma Law. The Owner reserves the right to reject any and all bids in accordance with the Oklahoma Public Competitive Bidding Act of 1974. Conditional bids shall not be accepted.

A pre-bid conference will be held on this project at: City of Shawnee, Commission Chambers on the 7th day of September 2023 at 9 am.

Approved on this ____ day of _____, 20__



Andrea Weckmueller-Behringer, City Manager

PLAN OF PROPOSED THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

ARP-23-0092-G
CITY OF SHAWNEE
SECTION 17, T10N, R4E, I.M.
POTTAWATOMIE COUNTY, OKLAHOMA

SURVEY CONTROL DATA

- HORIZONTAL/VERTICAL CONTROL
HORIZONTAL DATUM IS BASED ON THE OKLAHOMA STATE
PLANE COORDINATE SYSTEM (NORTH ZONE) NAD 83. VERTICAL
DATUM IS BASED ON THE NORTH AMERICAN VERTICAL DATUM
OF 1988 (NAVD 88)
- BASIS OF BEARINGS:
BEARINGS ARE BASED ON GRID NORTH (N00°00'00"E)

UTILITY CONTACTS

COMPANY NAME	CONTACT NAME	PHONE NUMBER
SHAWNEE UTILITIES	SHAWNEE PUBLIC WORKS	405-273-1960
OG&E ENERGY CORPORATION	RAE ANN LAWRENCE, P.E. SENIOR LAND MANAGEMENT COORDINATOR	405-553-5785 (O) 405-388-8599 (C)
OG&E ENERGY CORPORATION	TIM THOMPSON	405-401-7229
AT&T OKLAHOMA	JOE ANDERSON	539-444-1026
OKLAHOMA NATURAL GAS	ALEXANDRIA MARSHALL	405-551-6389
BLUEPEAK	JERRY LEIBY	JERRY.LEIBY@MYBLUEPEAK.COM

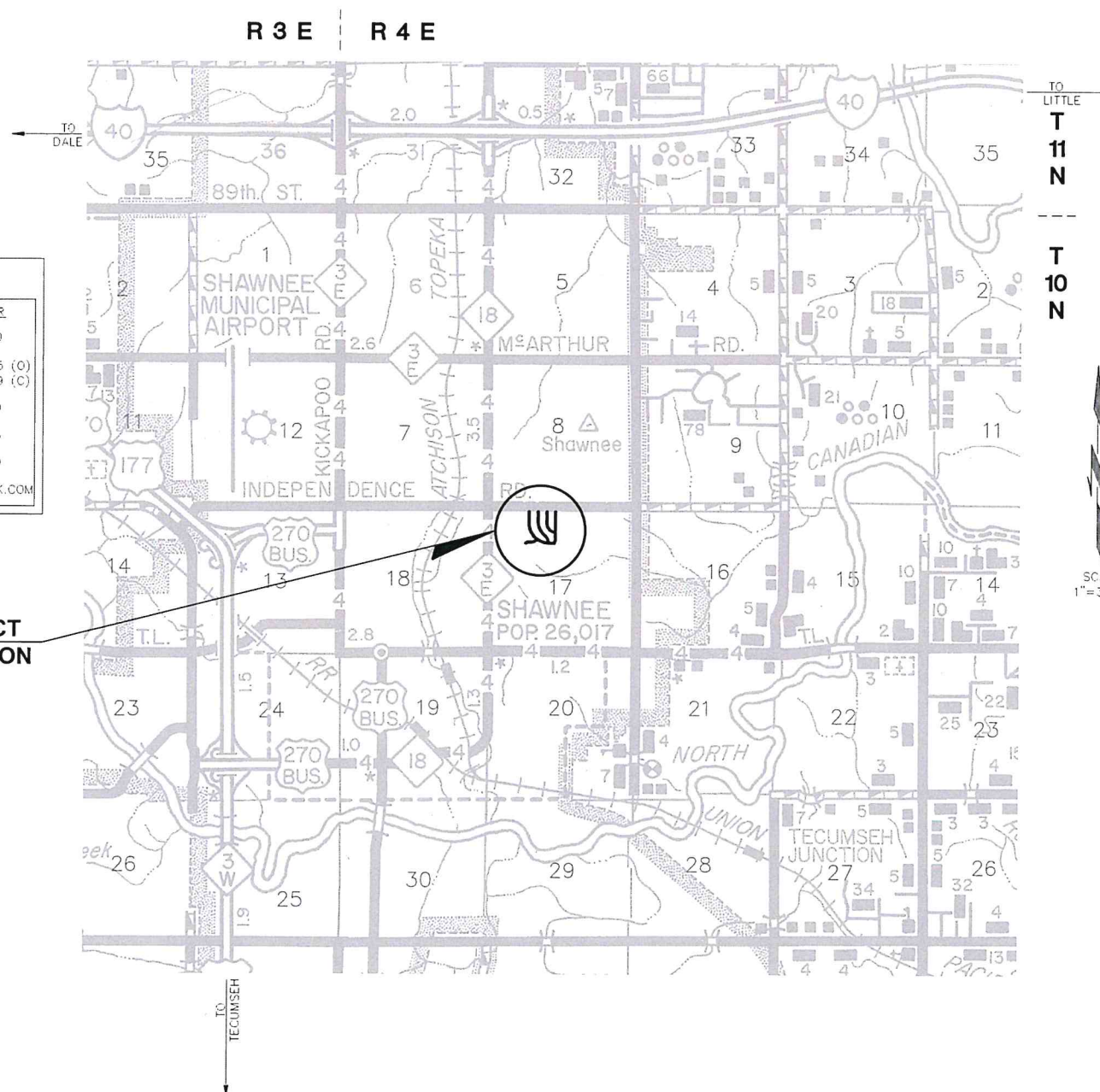
LEGEND

---	EXISTING CONTOUR
---	PROPOSED CONTOUR
---	SECTION LINE
---	QUARTER SECTION LINE
---	RIGHT-OF-WAY (EXISTING)
---	RIGHT-OF-WAY (PROPOSED)
---	EXISTING ROAD
---	PROPOSED ROAD
---	FENCES
---	POWER OVERHEAD
---	POWER UNDERGROUND
---	TELEPHONE UNDERGROUND
---	GAS LINE
---	WATER LINE
---	SANITARY SEWER LINE
---	STORM SEWER (EXISTING)
---	STORM SEWER (PROPOSED)



- AN EFFORT HAS BEEN MADE TO LOCATE AND SHOW APPROXIMATE LOCATION OF UNDERGROUND UTILITY LINES. BURIED UTILITIES ARE NOT NECESSARILY SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PRESERVE ALL UTILITIES.
- CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES WITHIN WORK ZONE PRIOR TO CONSTRUCTION.

PROJECT
LOCATION



SHEET INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PAY QUANTITIES & NOTES
3	STORMWATER MANAGEMENT PLAN
4	SURVEY DATA
5	OVERALL MAP
6-9	LINE 1 P&P
10-12	LINE 2 P&P
13-14	LINE 3 P&P
15-17	LINE 4 P&P
18	LINE 5 P&P
19-21	WATER DETAILS
22-26	SPECIAL DETAILS
27	EROSION CONTROL DETAIL

STATE OF OKLAHOMA
Department of Environmental Quality

APPROVED

August 08 2023

Rocky W. Chen, P.E.

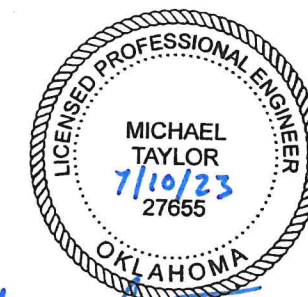
Water Quality Division

Adam Divine

D. Adam Divine, P.E.

Construction Permitting Section

PREPARED BY



MICHAEL TAYLOR, P.E.
OKLAHOMA REGISTERED PROFESSIONAL ENGINEER NO. 27655
COWAN GROUP ENGINEERING, LLC
OKLAHOMA CERTIFICATE OF AUTHORIZATION NO. 6414
EXPIRES JUNE 30, 2024



COWAN GROUP ENGINEERING
7100 N. CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
405-463-3369 D 405-463-3381 F
WWW.COWANGROUP.CO
CA# 6414 EXPDRES 6/30/2024

THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

TITLE SHEET

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	23-152
DATE	6/13/2023

REVISIONS

SHEET NUMBER

Monday, July 3, 2023 11:12:45 AM

GENERAL CONSTRUCTION NOTES

1.

ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE, FEDERAL, AND LOCAL STANDARDS AND SPECIFICATIONS AND THE REQUIREMENTS OF THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY. WHERE IN CONFLICT THE MOST STRINGENT REQUIREMENT SHALL APPLY.
2.

ANY CONSTRUCTION ITEMS THAT ARE NOT LISTED IN THE SUMMARY OF QUANTITIES SHALL BE CONSIDERED INCIDENTAL CONSTRUCTION ITEMS. THE COST OF INCIDENTAL CONSTRUCTION ITEMS SHALL BE INCLUDED IN THE COST OF OTHER BID ITEMS.
3.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH ALL PUBLIC AND/OR PRIVATE UTILITY COMPANIES IN THE VICINITY OF CONSTRUCTION.
4.

EXISTING UTILITIES AND THEIR LOCATIONS, AS SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION OBTAINABLE FOR DESIGN. LOCATION INFORMATION HAS BEEN OBTAINED FROM THE VARIOUS UTILITY COMPANIES AND IS EITHER FROM COMPANY RECORD DRAWINGS OR COMPANY PROVIDED FIELD LOCATIONS. THE PLAN LOCATIONS SHOWN ARE NOT GUARANTEED. ADDITIONAL EXISTING UTILITIES MAY ALSO BE ENCOUNTERED.
5.

RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES AND EXCESS EXCAVATION WHICH IS TO BE WASTED ON SITES TO BE PROVIDED BY THE CONTRACTOR. THESE SITES SHALL BE APPROVED BY THE ENGINEER AS TO SUITABILITY. ALL DISPOSAL SITES MUST BE APPROVED BY THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOOD PLAIN SHALL REQUIRE THE NECESSARY PERMITS. ANY MATERIAL DUMPED IN THE WATERS OF THE UNITED STATES OR WETLANDS IS SUBJECT TO U.S. CORP OF ENGINEERS PERMITTING REGULATIONS. ANY MATERIAL BURIED OR STOCKPILED BEYOND APPROVED CONSTRUCTION LIMITS WOULD REQUIRE ADDITIONAL ARCHAEOLOGICAL INVESTIGATIONS AND STATE APPROVAL.
6.

A COPY OF THE EROSION CONTROL SITE PLANS AND THE STORM WATER POLLUTION PREVENTION PLAN MUST BE ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE INSPECTOR UPON REQUEST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION , MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL EROSION CONTROL DEVICES DAMAGED DUE TO CONSTRUCTION.
7.

CONTRACTOR SHALL PROVIDE BONDS AND PROOF OF INSURANCE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
8.

CONSTRUCTION STAKING AND TESTING SHALL BE PROVIDED BY THE CONTRACTOR.
9.

THE CONTRACTOR SHALL GIVE ALL PROPERTY OWNERS AND/OR TENANTS OF DEVELOPED PROPERTY DIRECTLY ABUTTING CONSTRUCTION OF THIS PROJECT MINIMUM OF TEN (10) DAYS NOTICE PRIOR TO START OF CONSTRUCTION.
10.

THE CONTRACTOR SHALL AVOID TREE DAMAGE IF AT ALL POSSIBLE AND SHALL PRUNE ALL ROOTS DAMAGED DURING CONSTRUCTION ACTIVITIES
11.

ALL WATER LINE MAINS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF FOUR (4) FEET, UNLESS OTHERWISE NOTED.
12.

SHOP DRAWNGS FOR ALL PIPE MATERIALS INCLUDING BUT NOT LIMITED TO VALVES, FITTINGS, AND PIPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION BEGINS.
13.

ALL DISTURBED AREAS SHALL HAVE 4” TOPSOIL AND SOLID SLAB SOD LAID. CONTRACTORS SHALL TAKE NECESSARY MEASURES TO RE-ESTABLISH SOD. PRICE BID TO INCLUDE COST OF (10–20–10) FERTILIZER, ESTIMATED AT 200 POUNDS PER 1000 SY. OF SODDING. PRICE BID ALSO TO INCLUDE COST OF WATERING, ESTIMATED AT 40 GALLONS PER SY.
14.

WATER VALVES TO BE ABANDONED IN SIDEWALKS OR PAVEMENT SHALL BE CLOSED; POUR CONCRETE OVER VALVE, PULL VALVE BOX, AND REPAIR SIDEWALK OR PAVING.
15.

CONTRACTOR SHALL CONDUCT PRESSURE TESTS AND DISINFECTION ON ALL WATER MAINS PRIOR TO CONNECTION TO EXISTING DISTRIBUTION SYSTEM.

PRESSURE AND LEAKAGE TESTS SHALL BE PERFORMED BY CONTRACTOR IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY OAC252:626–19–2(E) AND LATEST REVISION OF AWWA C906.

DISINFECTION TESTS SHALL BE PERFORMED BY CONTRACTOR IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY OAC252:626–19–2(F) AND LATEST REVISION OF AWWA STANDARD SPECIFICATIONS.
16.

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC CONTROL IN ACCORDANCE WITH FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THE CONTRACTOR IS RESPONSIBLE FOR THE PROMPT REPLACEMENT AND/OR REPAIR OF ALL TRAFFIC CONTROL DEVICES

- AND APPURTENANCES DAMAGED OR DISTURBED DUE TO CONSTRUCTION. COST OF TRAFFIC CONTROL SHALL BE CONSIDERED INCIDENTAL AND INCLUDED IN THE COST OF OTHER BID ITEMS.
17.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE REQUIRED 10 FOOT HORIZONTAL AND 2 FOOT VERTICAL SEPARATION BETWEEN SANITARY SEWER AND POTABLE WATER MAINS AND 5 FOOT HORIZONTAL AND 2 FOOT VERTICAL SEPARATION BETWEEN WATER MAINS AND OTHER UTILITIES
18.

CONTRACTOR SHALL MAINTAIN WATER SERVICE DURING CONSTRUCTION. CONNECTION SHALL BE COORDINATED WITH OWNER AND COMPLETED IN A TIMELY MANNER TO MINIMIZE INTERRUPTION TO SERVICE.
19.

ALL EXISTING WATER MAINS AND APPURTENANCES BEING ABANDONED BY ANY PROJECT ARE TO REMAIN THE PROPERTY OF SHAWNEE WATER DEPARTMENT, AND SHALL BE SALVAGED FOR THE SHAWNEE WATER DEPARTMENT.
20.

IN INSTANCES WHERE FLOW LINES ARE NOT INDICATED ON THE DRAWINGS, MAIN SHALL BE CONSTRUCTED WITH A MINIMUM OF 4’ COVER, OR AS DIRECTED BY THE CITY ENGINEER AND IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY STANDARDS.
21.

ALL EMBANKMENTS AND BACKFILL SHALL MEET THE STANDARD SPECIFICATION.
22.

ANY CONSTRUCTION PROCEDURES NOT COVERED IN THE PLANS AND SPECIFICATIONS WILL BE EXECUTED IN ACCORDANCE WITH PROPER CONSTRUCTION TECHNIQUES AND SHALL BE APPROVED BY THE ENGINEER.
27.

CONTRACTOR IS RESPONSIBLE FOR PROMPT REPLACEMENT OF ANY FENCE DISTURBED DURING CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL.
1.

TEMPORARY EROSION AND SEDIMENT CONTROL SHALL CONSIST OF TEMPORARY MEASURES WITHIN THE PROJECT LIMITS AND MINIMIZE POLLUTION OF RIVERS, STREAMS, AND PRIVATE PROPERTIES. SUCH MEASURES MAY INCLUDE SILT FENCES, BERMS, DIKES, SLOPE DRAINS, BALE BARRIERS, SEDIMENT FILTERS, SEDIMENT BASINS, SILT FENCES, MULCHES, AND GRASSES.
2.

INCLUDES COST FOR STORMWATER POLLUTION PREVENTION PLAN DOCUMENTATION AND MANAGEMENT AS PER ODEQ STANDARDS.
3.

ALL DISTURBED NON–PAVED AREAS SHALL BE SOLID SLAB SODDED. INCLUDES COST OF WATERING AT 40 GALLONS PER SQUARE YARD, AND FERTILIZING 10–20–10 AT 10 LBS PER 1000 SQUARE FEET.
4.

QUANTITY IS CALCULATED USING THE STANDARD TRENCH WIDTH AS SHOWN ON WATER DETAILS SHEET NO EXTRA PAYMENT IS MADE FOR ANY ADDITIONAL TRENCH WIDTH OR SODDING.
5.

COST OF EXCAVATION AND BACKFILL INCLUDING COST OF BEDDING MATERIALS AS PER STANDARD WATER DETAILS SHALL BE INCLUDED IN THE COST OF PIPE. NO ADDITIONAL PAYMENT SHALL BE MADE.
6.

QUANTITY INCLUDES ALL FITTINGS INCLUDING BUT NOT LIMITED TO TEES, CROSS. WYE, SOLID SLEEVES, BENDS, REDUCERS, CAPS, AND PLUGS TO MAKE CONNECTIONS TO EXISTING OR NEW WATER LINES.
7.

CONCRETE USED FOR DRIVE PLACEMENT AND PAVING SHALL BE 3,500 PSI HIGH EARLY STRENGTH CONCRETE.10. CONTRACTOR TO REMOVE AND REPLACE CONCRETE TO THE NEAREST CONTRACTION JOINT TO MATCH EXISTING PANELS. PRICE BID TO INCLUDE THE SAW CUTS OF CONCRETE, REMOVAL AND REPLACEMENT OF EXPANSION JOINTS, DOWELS, AND CURB AND GUTTER.
8.

FIRE HYDRANT ASSEMBLY COMPLETE PRICE BID ITEM TO INCLUDE THE COST OF (3 L.F. OF 6” WATER LINE , 1–FIRE HYDRANT, 4–6” MEGALUG SERIES 2006 PV, 1–12” RISER IF REQUIRED).
9.

ESTIMATED QUANTITY. LOCATION, IF AND WHERE REQUIRED, TO BE DETERMINED BY THE ENGINEER. COST TO INCLUDE CURB AND GUTTER.
10.

EXISTING WATERLINES ARE SHOWN AT APPROXIMATE LOCATIONS ON PLANS. CONTRACTOR TO FIELD LOCATE THE EXISTING WATERLINES. CONNECTION TO EXISTING WATERLINE SHALL INCLUDE ALL COSTS FOR LABOR AND MATERIAL TO LOCATE AND CUT EXISTING WATERLINE AND INSTALL THE REQUIRED VALVES AND FITTINGS CONNECTING THE NEW WATERLINE. NO ADDITIONAL PAYMENT SHALL BE MADE.
11.

COST TO INCLUDE HDPE FITTINGS.
12.

SHALL BE PLACED IN EVERY BORE PIT AND AT MINIMUM EVERY 400 FEET. SEE SPECIAL DETAIL SHEET 28.

PAY QUANTITY NOTES

PAY QUANTITIES

BASE BID					
ITEM #	ITEM	NOTES	UNIT	QUANTITY	AS-BUILT
1	MOBILIZATION		LS	1	
2	CLEARING AND GRUBBING		LS	1	
3	SOLID SLAB SOD	(3)(4)	SY	2,708	
4	STORMWATER POLLUTION PREVENTION PLAN	(2)	LS	1	
5	8" HDPE DR-11 WATERLINE (HDD)	(10)(11)	LF	5,322	
6	8" HDPE DR-11 WATERLINE (TRENCHING)	(4)(5)	LF	282	
7	6" GATE VALVE & BOX		EA	10	
8	8" GATE VALVE & BOX		EA	7	
9	1" AIR RELIEF VALVE		EA	1	
10	HDPE WALL ANCHOR	(12)	EA	17	
11	FIRE HYDRANT ASSEMBLY	(8)	EA	10	
12	MECHANICAL JOINT FITTINGS	(6)	LB	3,837	
13	WATER SERVICE RECONNECTION (SHORT)		EA	72	
14	WATER SERVICE RECONNECTION (LONG)		EA	77	
15	LEAD SERVICE REPLACEMENT (SHORT)		EA	1	
16	LEAD SERVICE REPLACEMENT (LONG)		EA	1	
17	REMOVE & REPLACE CONCRETE PAVEMENT	(7)(9)	SY	3	
18	REMOVE & REPLACE CONCRETE DRIVE	(7)(9)	SY	19	
19	REMOVE EXISTING FIRE HYDRANT		EA	6	
20	CONSTRUCTION SIGNING AND TRAFFIC CONTROL		LS	1	
21	TEMPORARY EROSION AND SEDIMENT CONTROL	(1)	LS	1	
22	PRESSURE AND LEAKAGE TESTING		LS	1	
23	DISINFECTION AND TESTING		LS	1	

STATE OF OKLAHOMA

Department of Environmental Quality

APPROVED

August 08 2023

Rocky W. Chen, P.E.

Water Quality Division



D. Adam Divine, P.E.

Construction Permitting Section

THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE

POTTAWATOMIE COUNTY, OKLAHOMA

PAY QUANTITIES & NOTES

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	23-152
DATE	6/13/2023

REVISIONS

SHEET NUMBER	2
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G:\PROJECTS\23-152 SHAWNEE THOMPSON HEIGHTS WATERLINES\CAD\WTR\23-152 PAY QUANTITIES & NOTES.DWG



COWAN GROUP ENGINEERING
7100 N GLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
405-463-3369 O 405-463-3381 F
WWW.COWANGROUP.CO
CA# 6414 EXPIRES 6/30/2024

STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: PROJECT LOCATED IN SECTION 17, T10N, R4E, I.M. SHAWNEE, OKLAHOMA.

PROJECT DESCRIPTION: 5600 LF OF WATERLINE IMPROVEMENTS.

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES: PRIOR TO INITIATING SOIL DISTURBING ACTIVITIES, THE CONTRACTOR WILL STRIP, STOCKPILE, AND STABILIZE TOPSOIL. CLEAR AND GRUB ONLY IN AREAS NECESSARY, PRESERVING AS MUCH NATIVE VEGETATION AS POSSIBLE. INSTALL, MAINTAIN, AND/OR MOVE TEMPORARY SEDIMENT ITEMS AS PRACTICAL WITH CONSTRUCTION OPERATIONS. IF DIRECTED BY THE ENGINEER, PLANT TEMPORARY SEEDING, PLACE SALVAGED TOPSOIL AND DEVICES WHEN AN ACCEPTABLE VEGETATION COVER (AT LEAST 70%) HAS BEEN ATTAINED. AS SITE CONDITIONS WARRANT, THE CONTRACTOR MAY CHOOSE TO MODIFY THE TYPE OR ARRANGEMENT OF SPECIFIED PRACTICES TO IMPROVE THEIR EFFECTIVENESS AS APPROVED BY THE ENGINEER. THE CONTRACTOR WILL MAINTAIN A LOG OF THE DATES OF MAJOR SOIL DISTURBANCE ACTIVITIES AND ALSO THE DATES OF INSTALLATION OF EROSION CONTROL MEASURES.

SOIL TYPE: AYDELOTTE LOAM

TOTAL AREA OF THE CONSTRUCTION SITE: 4.0 ACRE

ESTIMATED AREA TO BE DISTURBED: 0.5 ACRE

OFFSITE AREA TO BE DISTURBED: (FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: 3.0 ACRE

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: 3.0 ACRE

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: C=0.5

LATITUDE & LONGITUDE OF CENTER OF PROJECT: 35°20'50"N, 96°54'07"W

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: CANADIAN RIVER

SENSITIVE WATERS OR WATERSHEDS: YES NO X

303 (d) IMPAIRED WATERS: YES X NO

IF YES, LIST IMPAIRMENT: ENTEROCOCCUS

LOCATED IN A TMDL: YES X NO

LAKE THUNDERBIRD TMDL: YES NO X

MS4 ENTITY YES X NO

IF YES, LOCATION:

NOTE: THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- X TEMPORARY SEEDING
- X PERMANENT SODDING, SPRIGGING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION BLANKET
- X PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

- STABILIZED CONSTRUCTION EXIT
- X TEMPORARY SILT FENCE
- TEMPORARY SILT DIKES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ROCK FILTER DAMS
- TEMPORARY SLOPE DRAIN
- PAVED DITCH W/ DITCH LINER PROTECTION
- TEMPORARY DIVERSION CHANNELS
- TEMPORARY SEDIMENT BASINS
- TEMPORARY SEDIMENT TRAPS
- TEMPORARY SEDIMENT FILTERS
- TEMPORARY SEDIMENT REMOVAL
- RIP RAP
- X INLET SEDIMENT FILTER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBAG BERMS
- TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- HAUL ROADS DAMPENED FOR DUST CONTROL
- X LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- X EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

CONTRACTOR TO REMOVE SEDIMENT WHEN TEMPORARY DEVICES ARE HALF FULL OR AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGE WAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:

A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC., THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEANING UP
- 104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
- 104.13 ENVIRONMENTAL PROTECTION
- 106.08 STORAGE AND HANDLING OF MATERIAL
- 107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
- 107.20 STORM WATER MANAGEMENT
 - 220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
 - 221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:

"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.

THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA



COWAN GROUP ENGINEERING
7100 N GLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
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CA# 6414 EXPIRES 6/30/2024

STORMWATER MANAGEMENT PLAN	
DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	23-152
DATE	6/13/2023
REVISIONS	
SHEET NUMBER	
3	

Monday, July 3, 2023 11:12:58 AM



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August 08 2023
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Water Quality Division
Adam Divine
D. Adam Divine, P.E.
Construction Permitting Section





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CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

SURVEY DATA

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PROJECT NUMBER	23-152
DATE	6/13/2023

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SHEET NUMBER
4



BM-1
LAVERNE AVENUE
CUT "X" ON CONC. CURB
N: 734667.105
E: 2295424.312
ELEV.=1088.60'



BM-2
LAVERNE AVENUE
CUT "X" ON CONC. CURB
N: 733917.1086
E: 2295426.7428
ELEV.=1075.70'



BM-3
LAVERNE AVENUE
CUT "X" ON CONC. CURB
N: 733562.3725
E: 2295410.804
ELEV.=1079.45'



BM-4
THOMPSON DRIVE
CUT "X" ON CONC. CURB
N: 734669.897
E: 2295102.665
ELEV.=1089.79'



BM-5
THOMPSON DRIVE
CUT "X" ON CONC. CURB
N: 734136.477
E: 2295133.608
ELEV.=1085.52'



BM-6
RICKEY ROAD
CUT "X" ON CONC. CURB
N: 734679.989
E: 2294778.786
ELEV.=1095.14'



BM-7
RICKEY ROAD
CUT "X" ON CONC. CURB
N: 734272.689
E: 2294797.153
ELEV.=1095.42'



BM-8
SHERRY LANE
CUT "X" ON CONC. CURB
N: 733529.038
E: 2295192.902
ELEV.=1082.70'



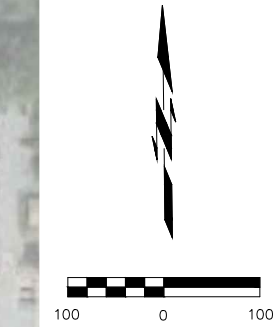
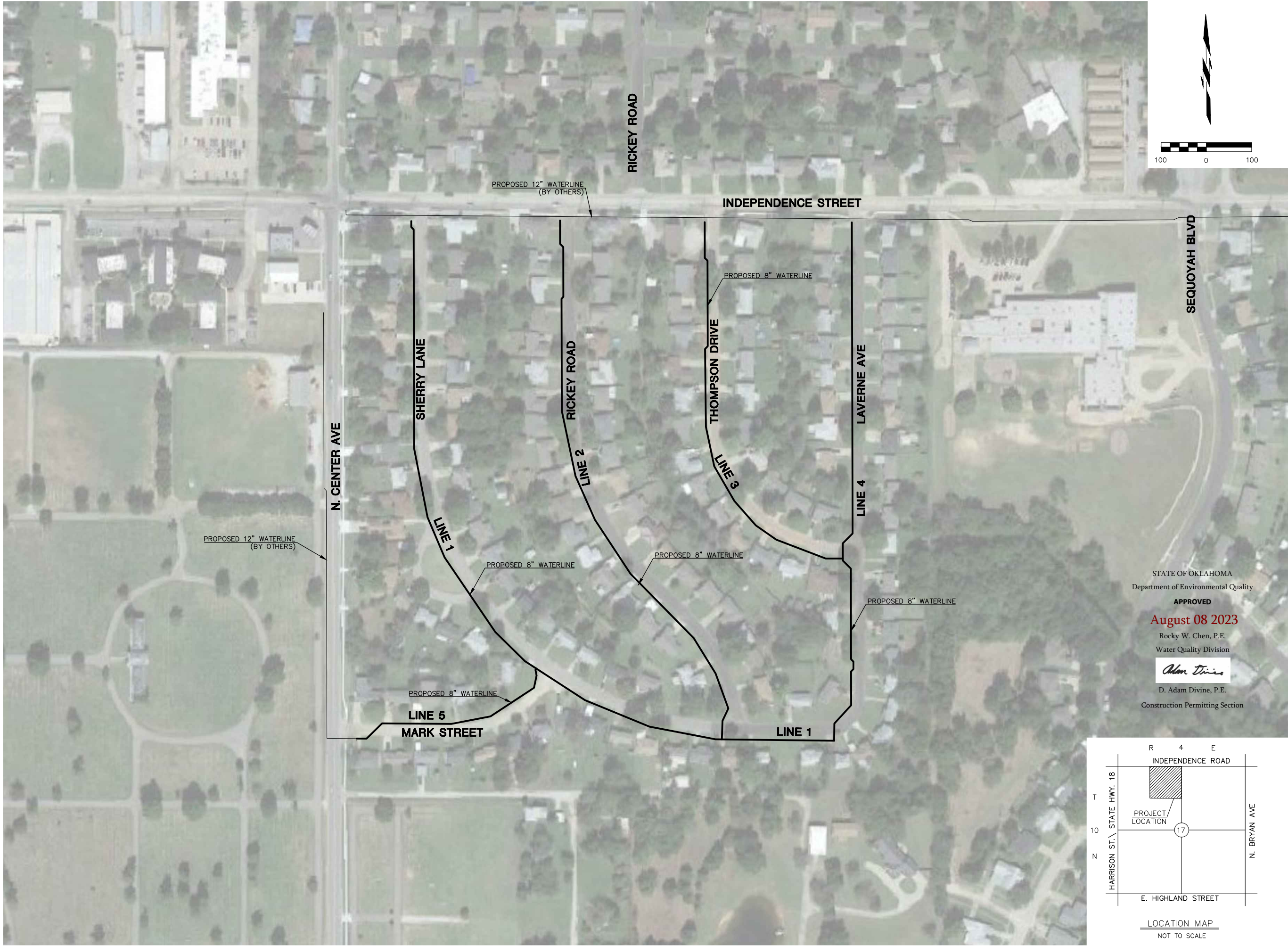
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SHERRY LANE
CUT "X" ON CONC. CURB
N: 734684.643
E: 2294509.633
ELEV.=1095.97'



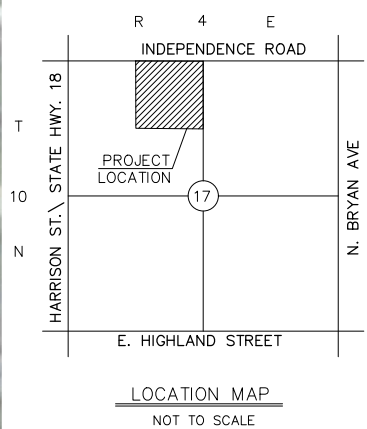
BM-10
SHERRY LANE
CUT "X" ON CONC. CURB
N: 734150.480
E: 2294476.574
ELEV.=1093.44'



BM-11
MARK STREET
CUT "X" ON CONC. CURB
N: 733624.352
E: 2294763.592
ELEV.=1083.49'



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THOMPSON HEIGHTS WATERLINE IMPROVEMENTS
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

OVERALL MAP

DESIGNED BY	GMT
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PROJECT NUMBER	23-152
DATE	6/13/2023

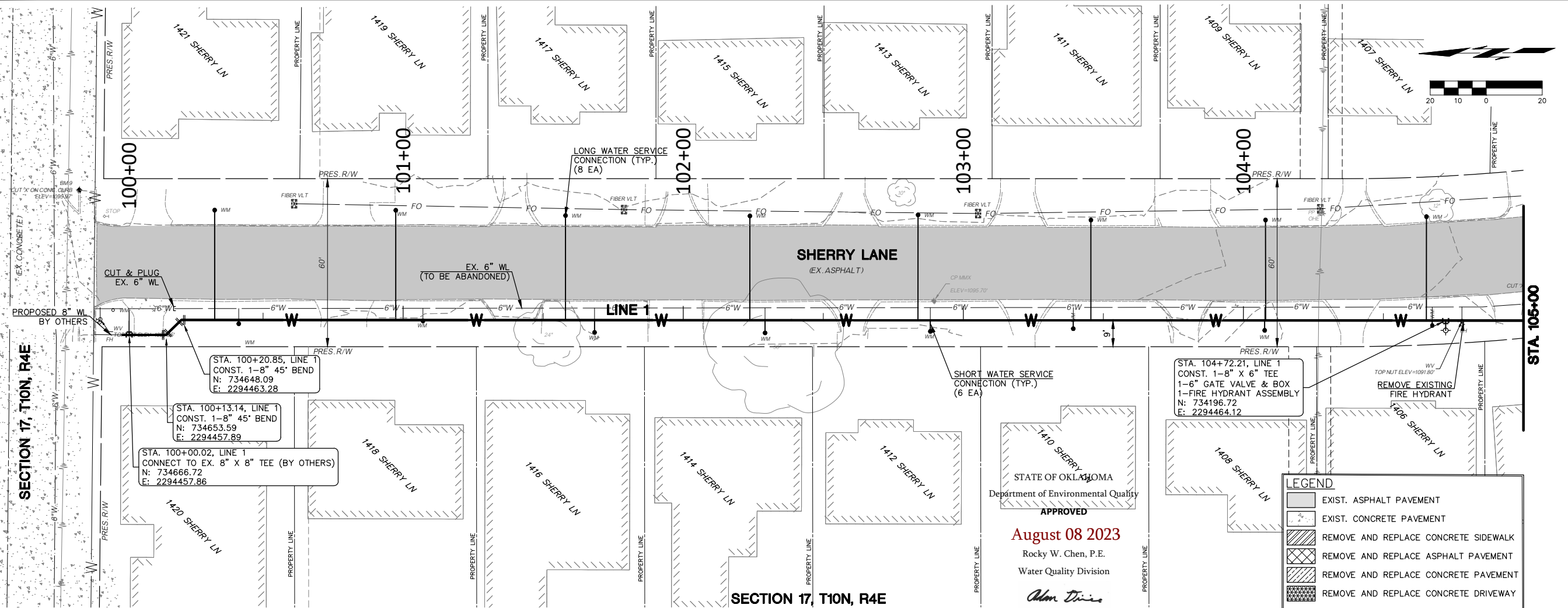
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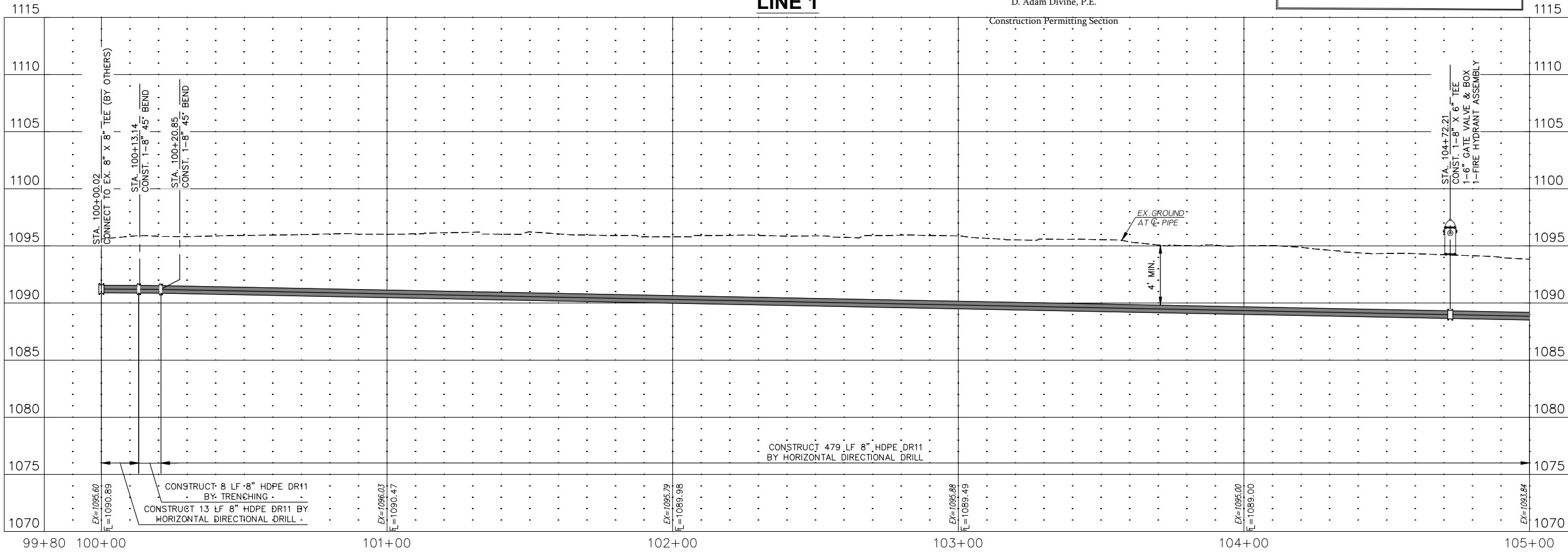
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SECTION 8, T10N, R4E

SECTION 17, T10N, R4E



SECTION 17, T10N, R4E
LINE 1



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THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

**LINE 1 P&P
(1 OF 4)**

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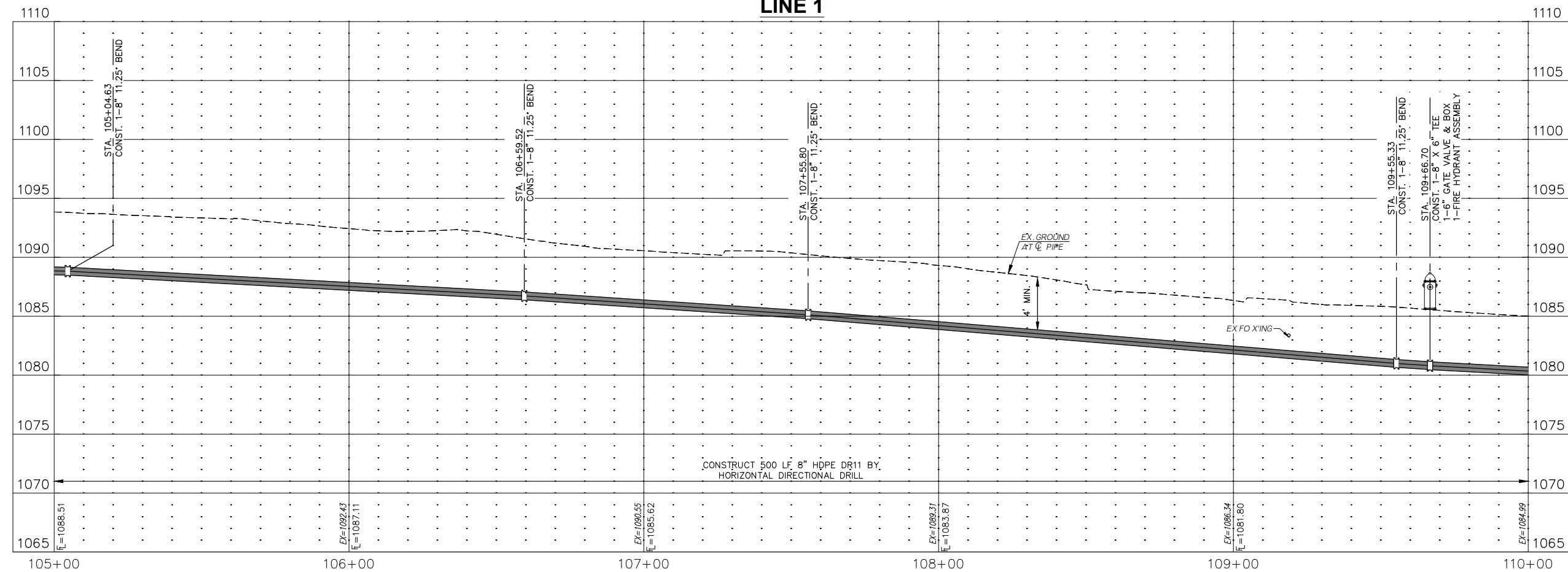
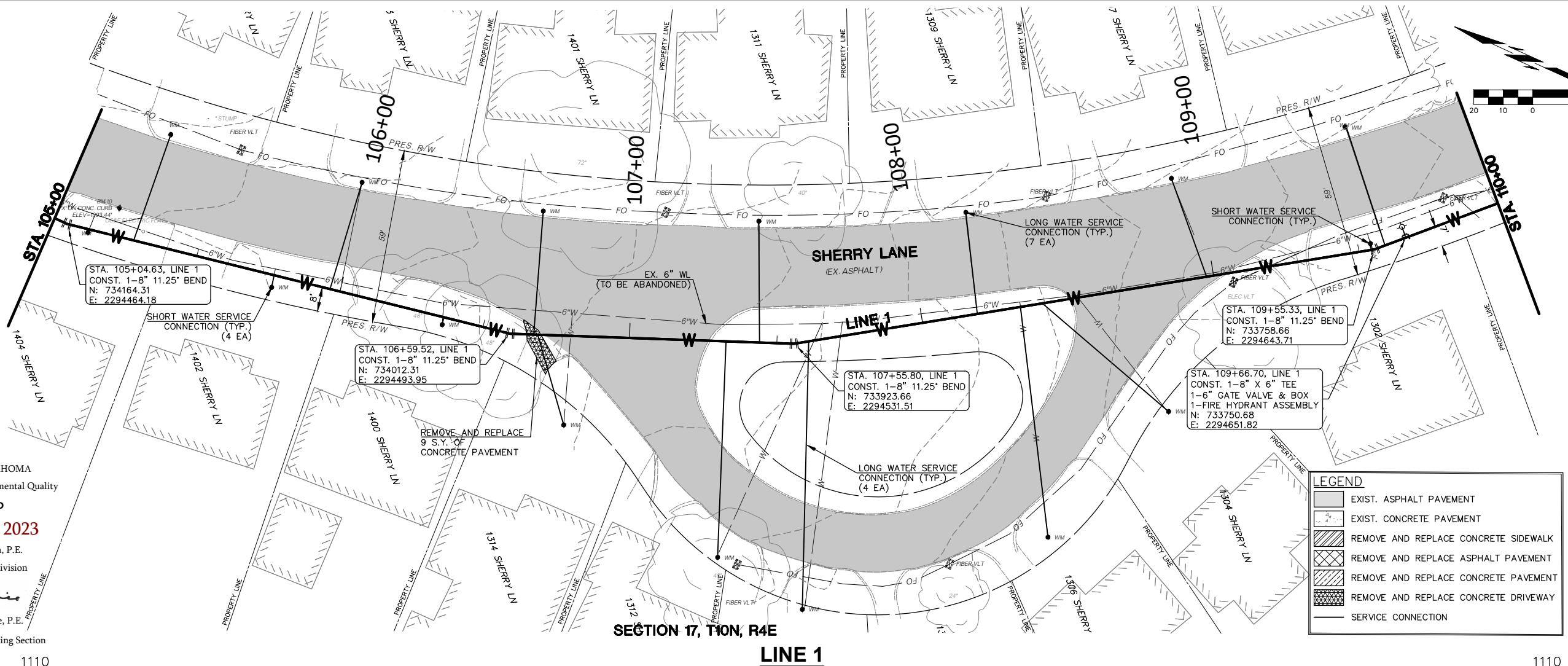
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6

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POTTAWATOMIE COUNTY, OKLAHOMA

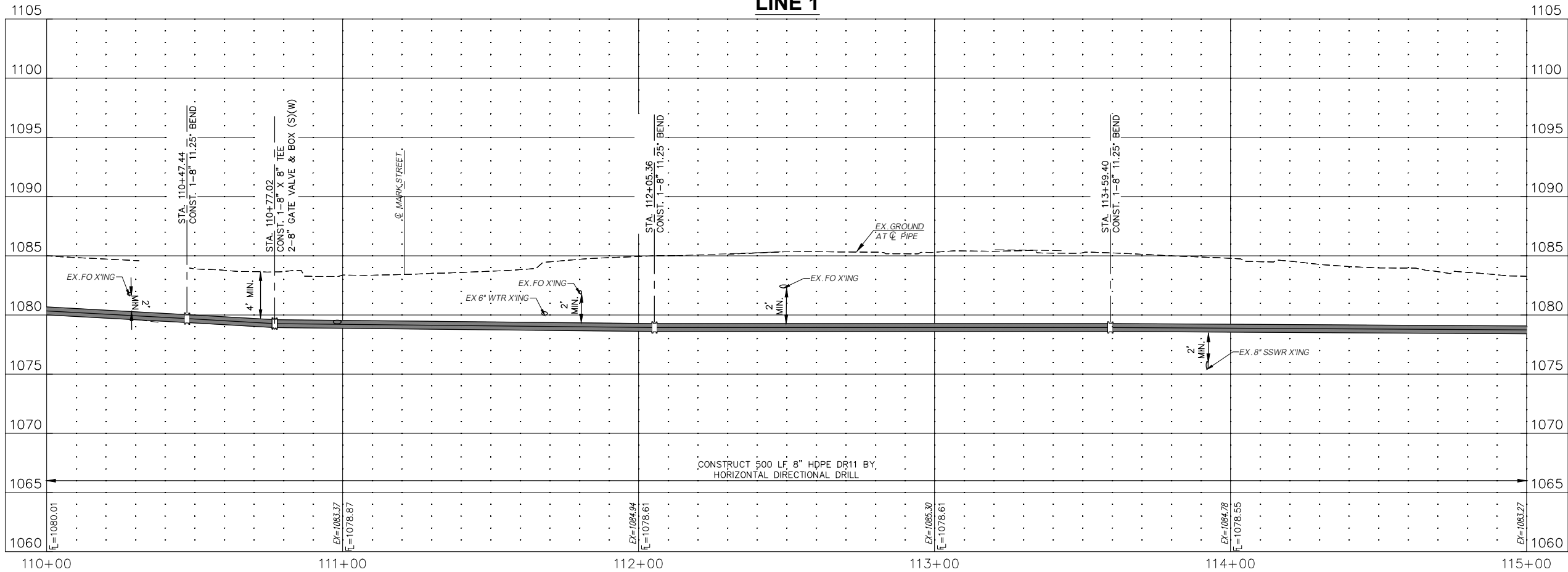
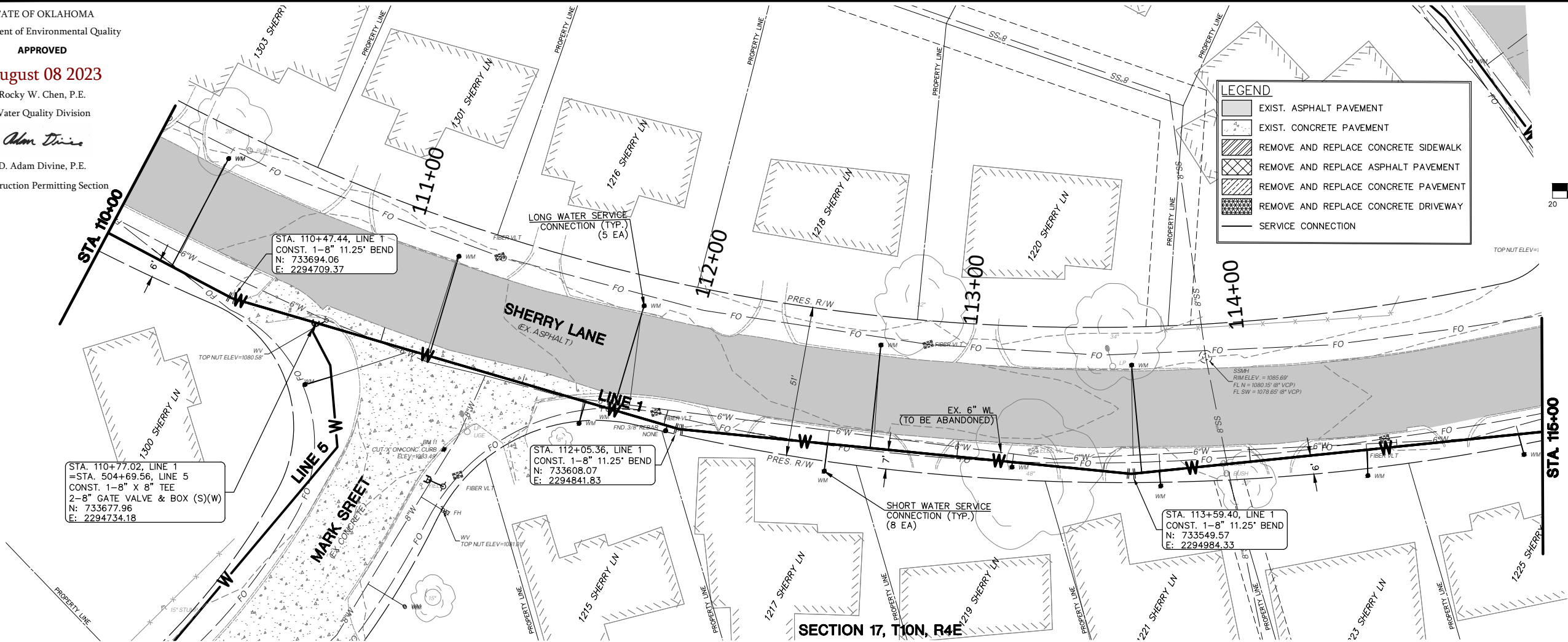
LINE 1 P&P (2 OF 4)

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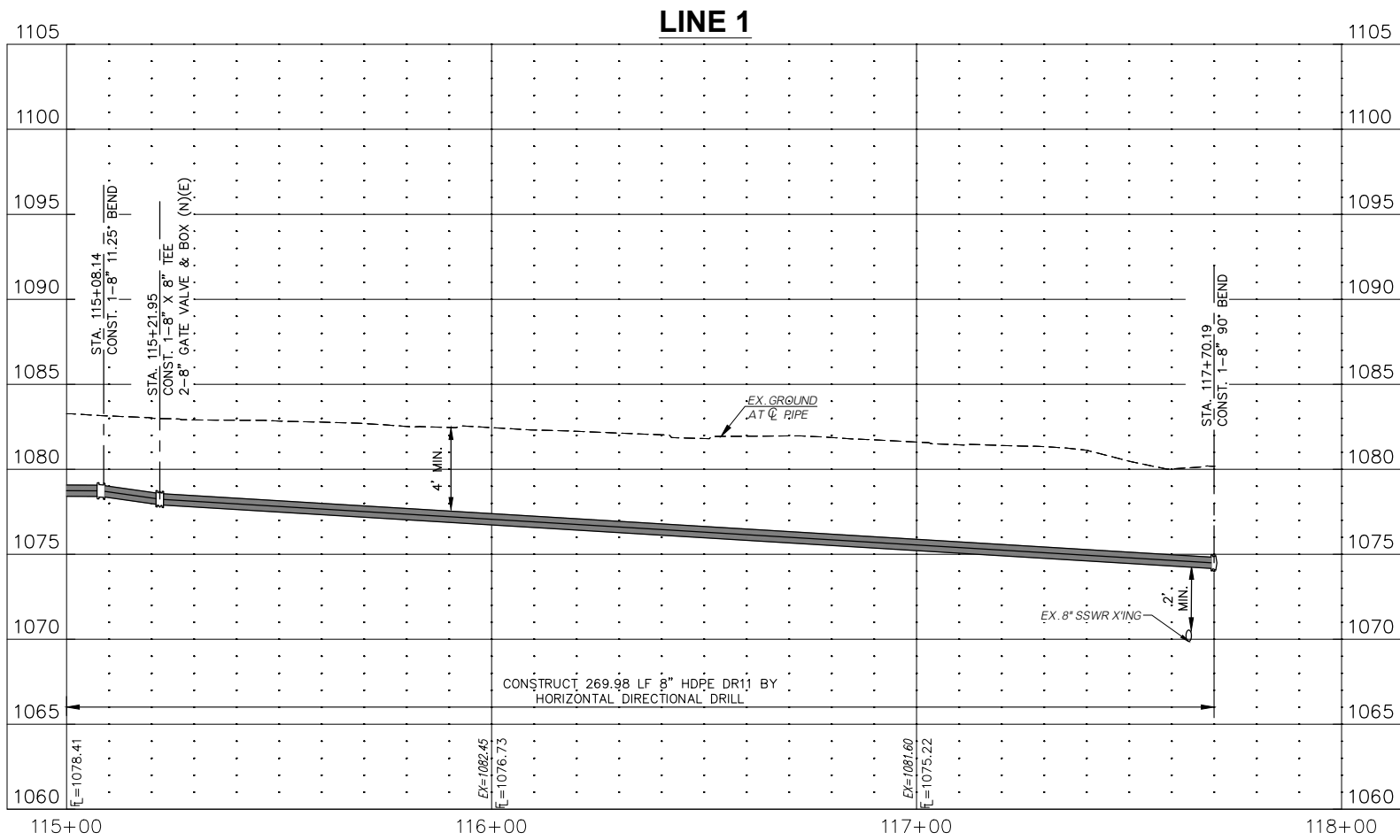
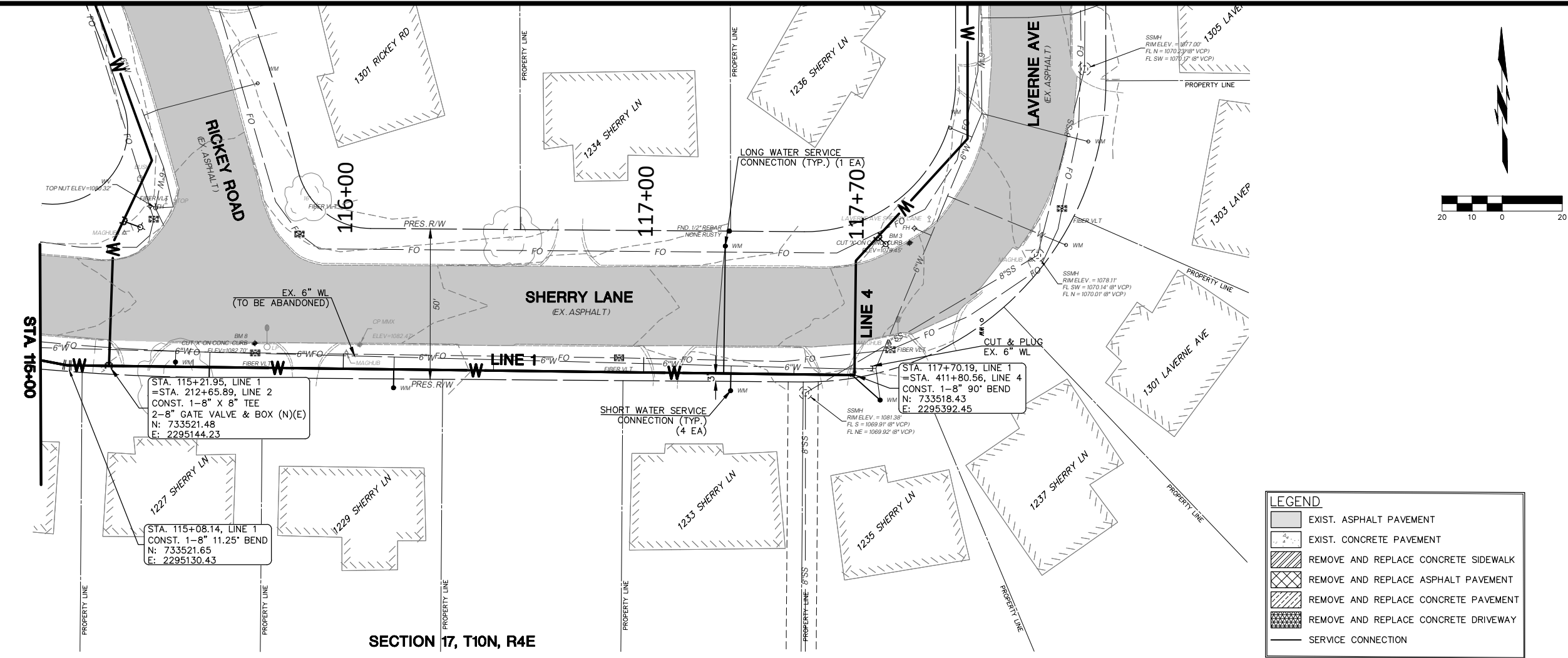
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THOMPSON HEIGHTS WATERLINE IMPROVEMENTS
CITY OF SHAWNEE
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LINE 1 P&P (3 OF 4)	
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CITY OF SHAWNEE
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**LINE 1 P&P
(4 OF 4)**

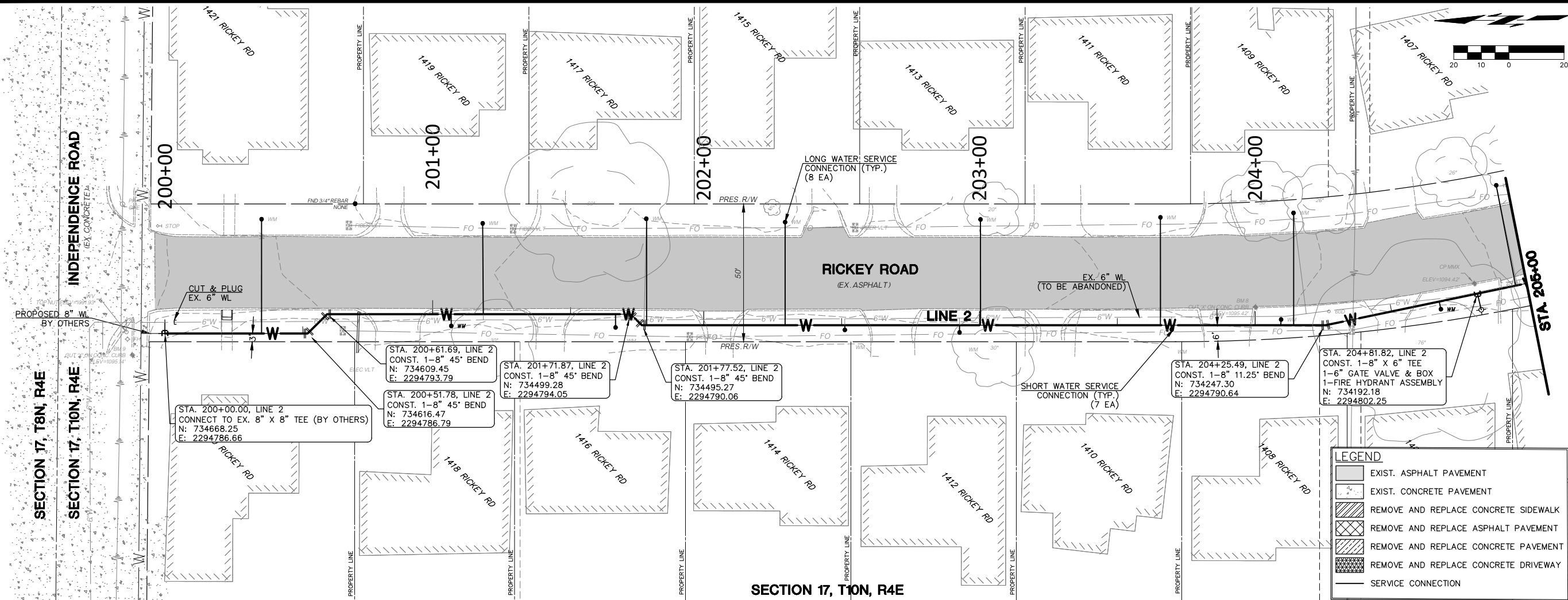
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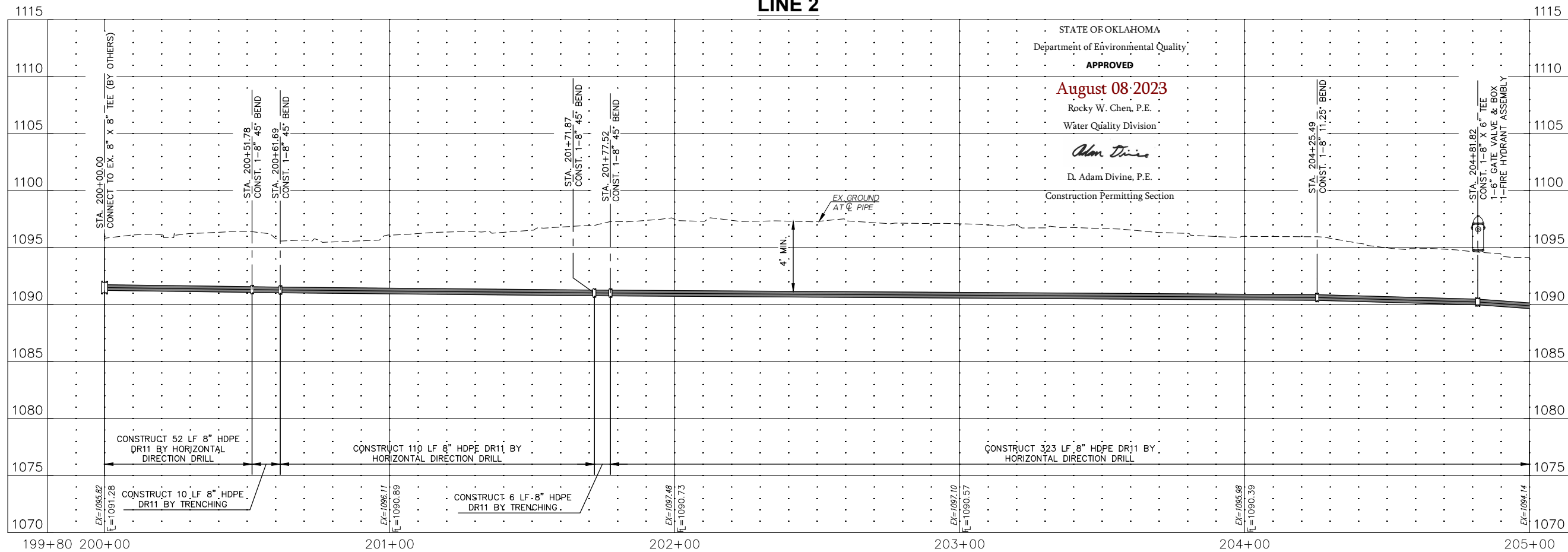
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SECTION 17, T10N, R4E
LINE 2



THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

LINE 2 P&P
(1 OF 3)

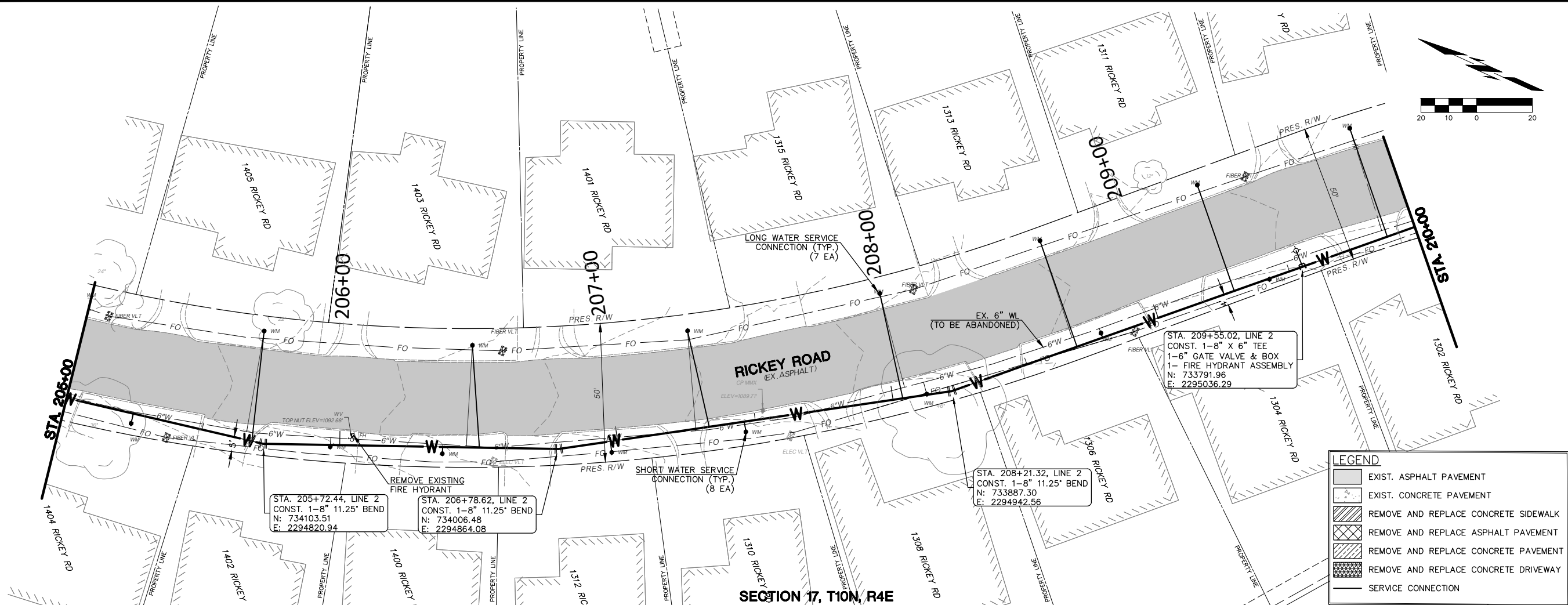
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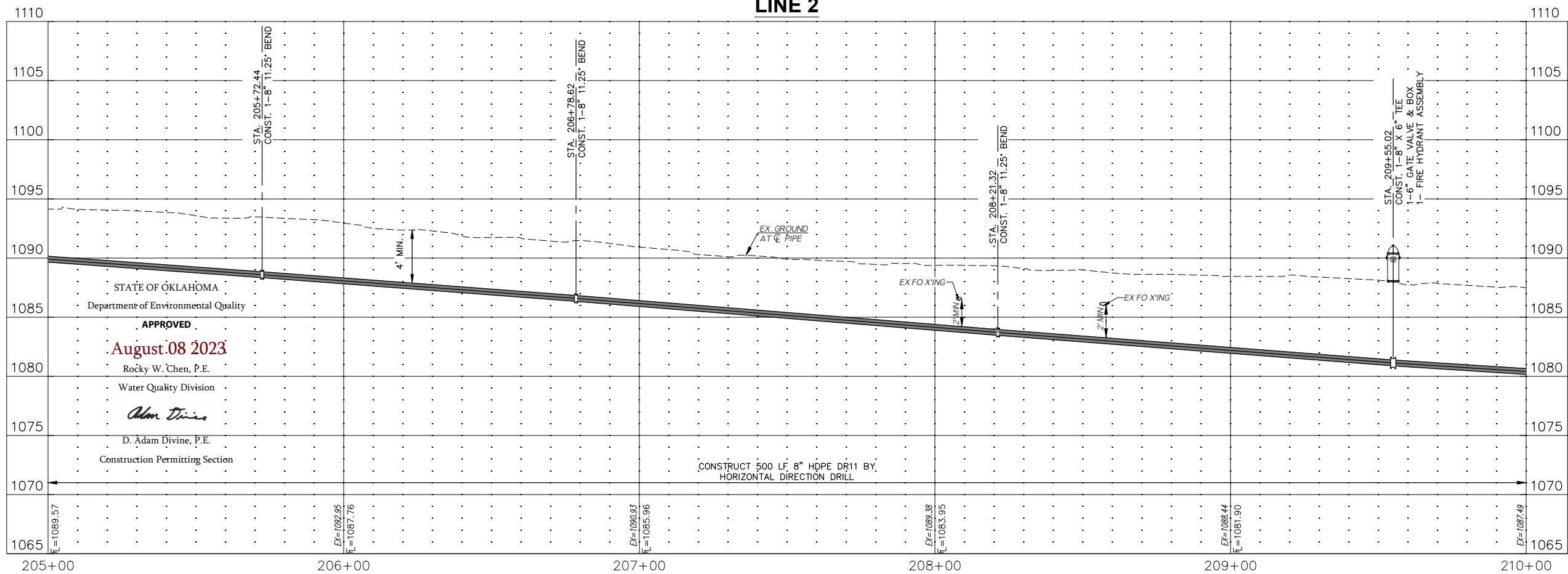
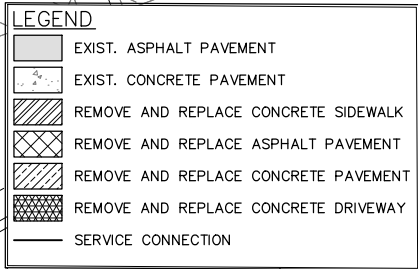
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SECTION 17, T10N, R4E
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CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

LINE 2 P&P
(2 OF 3)

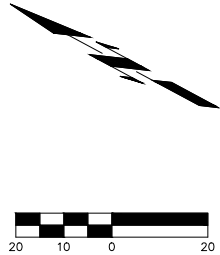
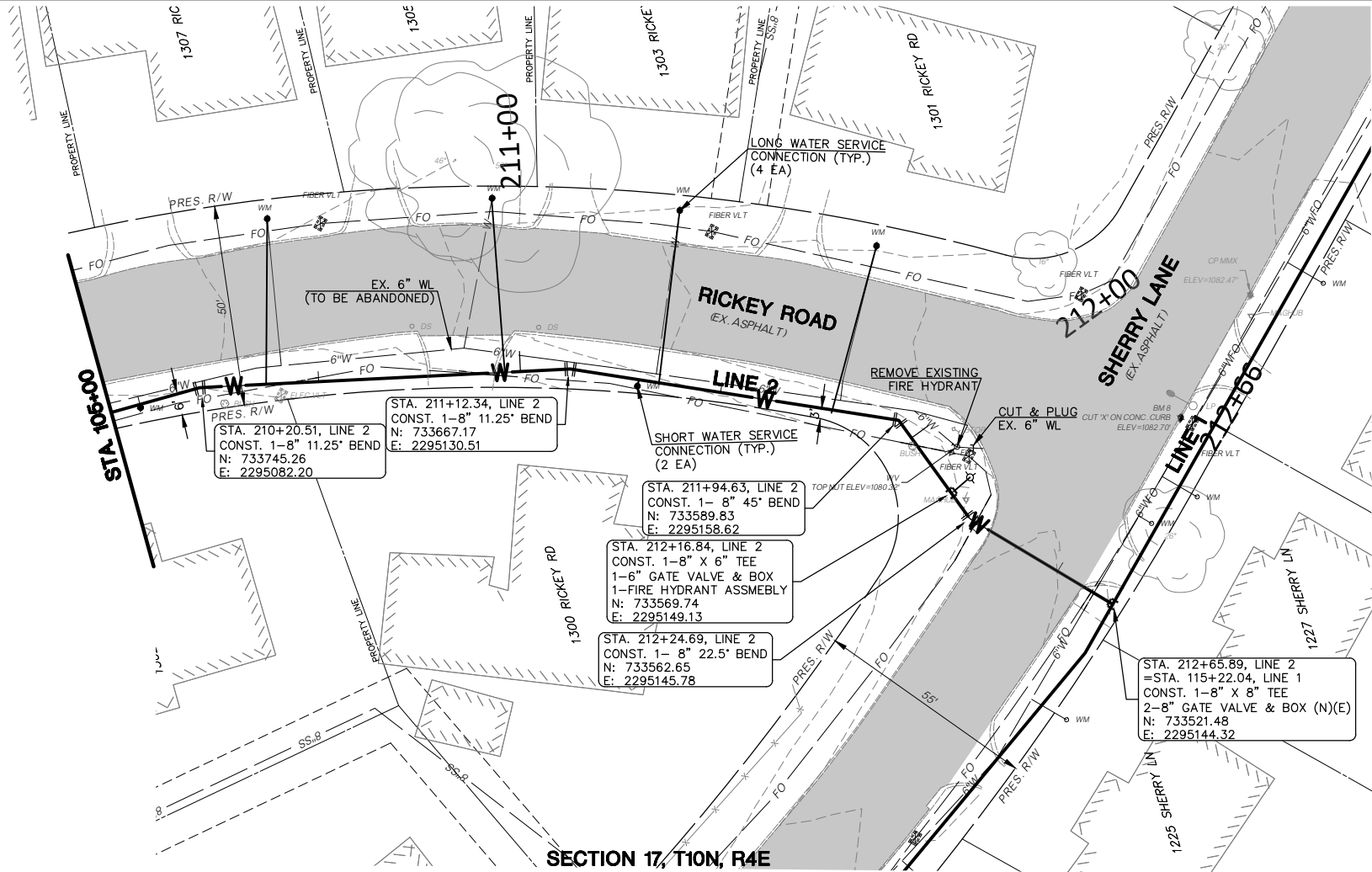
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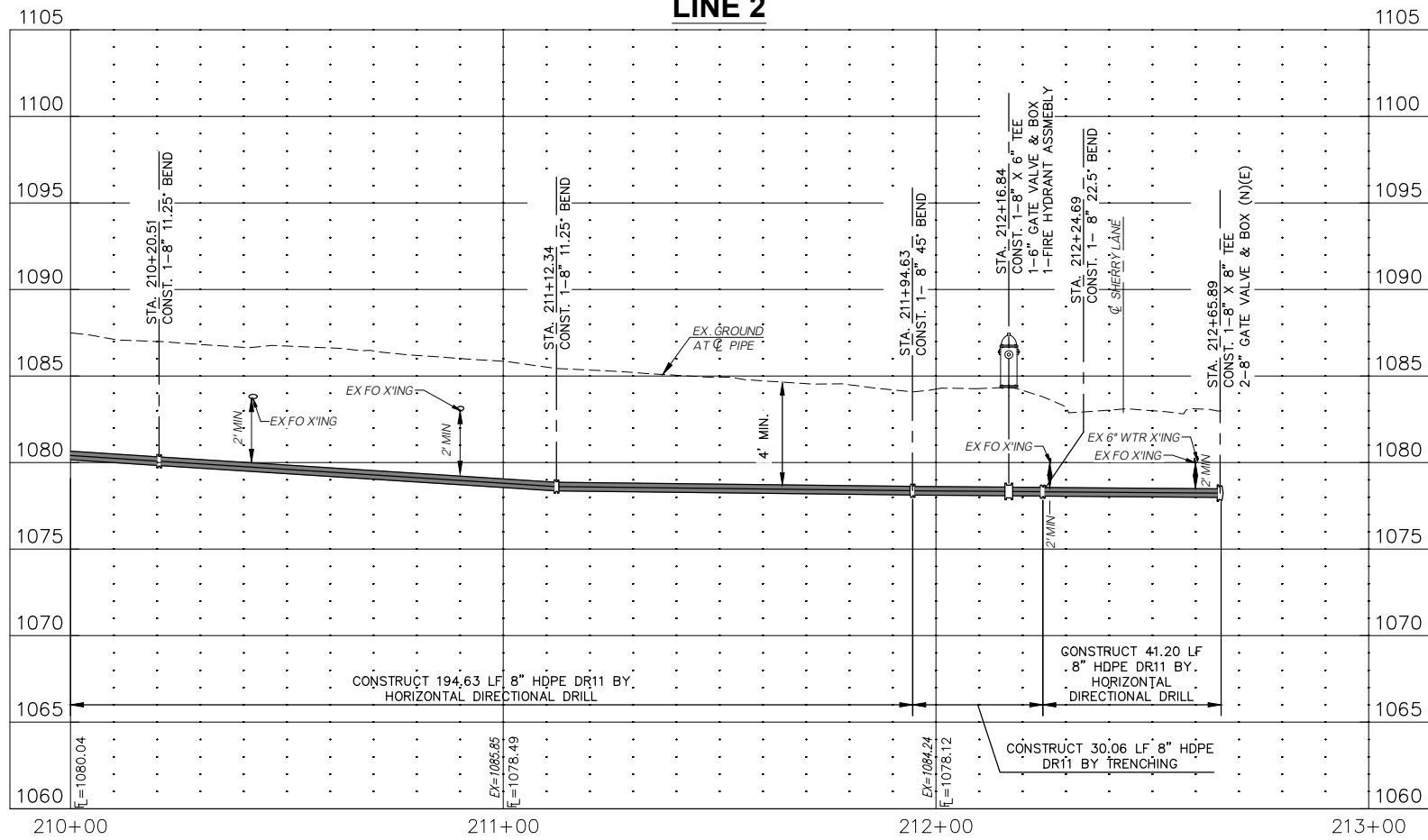
SHEET NUMBER

11

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LEGEND	
	EXIST. ASPHALT PAVEMENT
	EXIST. CONCRETE PAVEMENT
	REMOVE AND REPLACE CONCRETE SIDEWALK
	REMOVE AND REPLACE ASPHALT PAVEMENT
	REMOVE AND REPLACE CONCRETE PAVEMENT
	REMOVE AND REPLACE CONCRETE DRIVEWAY
	SERVICE CONNECTION



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POTTAWATOMIE COUNTY, OKLAHOMA

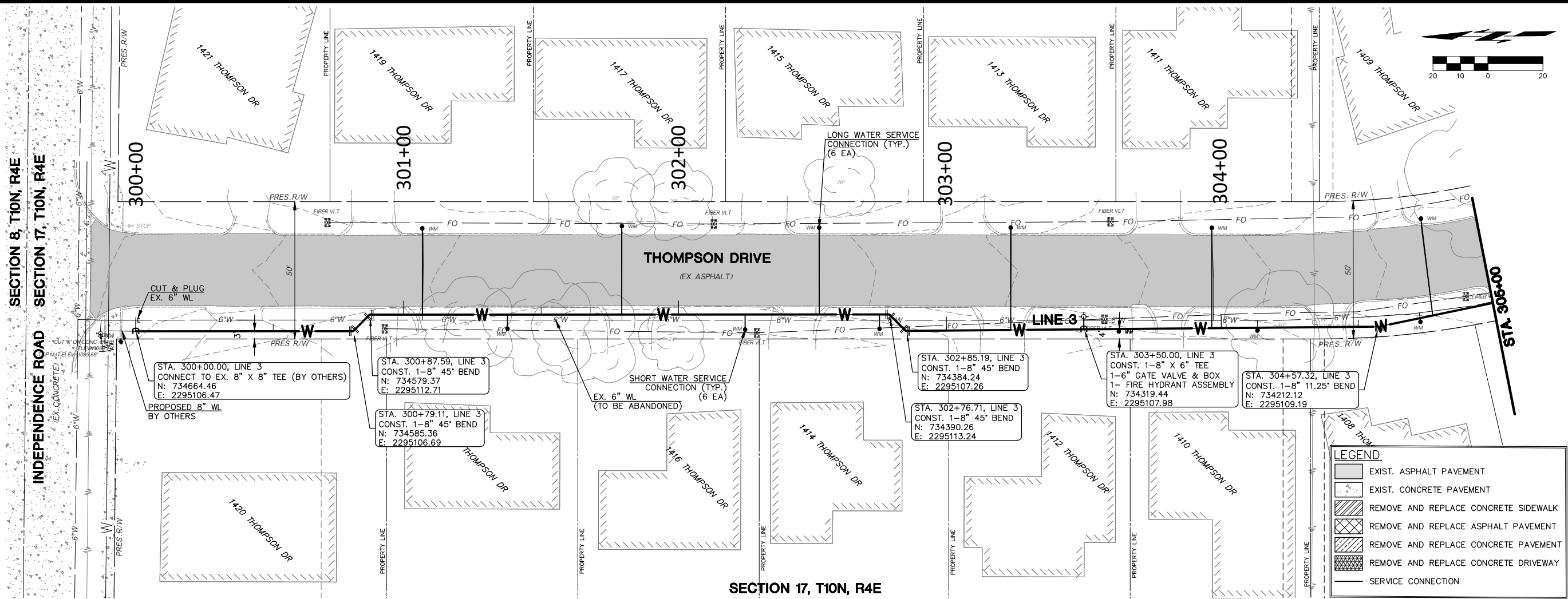
LINE 2 P&P
(3 OF 3)

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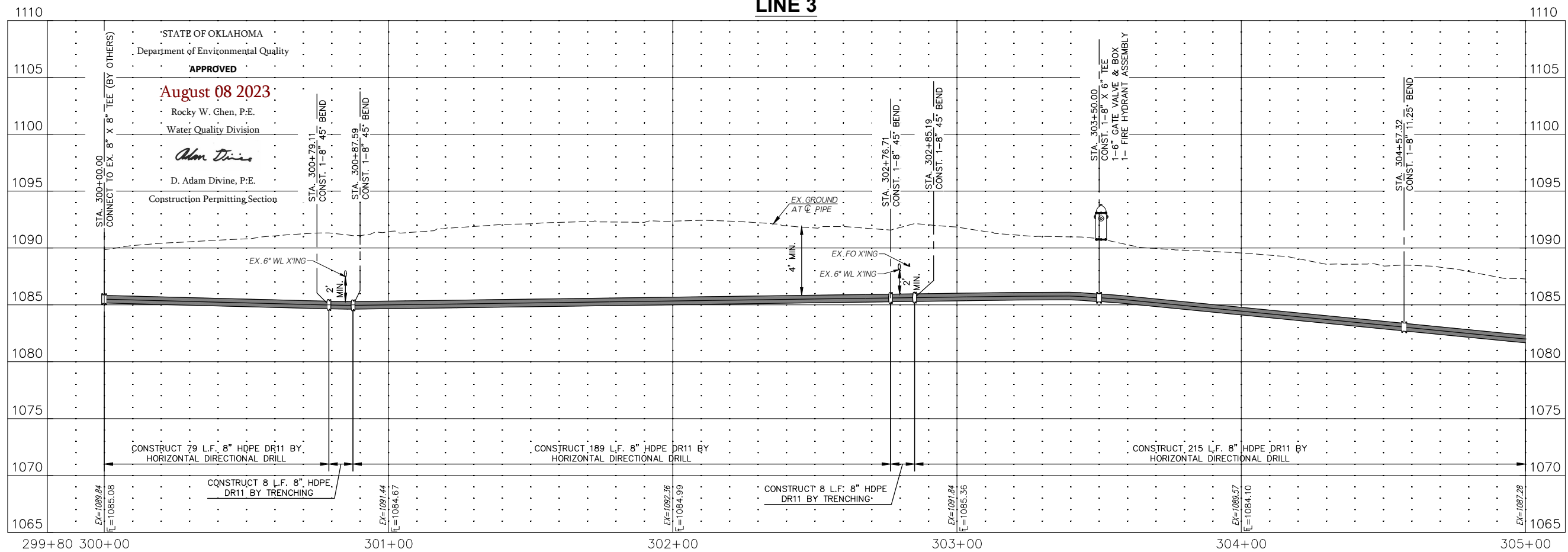
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12

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SECTION 17, T10N, R4E
LINE 3



THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

LINE 3 P&P
(1 OF 2)

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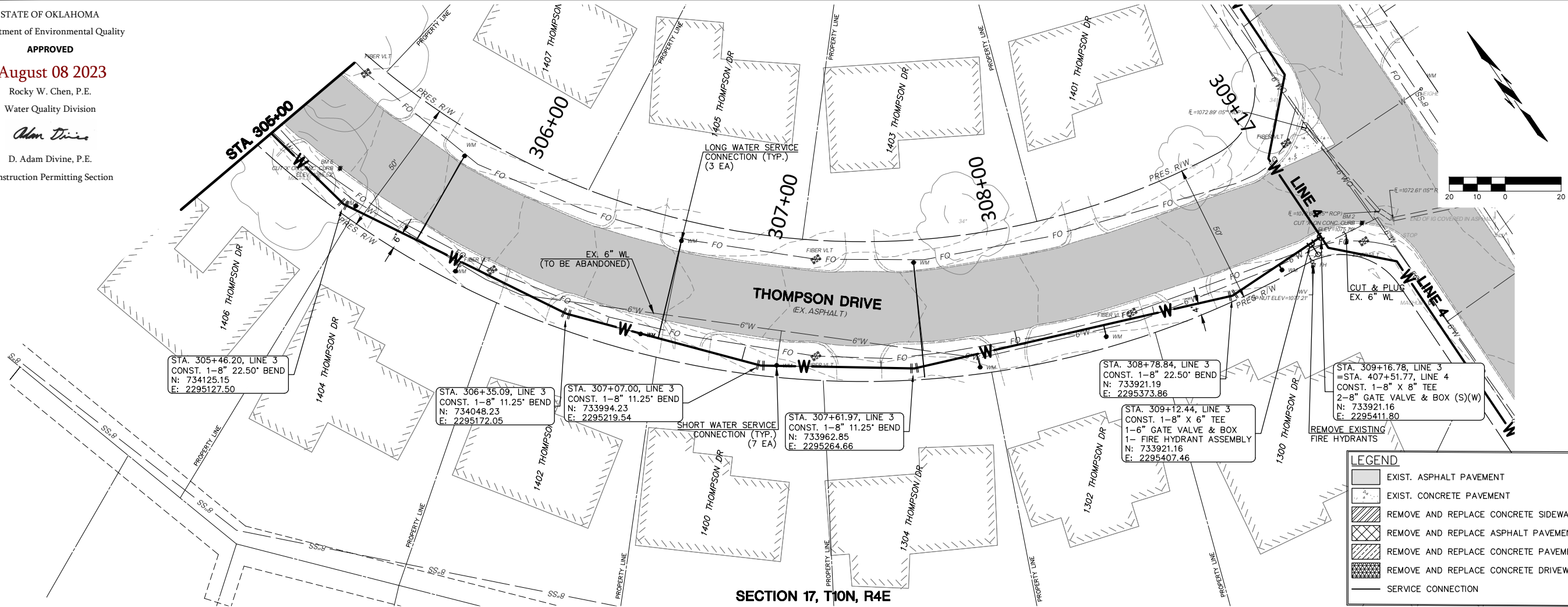
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Water Quality Division

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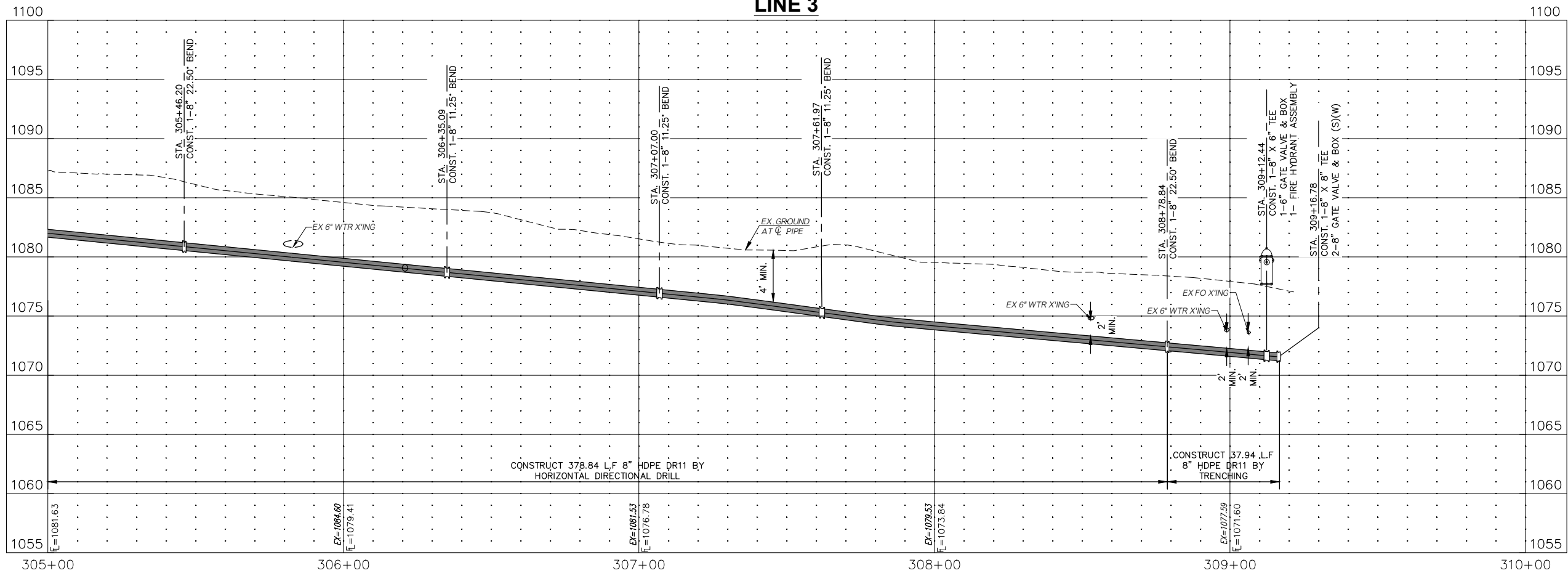
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SECTION 17, T10N, R4E
LINE 3



THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

LINE 3 P&P
(2 OF 2)

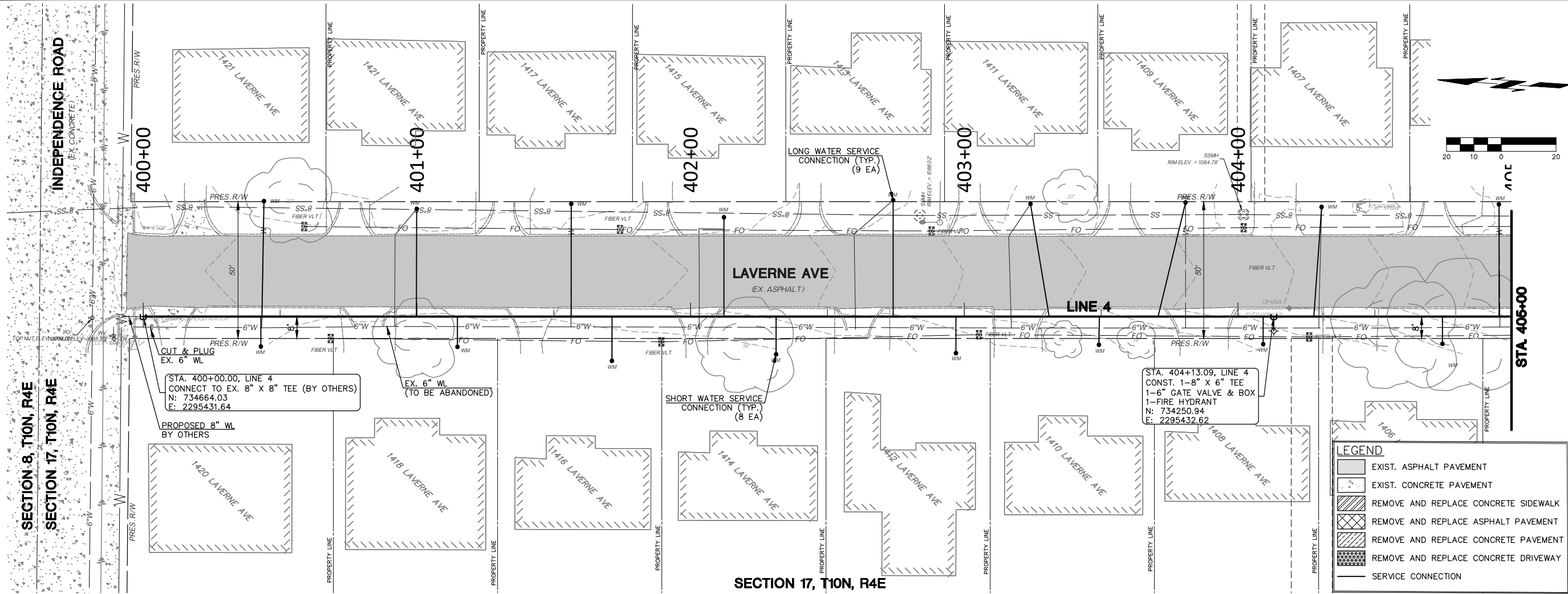
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14

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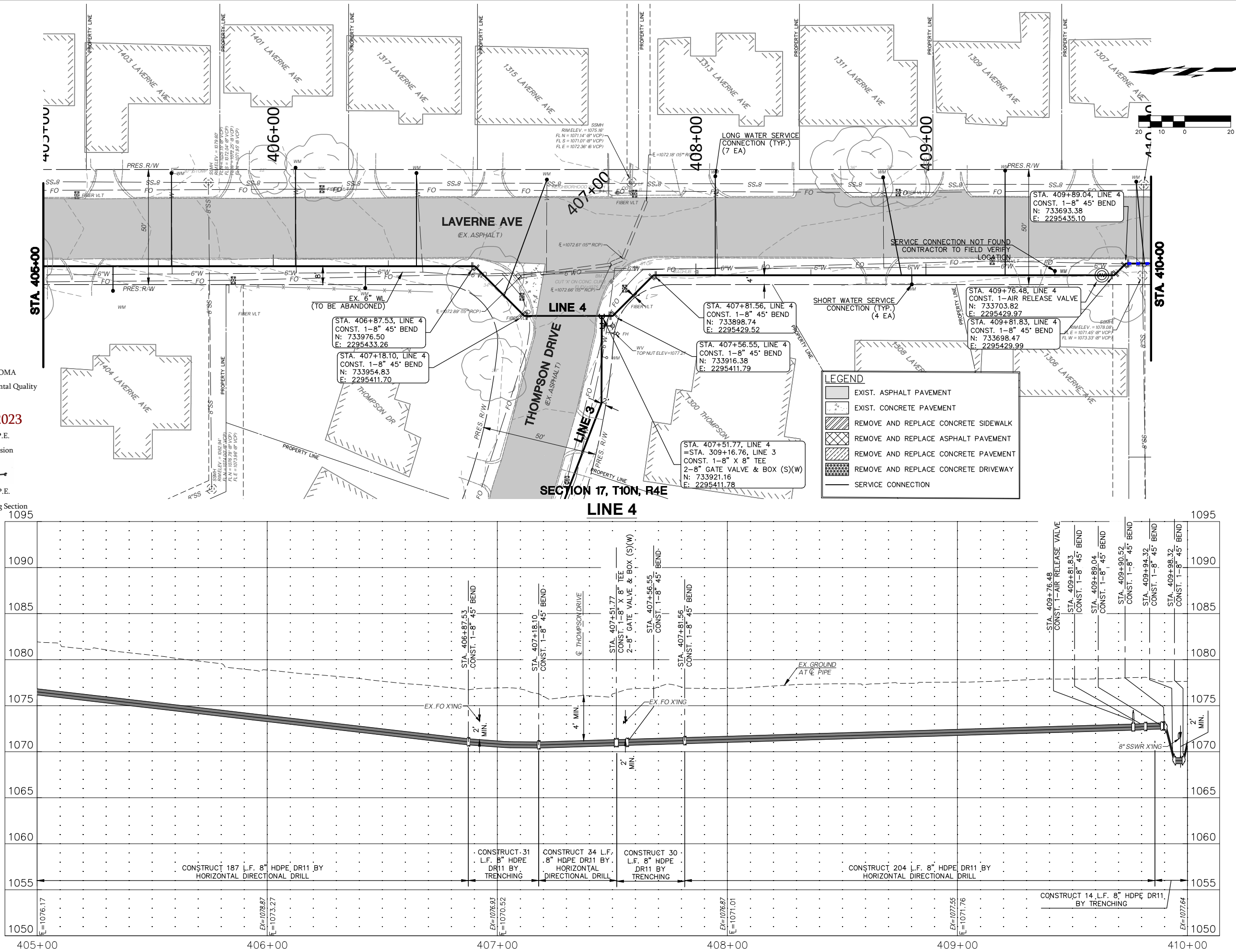
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THOMPSON HEIGHTS WATERLINE IMPROVEMENTS
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

LINE 4 P&P (1 OF 3)	
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PROJECT NUMBER	23-152
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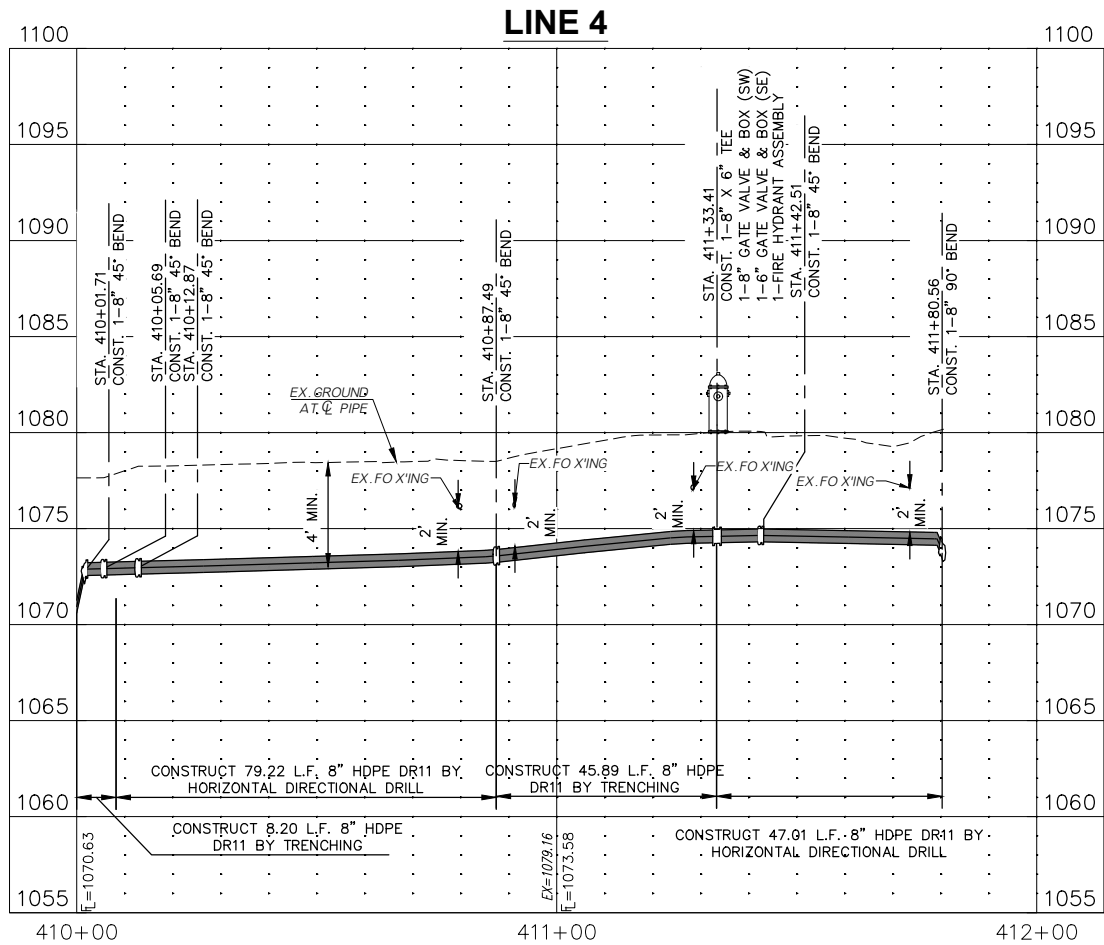
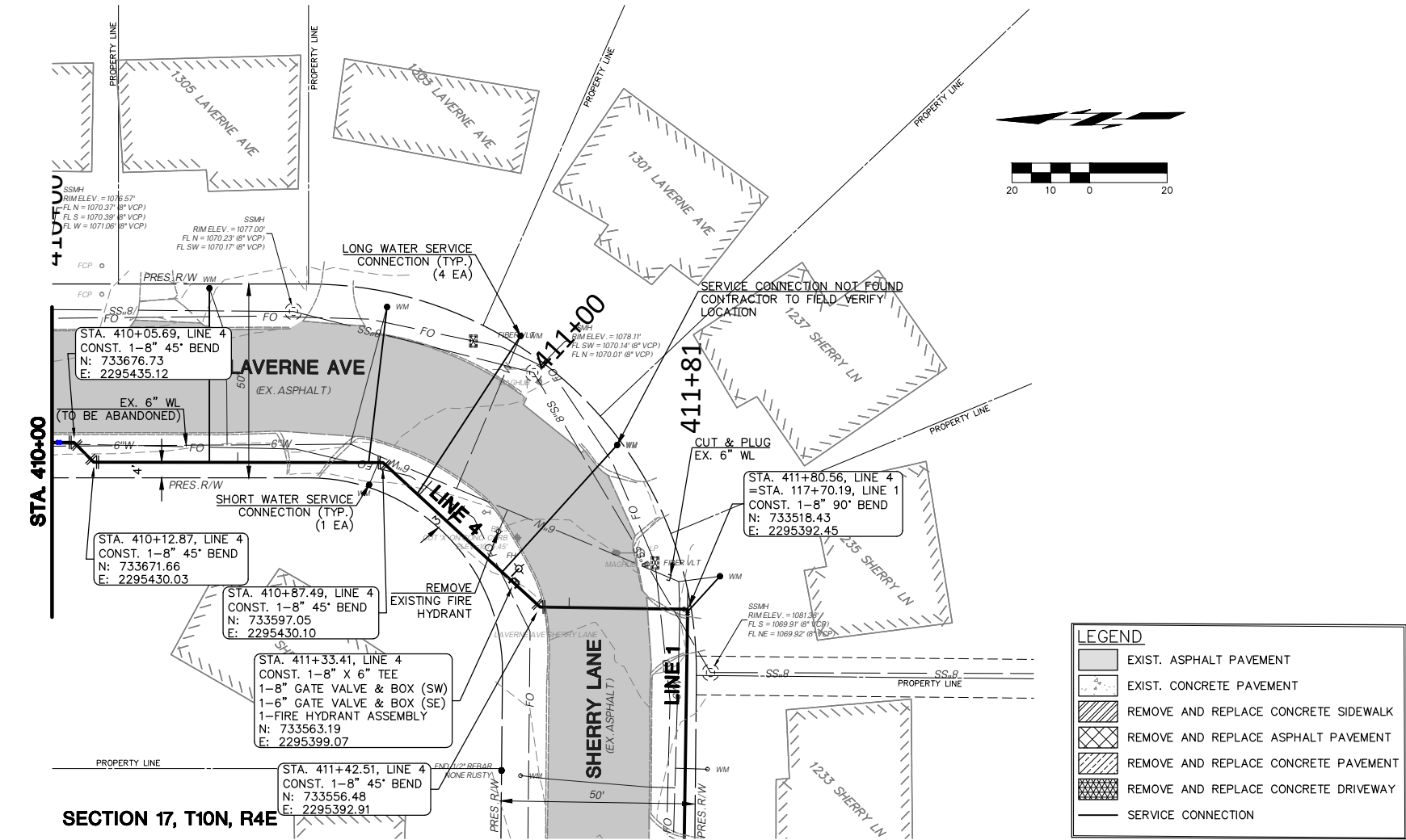
THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

LINE 4 P&P (2 OF 3)	
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PROJECT NUMBER	23-152
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16	

G:\PROJECTS\23-152 SHAWNEE THOMPSON HEIGHTS WATERLINE\CAD\WTR\23-152 LINE 4 P&P.DWG

Monday, July 3, 2023 11:17:02 AM



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Department of Environmental Quality

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THOMPSON HEIGHTS WATERLINE IMPROVEMENTS
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

**LINE 4 P&P
(3 OF 3)**

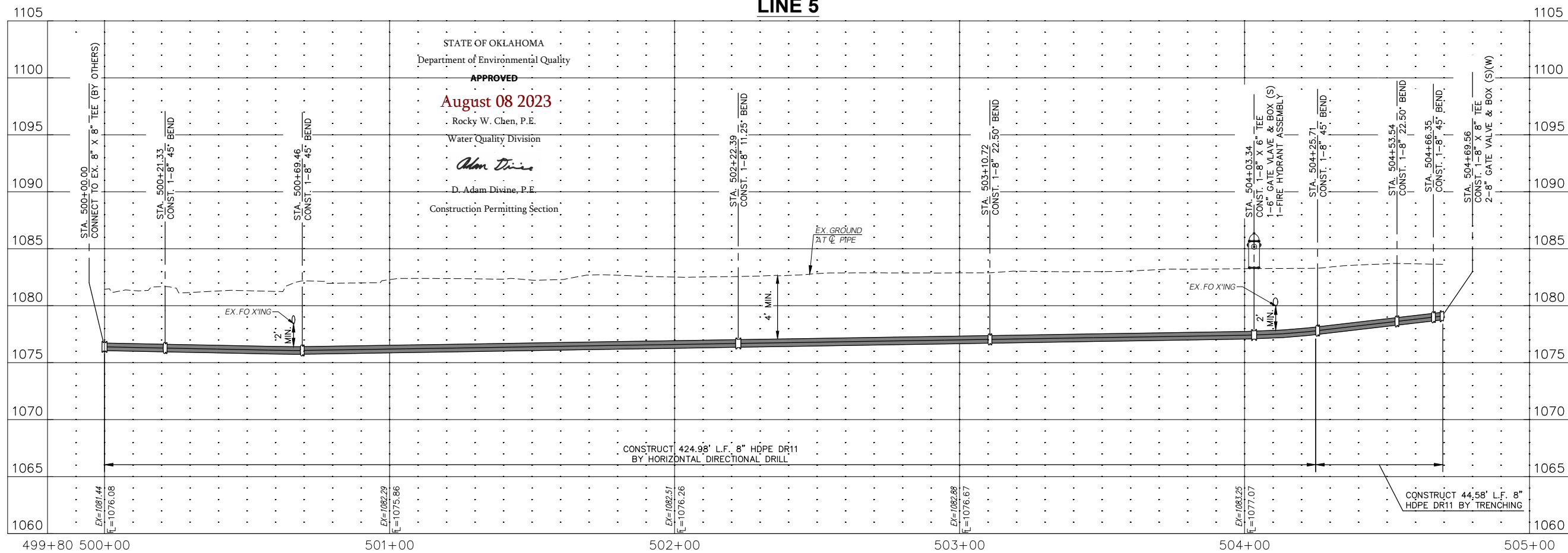
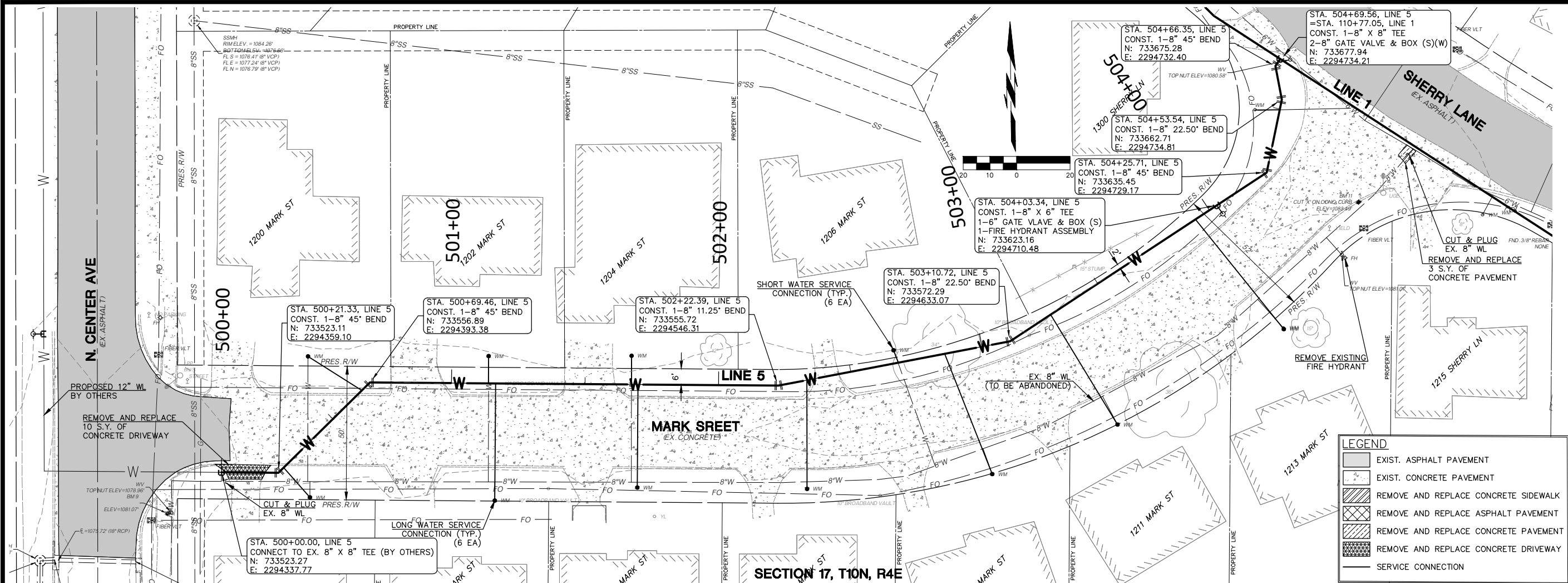
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17

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THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

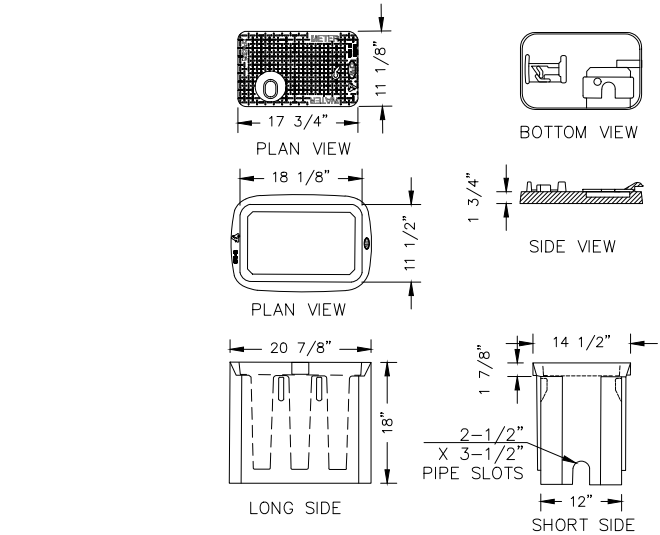
LINE 5 P&P

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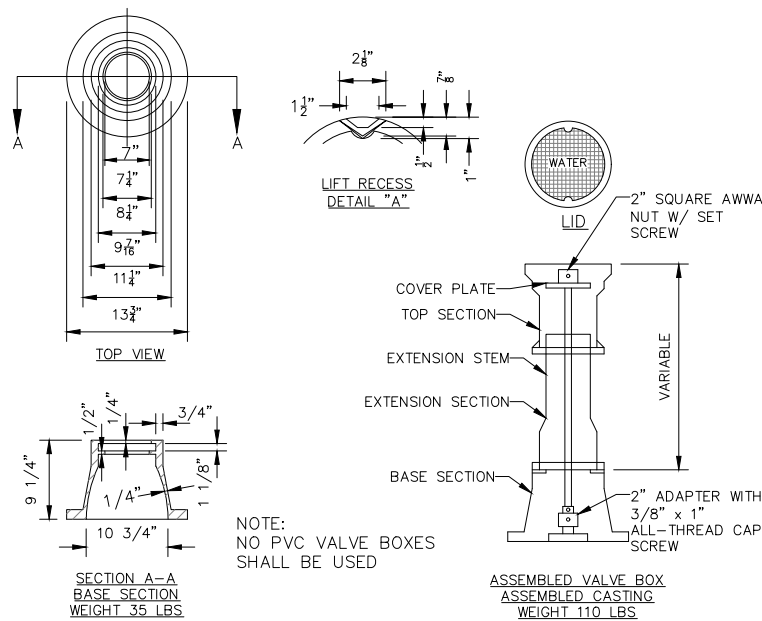
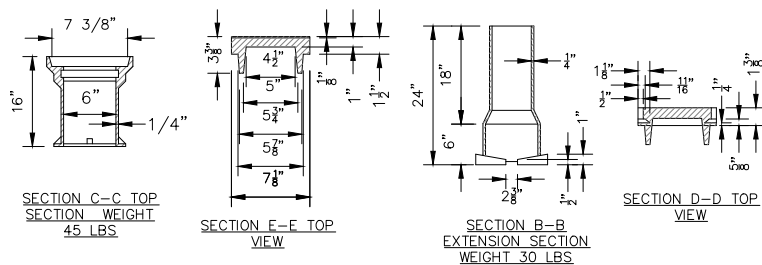
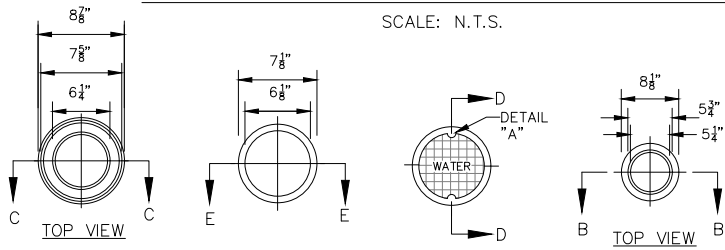
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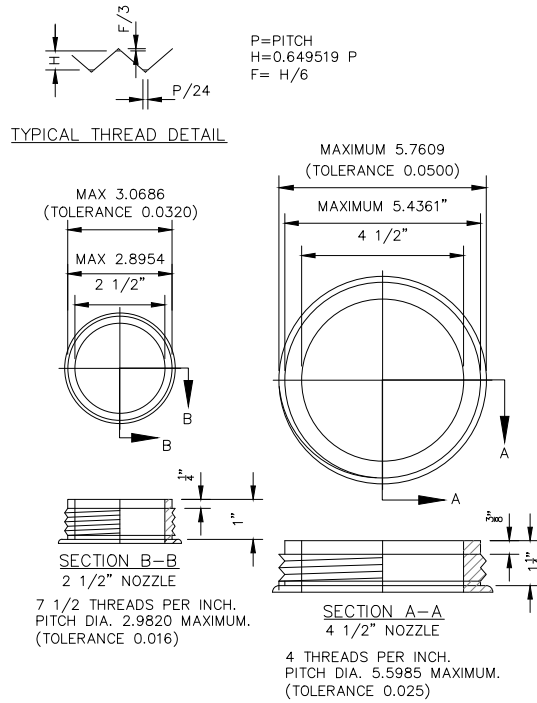
WATER METER BOX RING AND VALVE COVER

SCALE: N.T.S.

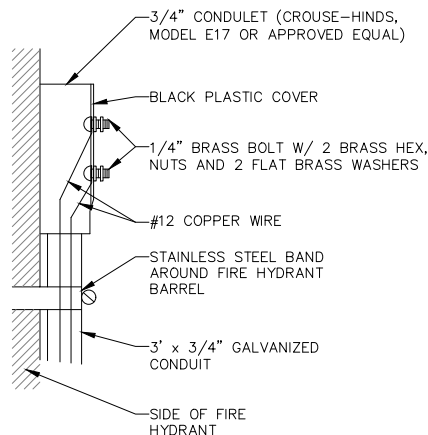


CAST IRON VALVE BOX AND LID

SCALE: N.T.S.



FIRE HYDRANT NOZZLE THREADS



NOTES:

1. WHEN DUCTILE IRON WATER PIPE IS USED, FURNISH 5F GALVANIC ANODE AND CONNECT TO COPPER WIRE AT 500' INTERVALS AND AT END OF LINE, WITH A MINIMUM OF ONE BETWEEN EACH FIRE HYDRANT.
2. WHEN WATER LINE IS ENCASED IN POLYETHYLENE WRAP, TRACER WIRE SHALL BE INSTALLED OUTSIDE OF THE WRAP.
3. TRACER WIRE SHALL BE PROPERLY SECURED TO THE TOP OF THE PIPE TO PREVENT MOVEMENT WHILE BACKFILLING.
4. COPPER WIRE SHALL BE #12 AWG SOLID COPPER WITH U.S.E. INSULATION FOR DIRECT BURIAL.

TRACER WIRE WEATHER-HEAD DETAIL

SCALE: N.T.S.

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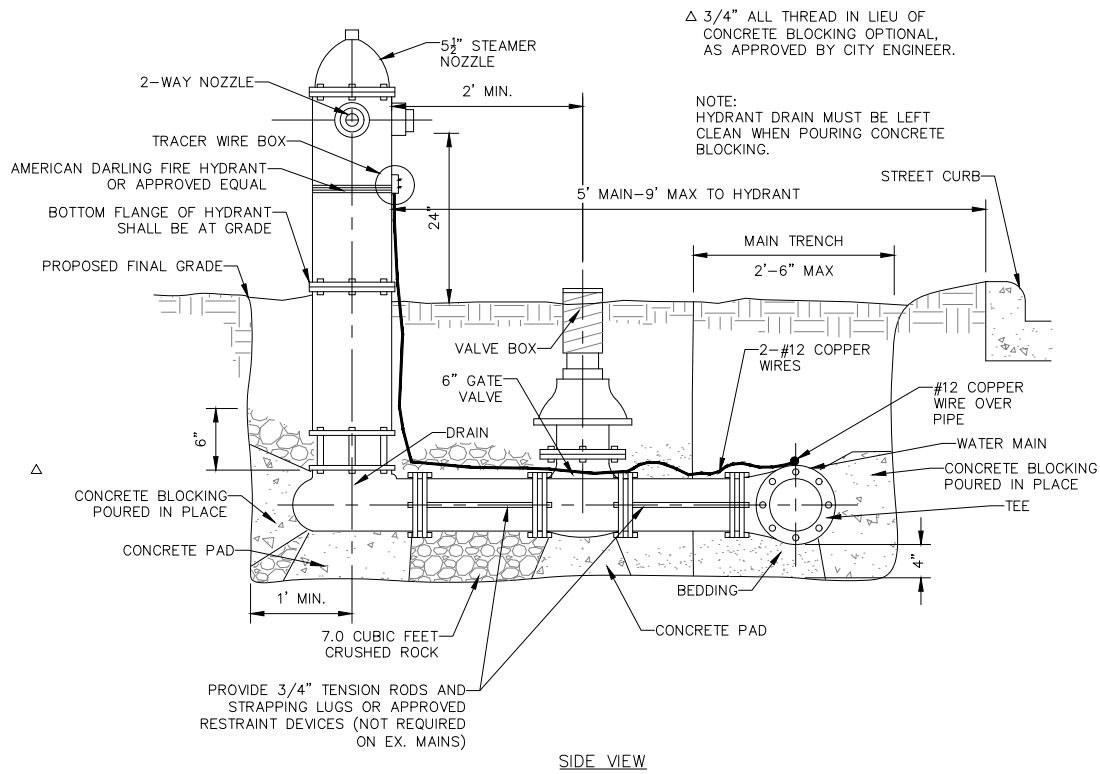
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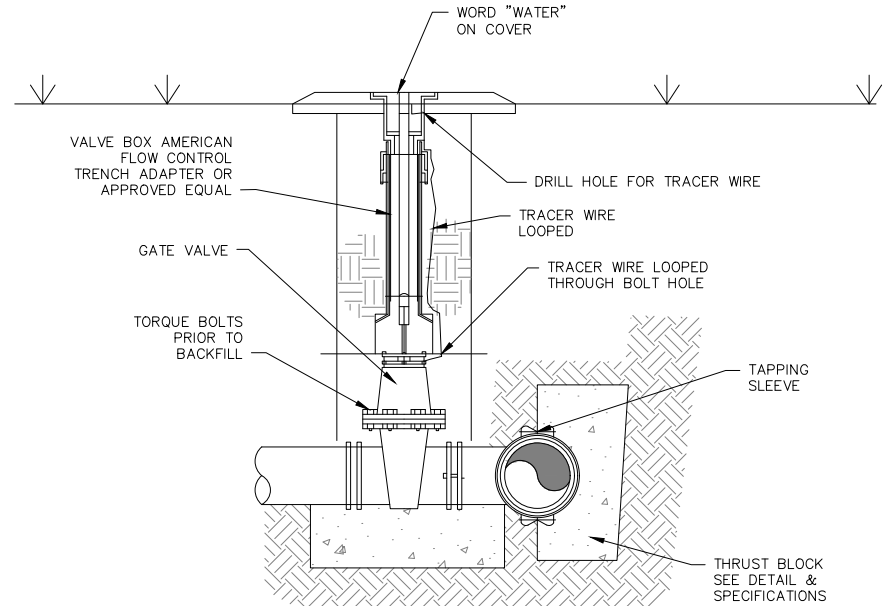
Adam Divine

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Construction Permitting Section



INSTALLATION OF FIRE HYDRANT



NOTE:
INSTALL 24 INCH DIAMETER ROUND BEVELED PRECAST CONCRETE VALVE PAD PROCAST OR APPROVED EQUAL FLUSH WITH THE TOP OF VALVE BOX. TAPPING SLEEVES SHALL BE DESIGNED FOR 200 psi AND SHALL BE JCM TYPE 432 FOR 6"-12" DIA. PIPE AND JCM 412 FOR PIPE GREATER THAN 12" DIA. TAPPING SLEEVES SHALL BE VINYL COATED.

TAPPING SLEEVE & VALVE DETAIL

SCALE: N.T.S.



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THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

WATER DETAILS (1 OF 3)

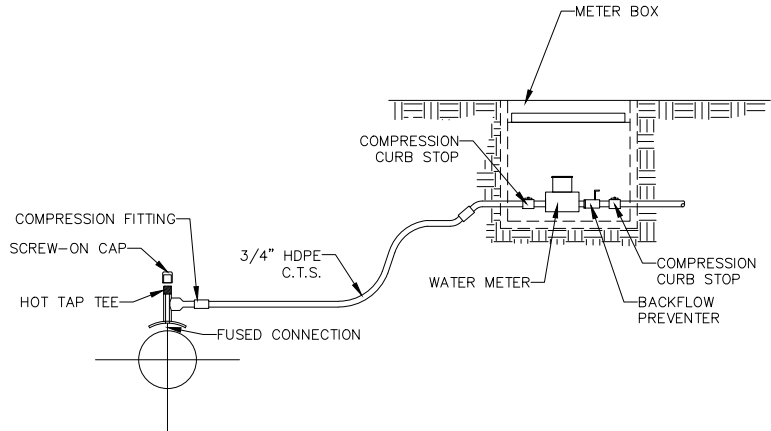
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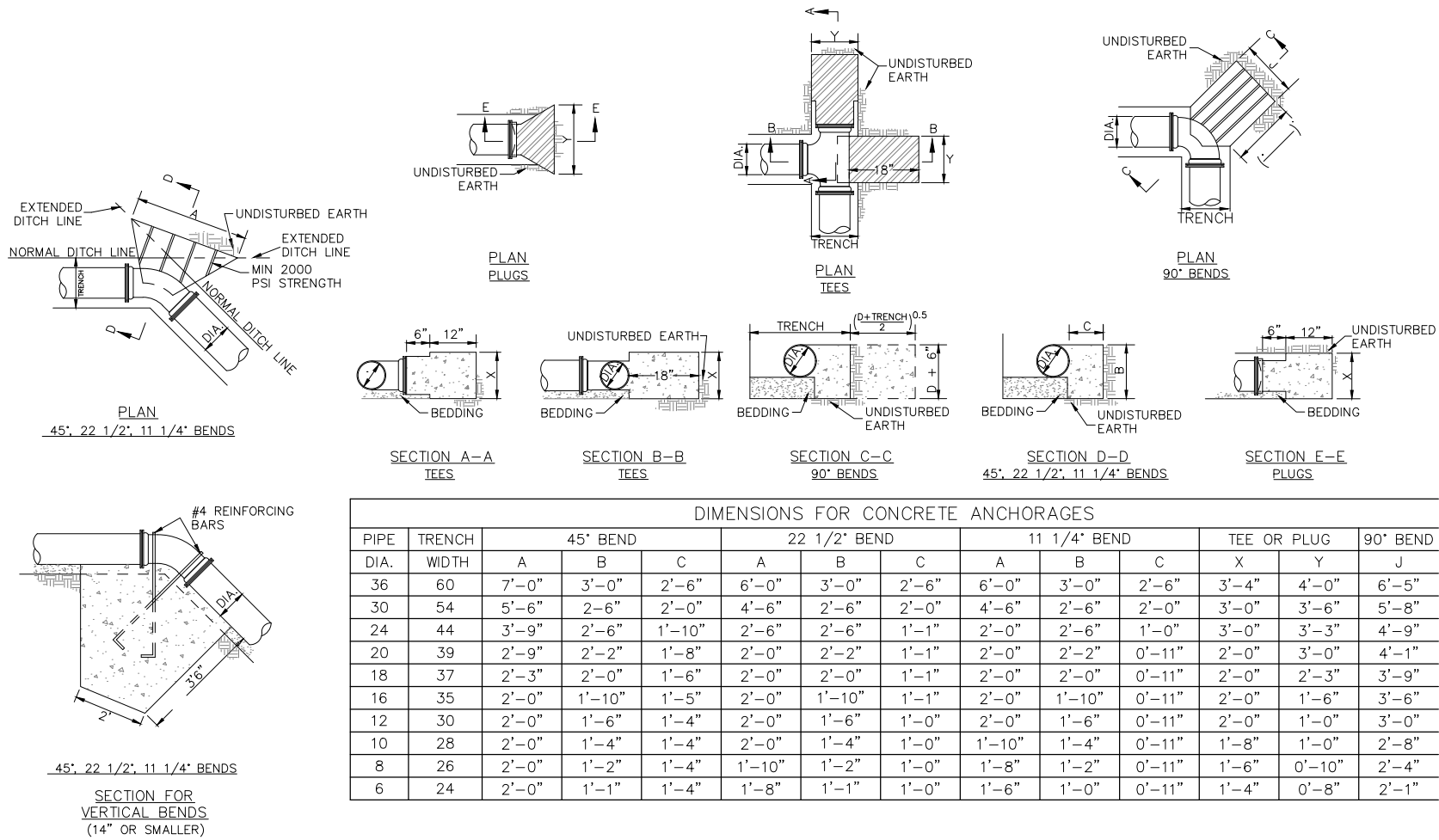
19

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TYPICAL SERVICE LINE CONNECTION

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THRUST BLOCKING



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WATER DETAILS (2 OF 3)

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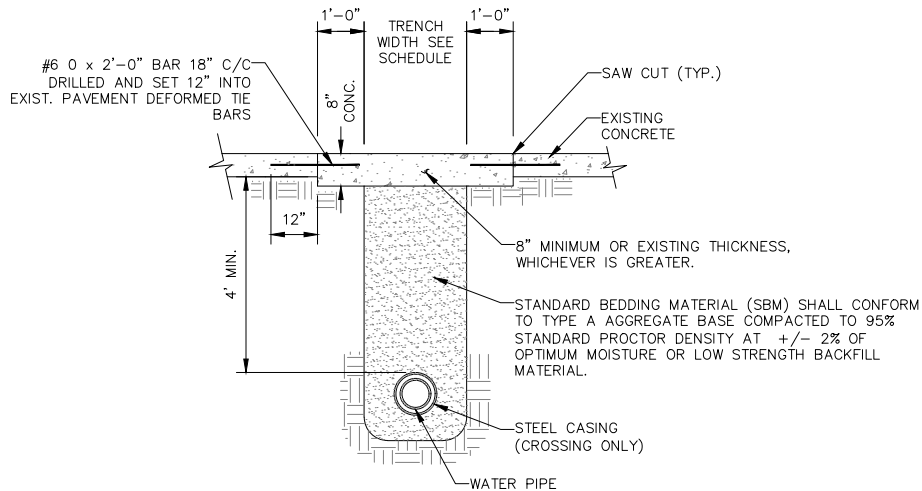
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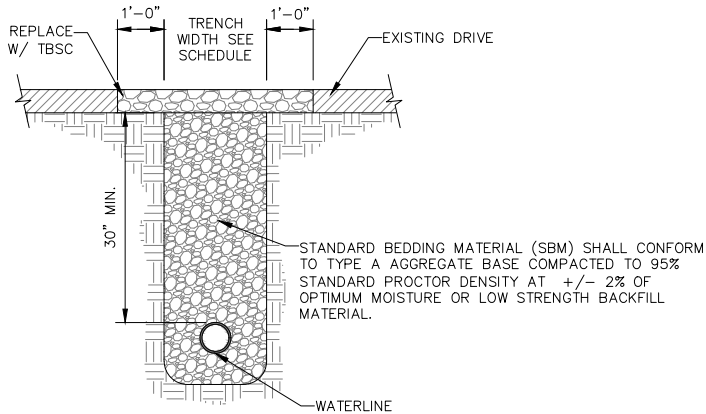
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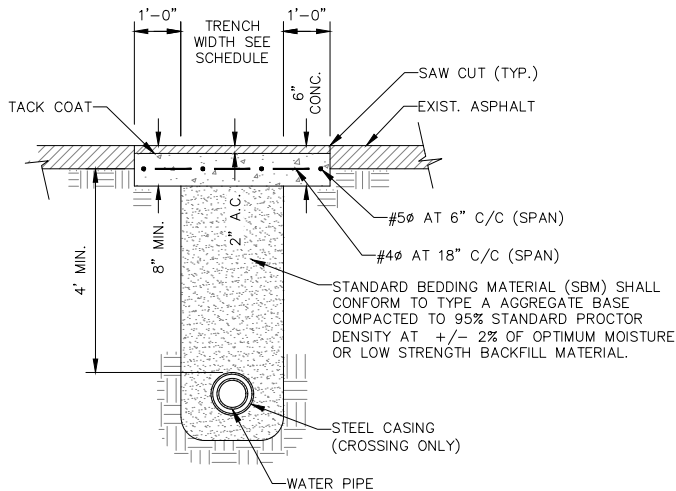
PAVING CUT AND PERMANENT REPAIR CONCRETE

SCALE: N.T.S.



DRIVE CUT AND PERMANENT REPAIR GRAVEL

SCALE: N.T.S.

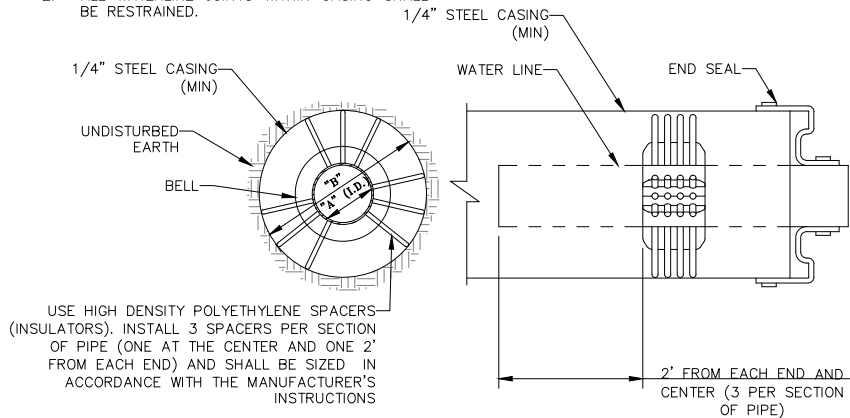


PAVING CUT AND PERMANENT REPAIR ASPHALT

SCALE: N.T.S.

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- NOTES:
1. CONSTRUCT WATER TIGHT PLUG AT EACH END OF CASING
 2. ALL WATERLINE JOINTS WITHIN CASING SHALL BE RESTRAINED.

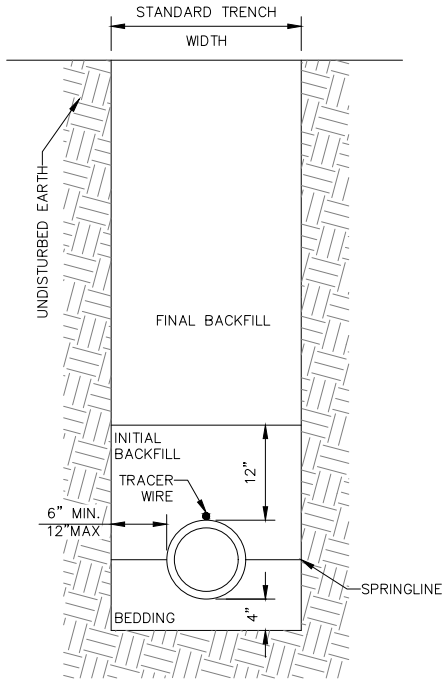


STANDARD ROAD CROSSING BORE

SCALE: N.T.S.

PIPE & STEEL CASING SCHEDULE	
PIPE DIA. "A"	CASING DIA. "B"
6"	16"
8"	18"
10"	20"
12"	24"
16"	30"
18"	30"
24"	42"

INSIDE PIPE DIAMETER (IN.)	STANDARD TRENCH WIDTH (IN.)
6	18
8	24
10	30
12	30
15	36
18	36
21	42
24	42
27	48
30	48
36	54
42	60
48	66



PIPE INSTALLATION

SCALE: N.T.S.

- NOTES:
1. STANDARD BEDDING MATERIAL (SBM), SHALL CONFORM TO TYPE A AGGREGATE BASE LOW STRENGTH BACKFILL MATERIAL.
 2. SELECT FILL CONSISTS OF EXCAVATED MATERIALS FREE OF ROCKS LARGER THAN 2-1/2 INCHES, ORGANIC MATERIAL, RUBBISH, DEBRIS, AND ALL OTHER OBJECTIONABLE MATERIAL.
 3. IF STONE IS DISCOVERED IN TRENCH, REMOVE ALL STONES FOUND IN THE TRENCH TO A DEPTH OF AT LEAST 6 INCHES BELOW THE BOTTOM OF THE PIPE.
 4. COMPACTION REQUIREMENTS:
A. PAVED AREAS: 95% STANDARD PROCTOR DENSITY
B. NON-PAVED AREAS: 90% STANDARD PROCTOR DENSITY IF COVER DEPTH < 10'. 95% STANDARD PROCTOR DENSITY IF COVER DEPTH > 10'.

DESCRIPTION	PAVED AREAS		NON-PAVED AREAS	
	FLEXIBLE PIPE	RIGID PIPE	FLEXIBLE PIPE	RIGID PIPE
FINAL BACKFILL	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	EXCAVATED MATERIAL	EXCAVATED MATERIAL
INITAL BACKFILL	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	COVER DEPTH < 10' - SELECT FILL COVER DEPTH > 10' - STAND. BEDDING MATERIAL	SELECT FILL
BEDDING	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)



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THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

WATER DETAILS
(3 OF 3)

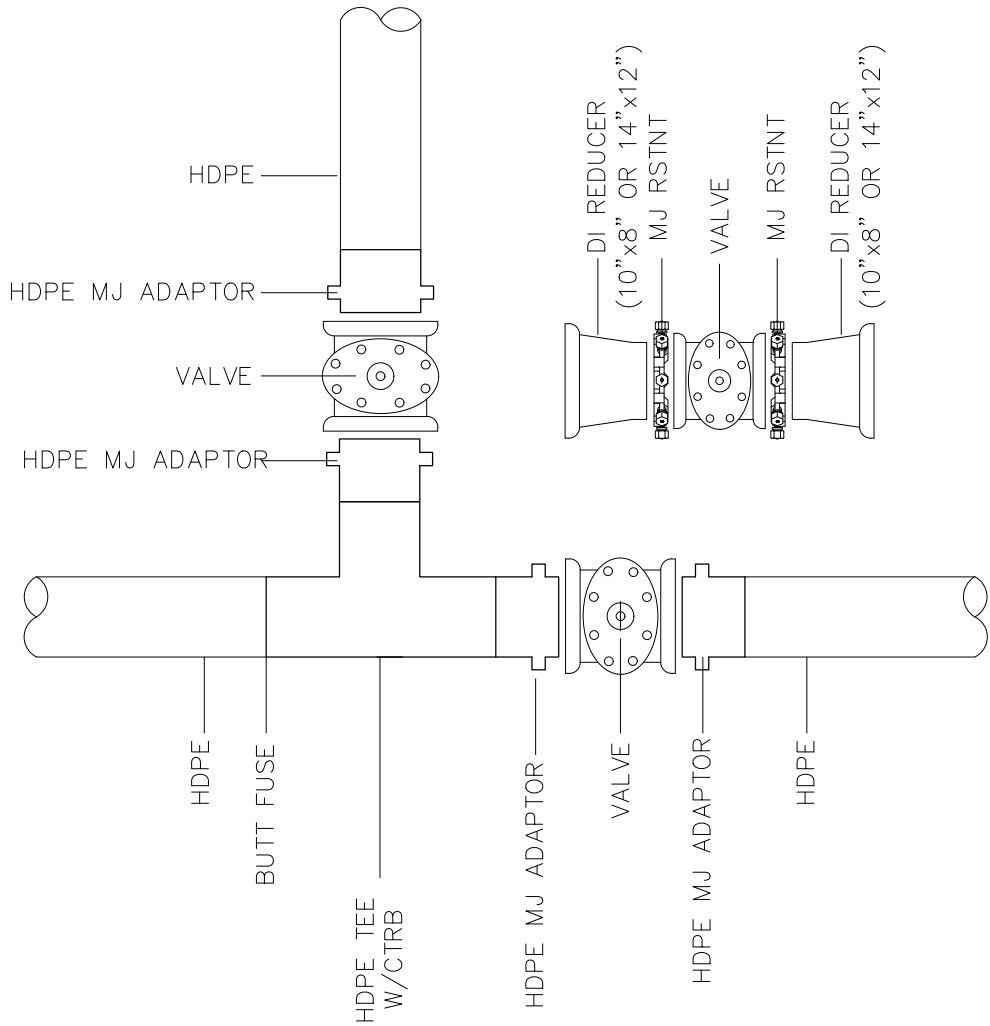
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HDPE TEE (HDPE MAIN / HDPE BRANCH)

WHEN HDPE MAIN IS CONNECTED TO DI FITTING, USE HDPE MJ ADAPTER AND DI REDUCER AS NECESSARY TO MAKE CONNECTION.

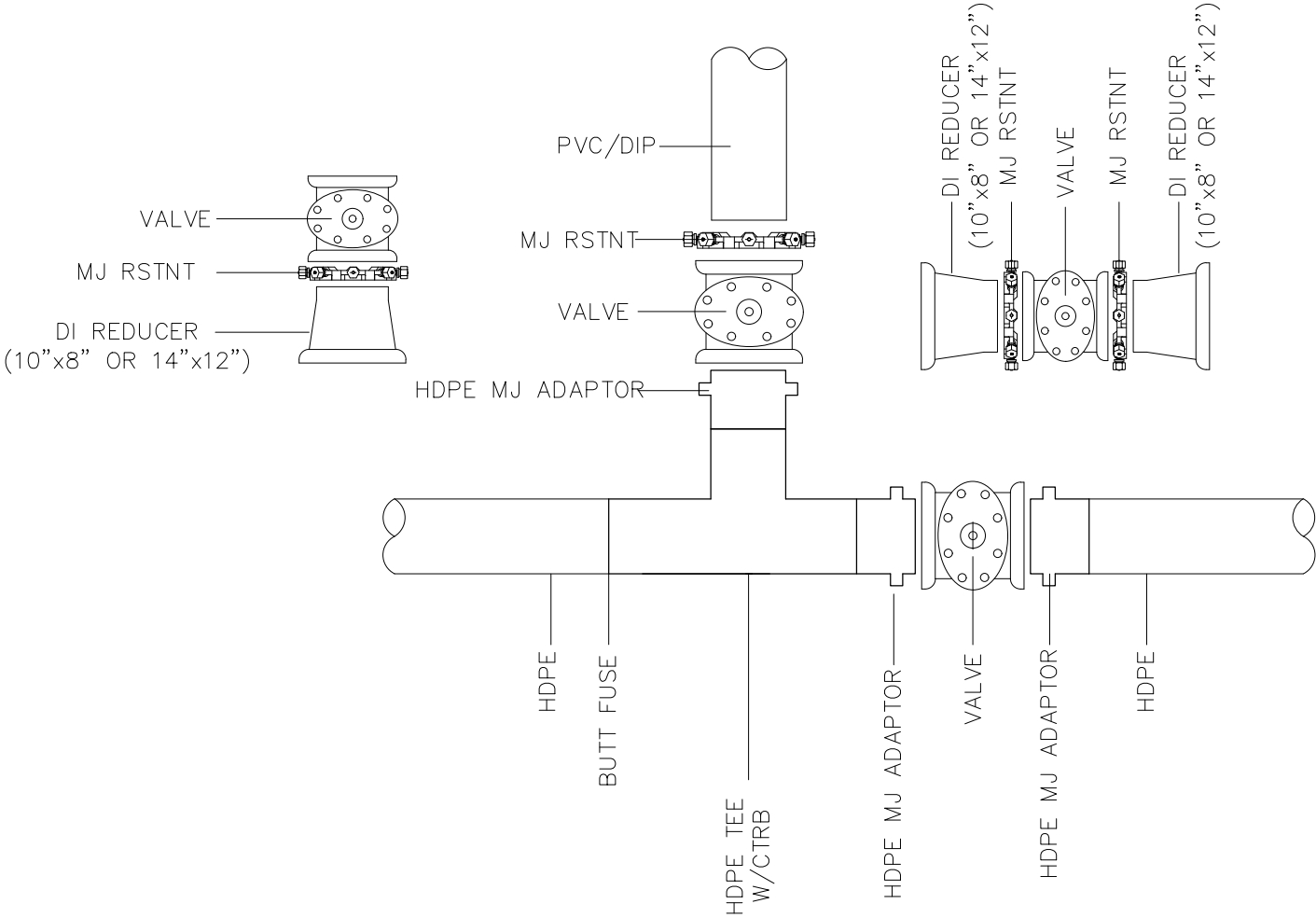
TYPICAL CONFIGURATIONS:

WHEN HDPE BRANCH IS 8", USE 8" GATE VALVE. USE 8" x 6" DI REDUCER AND 6" GATE VALVE ONLY WHEN CONNECTING TO 6" DIP/PVC.

WHEN HDPE BRANCH IS 10", USE 10" x 8" DI REDUCER AND 8" GATE VALVE.

WHEN HDPE BRANCH IS 12", USE 12" GATE VALVE.

WHEN HDPE BRANCH IS 14", USE 14" x 12" DI REDUCER AND 12" GATE VALVE.



HDPE TEE (HDPE MAIN / DIP OR PVC BRANCH)

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THOMPSON HEIGHTS WATERLINE IMPROVEMENTS
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

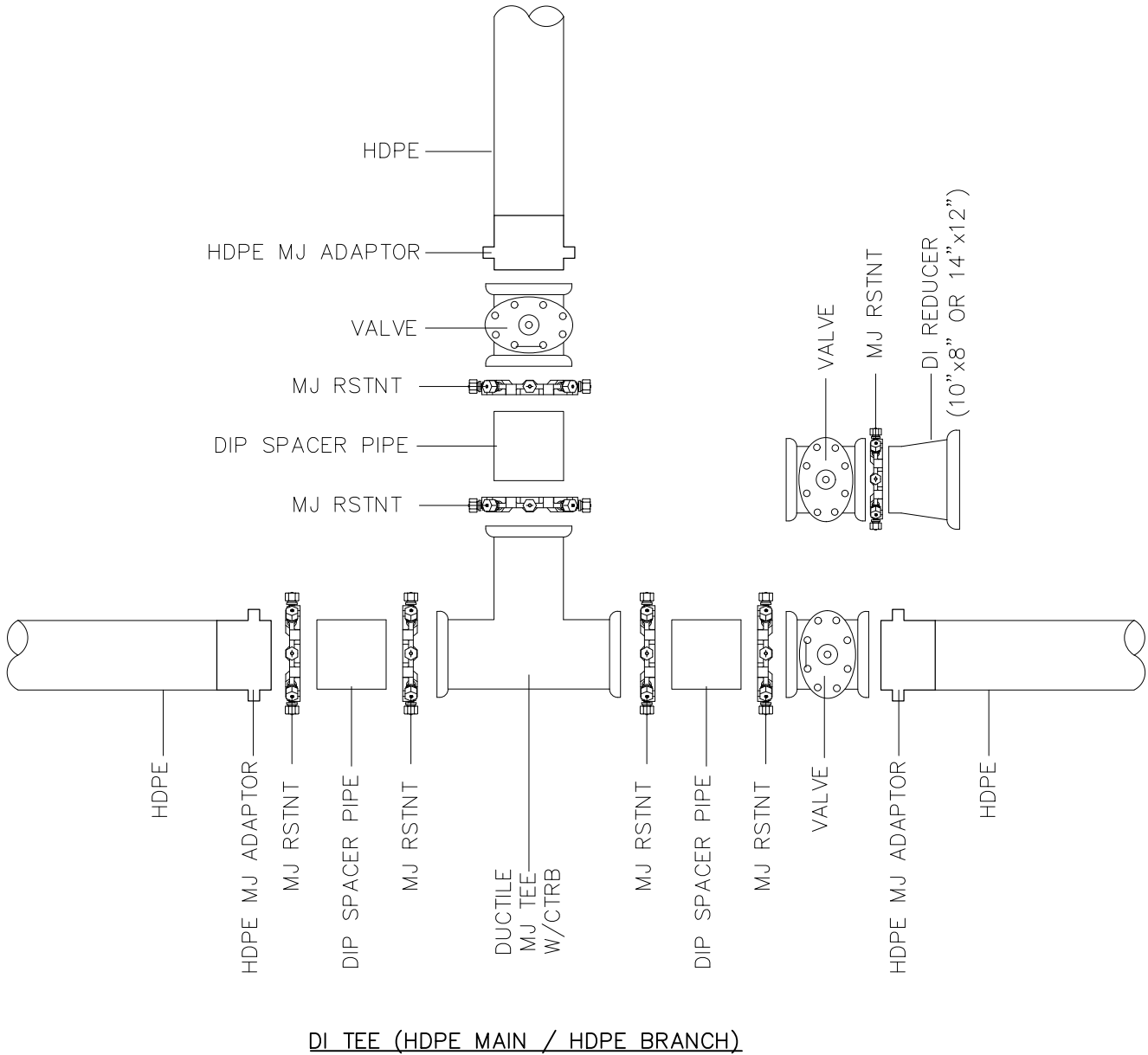
SPECIAL DETAILS
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22

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WHEN HDPE MAIN IS CONNECTED TO DI FITTING, USE HDPE MJ ADAPTER AND DI REDUCER AS NECESSARY TO MAKE CONNECTION.

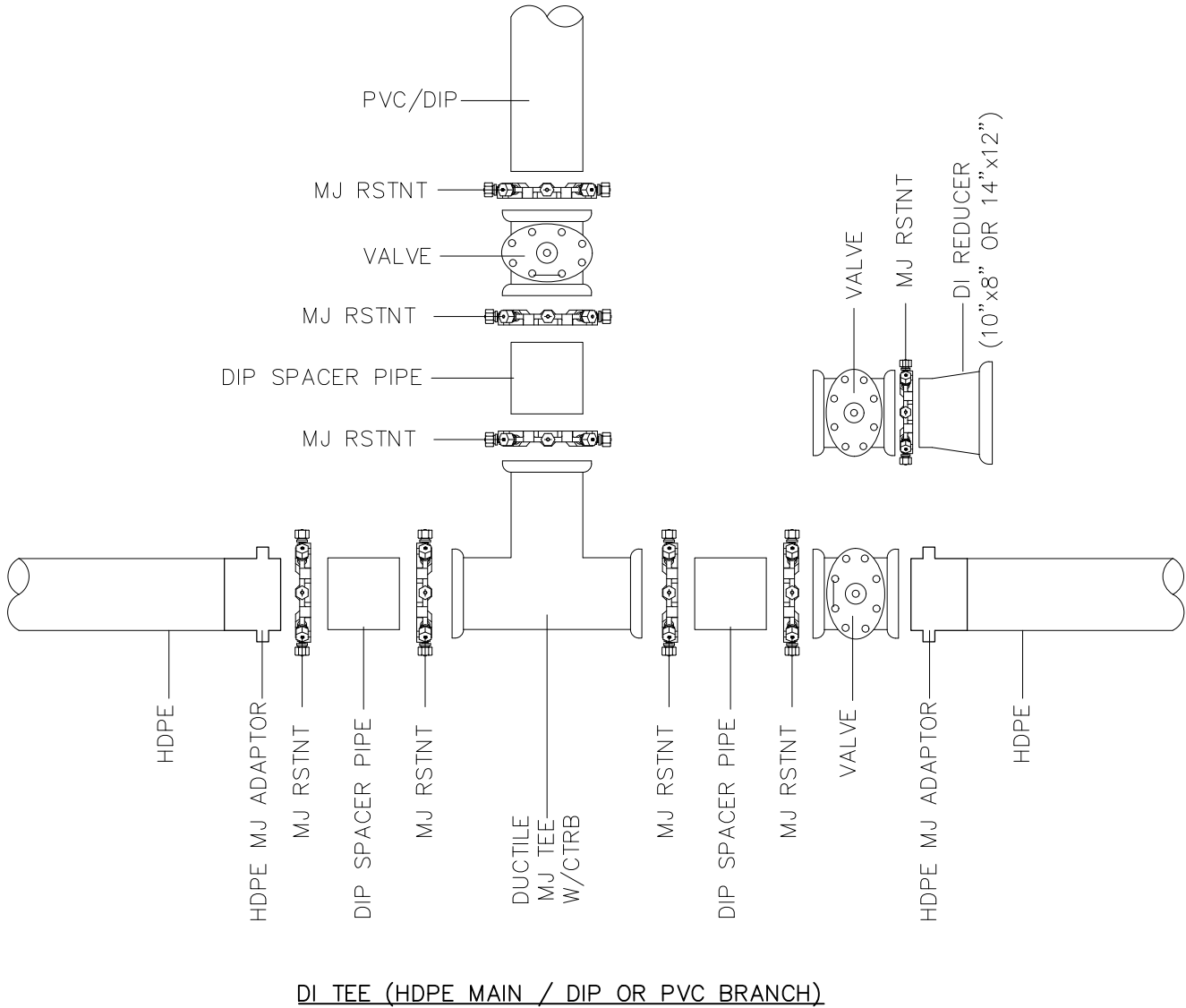
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WHEN HDPE BRANCH IS 14", USE 14" x 12" DI REDUCER AND 12" GATE VALVE.



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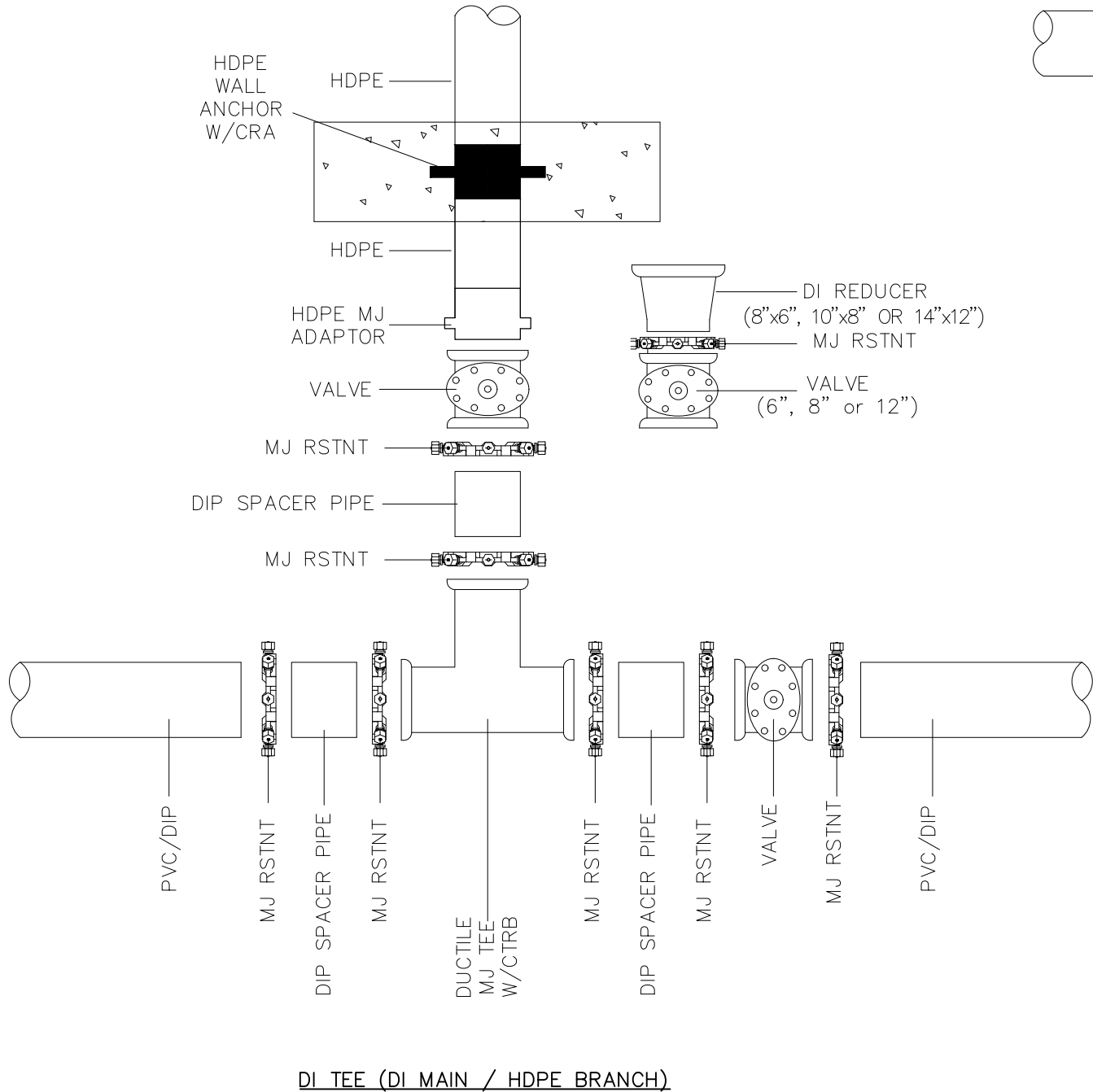
SPECIAL DETAILS
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WHEN HDPE MAIN IS CONNECTED TO DI FITTING, USE HDPE MJ ADAPTER AND DI REDUCER AS NECESSARY TO MAKE CONNECTION.

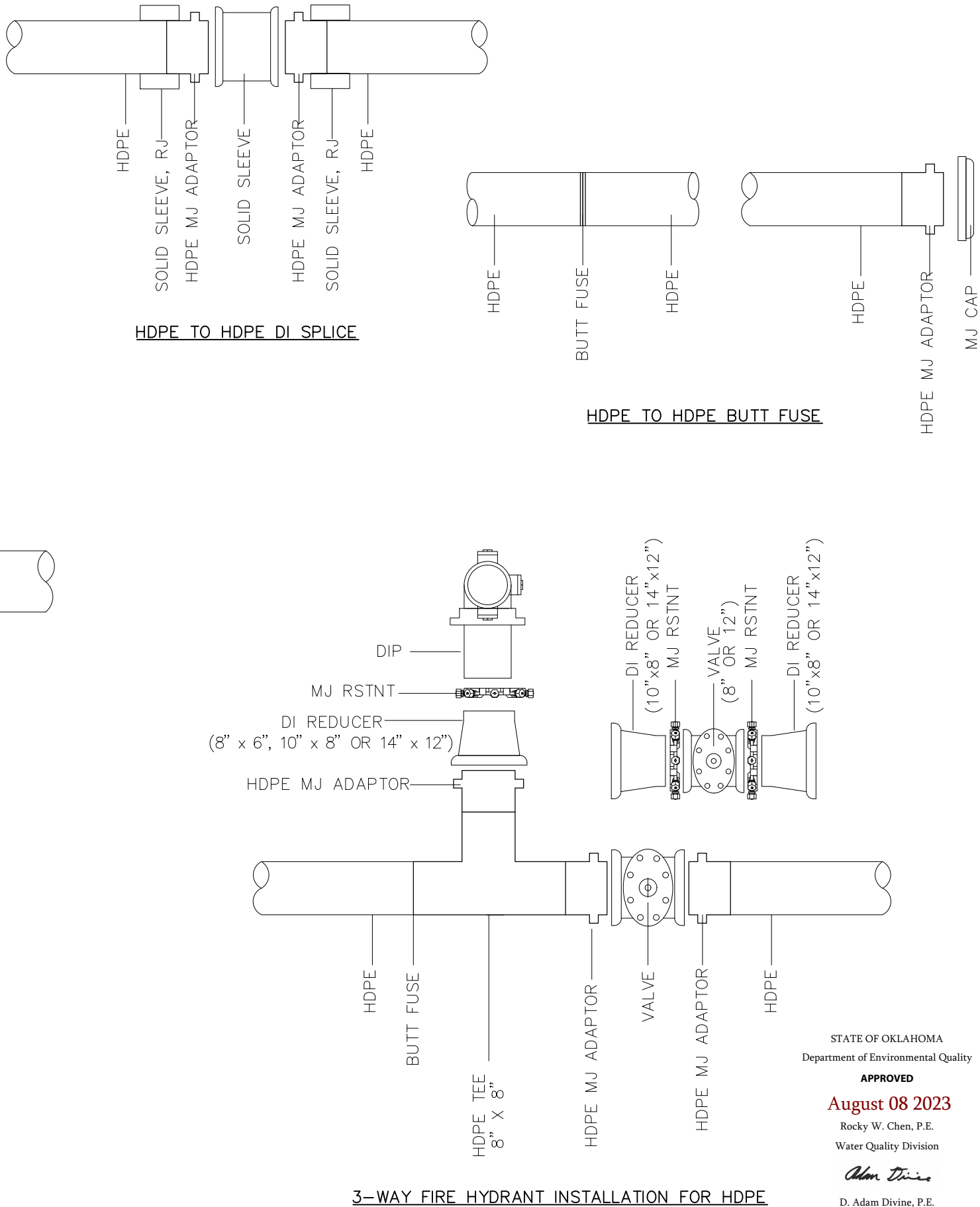
TYPICAL CONFIGURATIONS:

WHEN HDPE BRANCH IS 8", USE 8" GATE VALVE. USE 8" x 6" DI REDUCER AND 6" GATE VALVE ONLY WHEN CONNECTING TO 6" DIP/PVC.

WHEN HDPE BRANCH IS 10", USE 10" x 8" DI REDUCER AND 8" GATE VALVE.

WHEN HDPE BRANCH IS 12", USE 12" GATE VALVE.

WHEN HDPE BRANCH IS 14", USE 14" x 12" DI REDUCER AND 12" GATE VALVE.



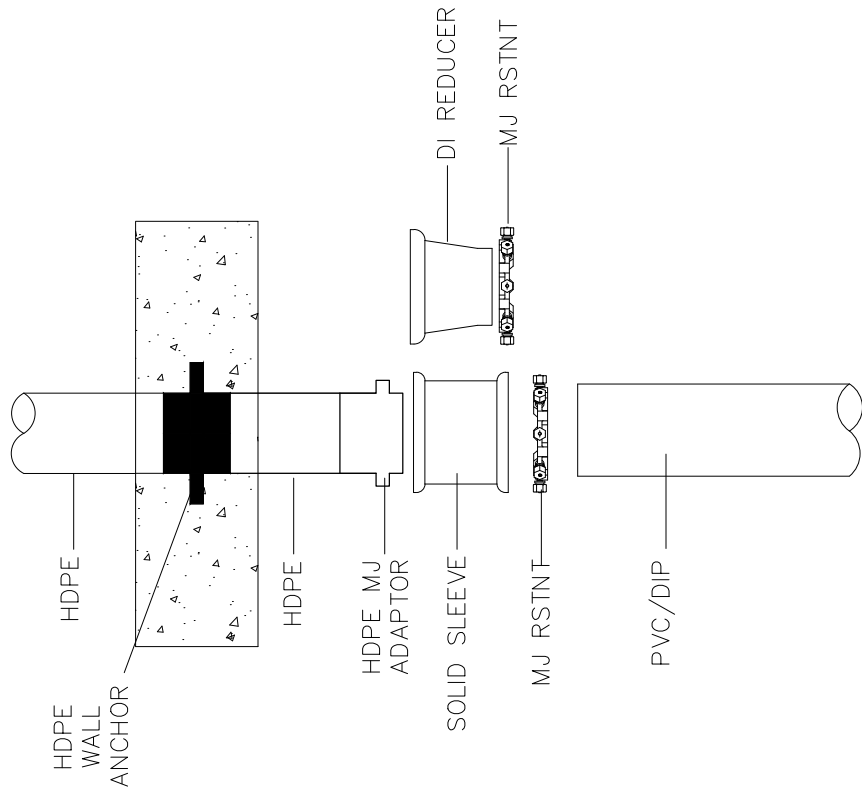
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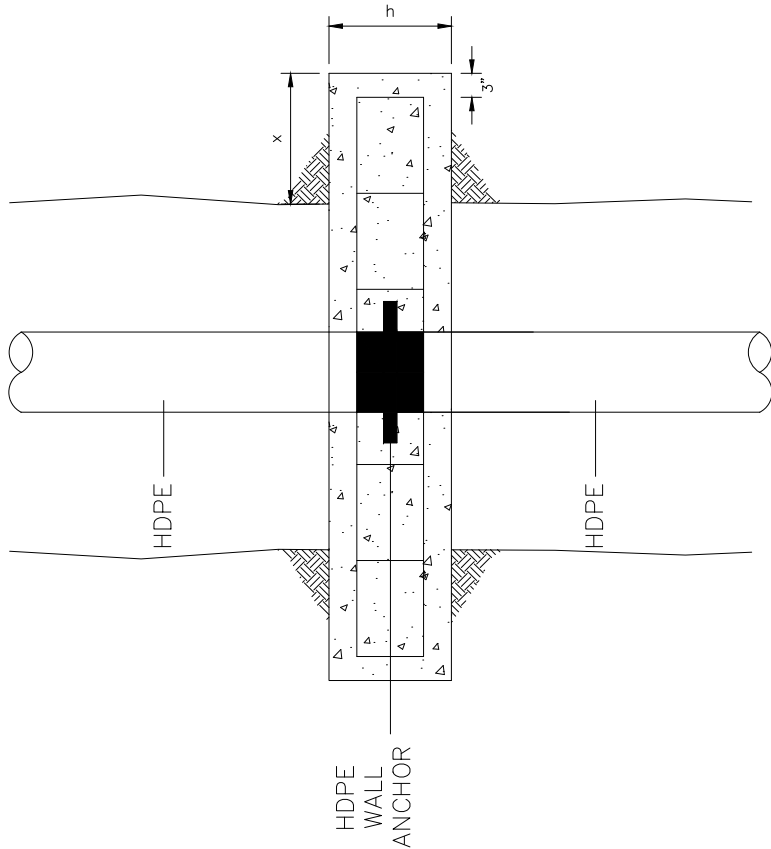
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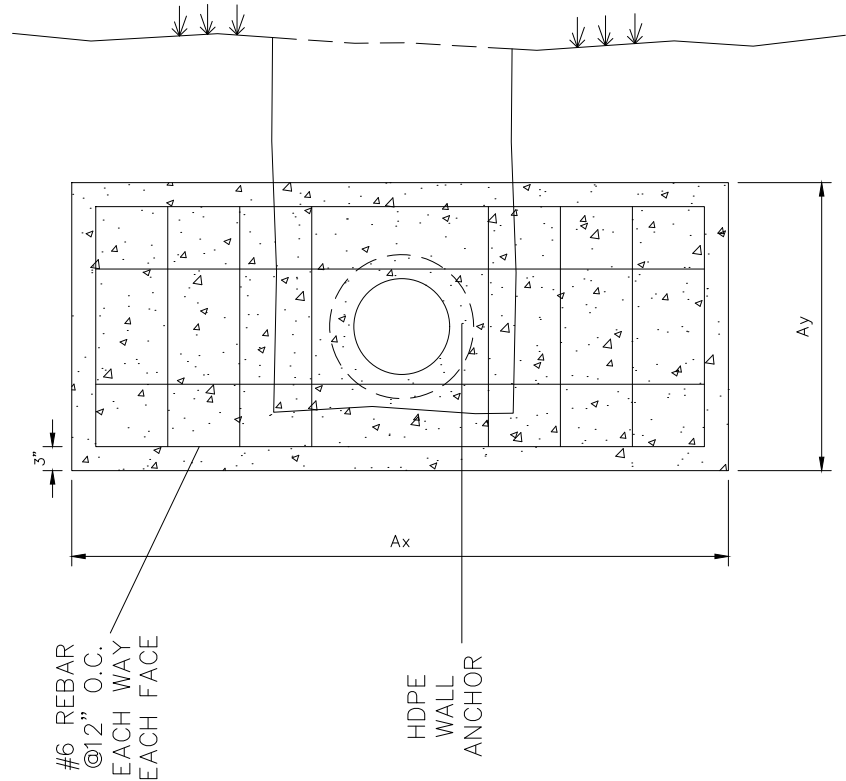
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HDPE TO DI/PVC SPLICE



HDPE WALL ANCHOR



DIPS PIPE SIZE (DR11)	PRESSURE	x (in)	Ax (in)	Ay (in)	Ab (sf)	h (in)	Vol (in)
8"	150 PSI	30	90	36	15	18	34
10"	150 PSI	36	102	42	221	18	45
12"	150 PSI	45	120	48	30	24	80
14"	150 PSI	54	144	54	40	24	108

THE MINIMUM SURFACE AREAS SHOWN ARE BASED ON A MAX STATIC PIPE PRESSURE OF 150 PSI AND ANN ALLOWABLE SOIL BEARING CAPACITY OF 1000 PSI. POLYETHYLENE PIPINS SYSTEM FIELD MANUAL FOR MUNICIPAL WATER APPLICATIONS 2009 EDITION.

THE DESIGN ENGINEER IS RESPONSIBLE FOR VERIFYING ASSUMPTION BASED ON ACTUAL SITE CONDITIONS. IF SITE CONDITIONS VARY FROM THE ASSUMPTIONS THE DESIGN ENGINEER SHALL PROVIDE A SITE SPECIFIC DESIGN.

THE MINIMUM LATERAL BEARING SURFACE AREA (Ab) AND APPROXIMATE VOLUME OF CONCRETE (Vol) SHALL BE SHOWN ON THE CONSTRUCTION PLANS FOR ALL CONCRETE WALL ANCHOR BLOCKS.

THE APPROXIMATE VOLUMES SHOWN ARE BASED ON THE MINIMUM DIMENSIONS IN THE TABLE.
A TRENCH WIDTH OF 30-INCHES (8"-12") OR 36-INCHES (14") AND 6" BEDDING UNDER THE PIPE ARE ASSUMED FOR BEARING CALCULATIONS (Ax, Ay, x AND y).

THE DESIGN ENGINEER SHALL ENSURE THE CONSTRUCTION OF THE CONCRETE WALL ANCHOR BLOCK SHALL NOT CONFLICT WITH OTHER UTILITIES.

WHEN HDPE MAIN IS CONNECTED TO DI FITTING, USE HDPE MJ ADAPTER AND DI REDUCER AS NECESSARY TO MAKE CONNECTION.

TYPICAL CONFIGURATIONS:

WHEN HDPE BRANCH IS 8", USE 8" GATE VALVE. USE 8" x 6" DI REDUCER AND 6" GATE VALVE ONLY WHEN CONNECTING TO 6" DIP/PVC.

WHEN HDPE BRANCH IS 10", USE 10" x 8" DI REDUCER AND 8" GATE VALVE.

WHEN HDPE BRANCH IS 12", USE 12" GATE VALVE.

WHEN HDPE BRANCH IS 14", USE 14" x 12" DI REDUCER AND 12" GATE VALVE.

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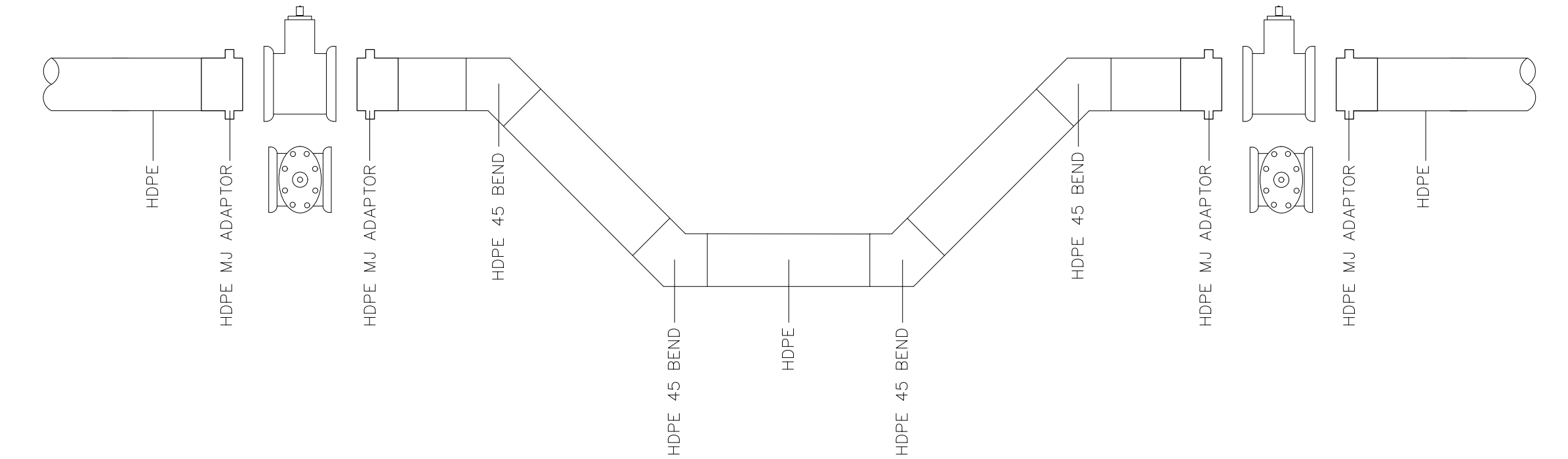
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SPECIAL DETAILS
(4 OF 5)

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HDPE HORIZONTAL / VERTICAL REALIGNMENT USING FITTINGS

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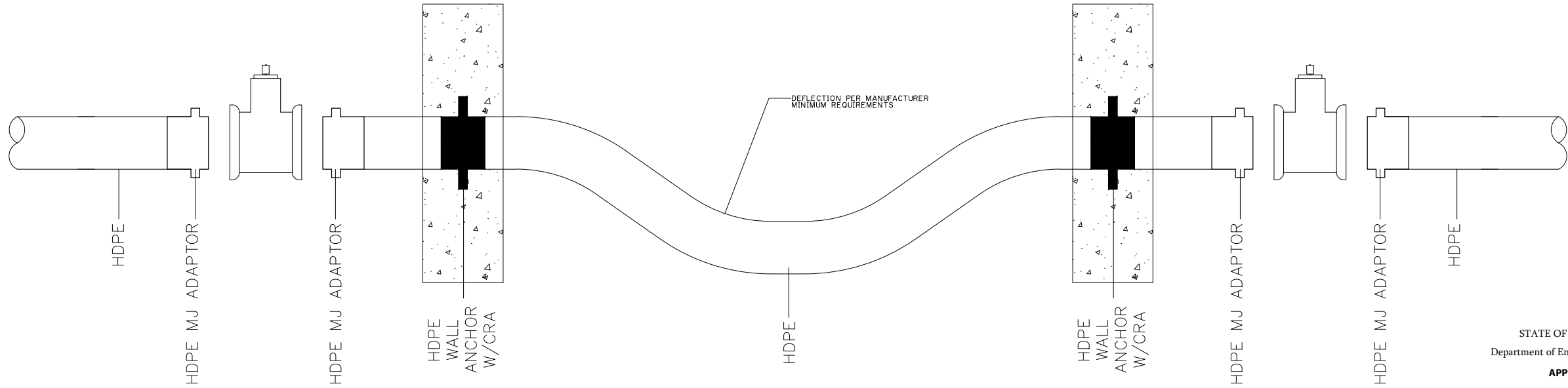
TYPICAL CONFIGURATIONS:

WHEN HDPE BRANCH IS 8", USE 8" x 6" DI REDUCER AND 6" GATE VALVE, OR USE 8" GATE VALVE.

WHEN HDPE BRANCH IS 10", USE 10" x 8" DI REDUCER AND 8" GATE VALVE.

WHEN HDPE BRANCH IS 12", USE 12" GATE VALVE.

WHEN HDPE BRANCH IS 14", USE 14" x 12" DI REDUCER AND 12" GATE VALVE.



HDPE VERTICAL/HORIZONTAL REALIGNMENT USING DEFLECTION

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THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

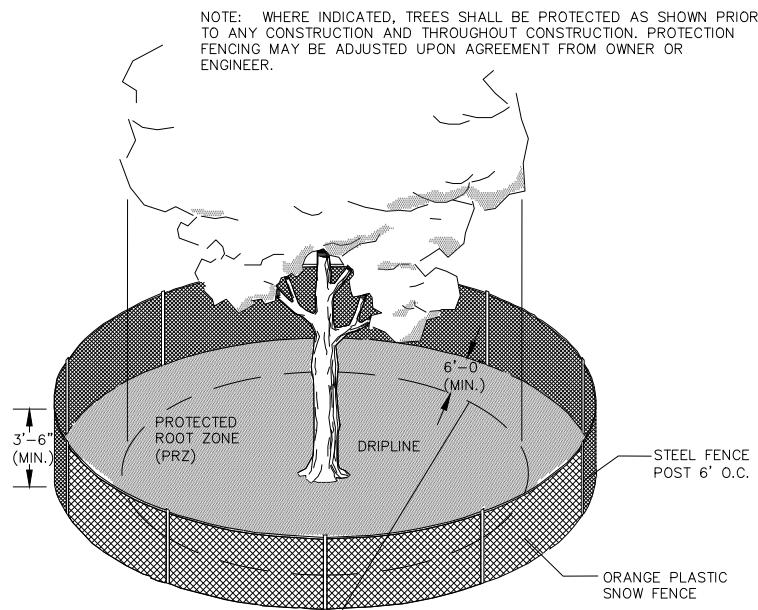
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SPECIAL DETAILS
(5 OF 5)

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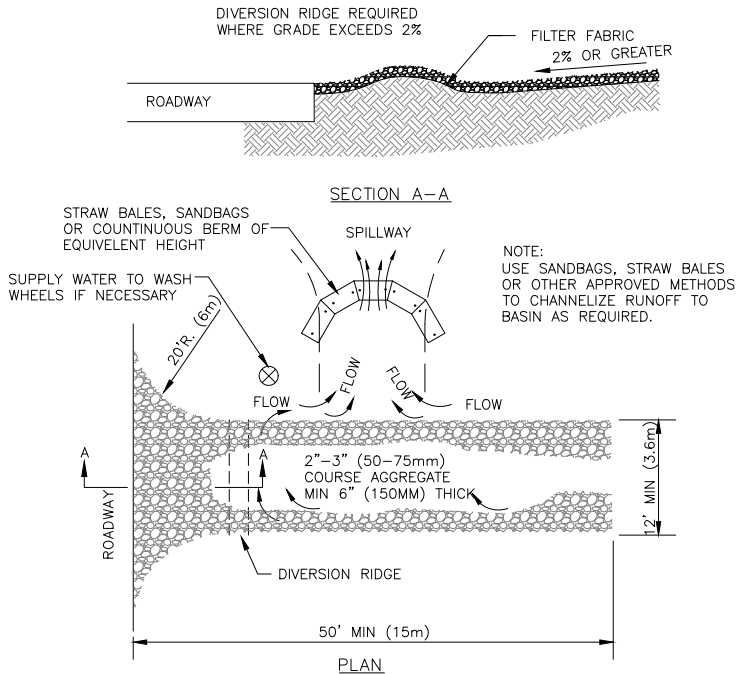
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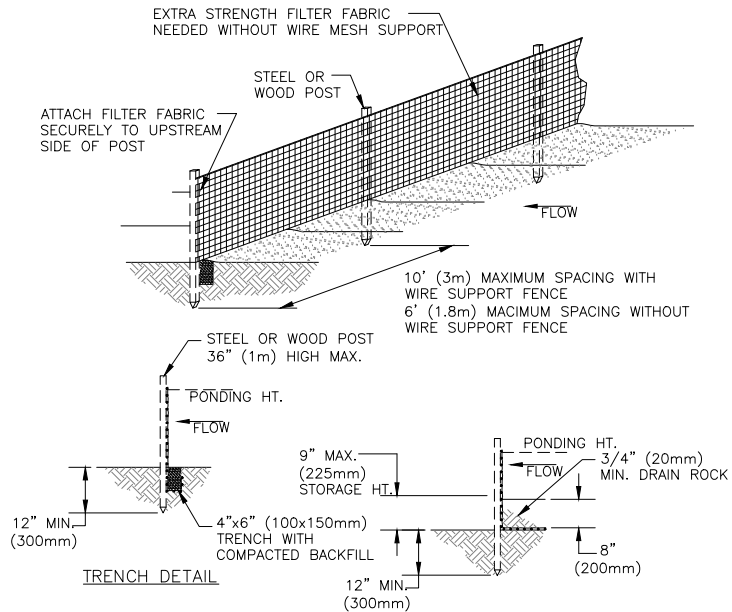
NOTE: THE TEMPORARY FENCE IS TO BE CONSTRUCTED AROUND SPECIFIED AREAS/TREES PRIOR TO ANY CONSTRUCTION AND SHALL REMAIN UNTIL ALL CONSTRUCTION IS COMPLETE. CONSTRUCTION EQUIPMENT AND MATERIALS ARE NOT PERMITTED WITHIN THE (PRZ). THE FENCE PLACEMENT AROUND THE (PRZ) MAY ONLY BE ADJUSTED WITH PERMISSION FROM THE OWNER OR ENGINEER.

TREE PROTECTION DETAIL



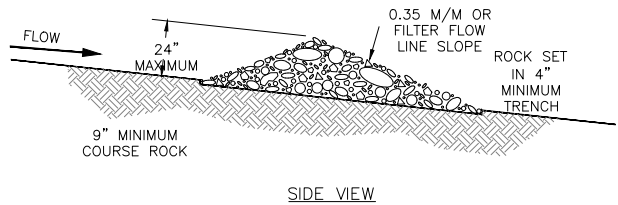
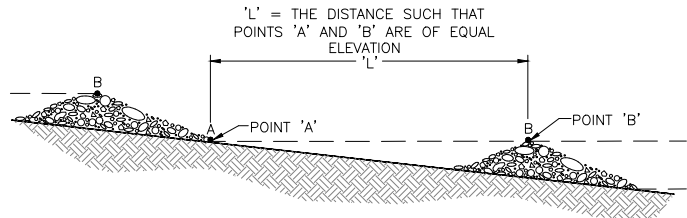
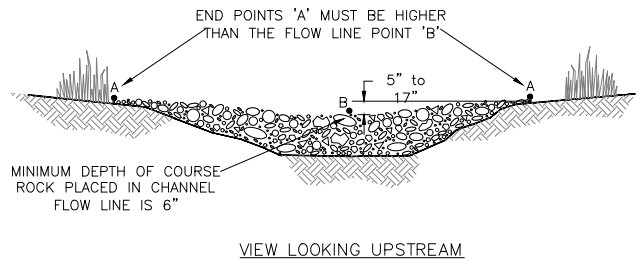
- NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMP. GRAVEL CONSTRUCTION ENTRANCE



- NOTES:
1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
 2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" (225mm) MAXIMUM RECOMMENDED STORAGE HEIGHT.
 3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

SILT FENCE



ROCK CHECK DAM

D-50 OF ROCK (MM)	DOWNSTREAM FLOWLINE SLOPE OF STRUCTURE (M / M)					
	0.35	0.30	0.25	0.20	0.15	0.10
75	15	18	20	25	33	48
150	30	36	41	50	66	100



COWAN GROUP ENGINEERING
7100 N. CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
405-463-3369 • 405-463-3381 F
WWW.COWANGROUP.COM
CA# 6414 EXPIRES 6/30/2024

THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

EROSION CONTROL DETAIL

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	23-152
DATE	6/13/2023

REVISIONS

SHEET NUMBER

27



CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

THOMPSON HEIGHTS WATERLINE

PROJECT NUMBER: 23-152

ARPA Grant Project Number: ARP – 23-0188-G

BID DATE:

By:

Cowan Group Engineering, LLC
7100 N Classen, Suite 500
Oklahoma City, OK 73116
Phone: 405-463-3369
CA # 6414 Expires 6/30/24

July 2023

STATE OF OKLAHOMA
Department of Environmental Quality

APPROVED

August 08 2023

Rocky W. Chen, P.E.

Water Quality Division

Adam Divine

D. Adam Divine, P.E.

Construction Permitting Section

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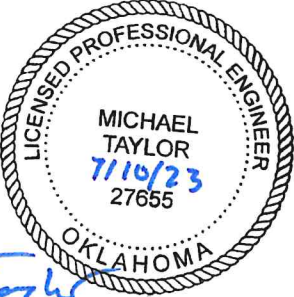
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Responsible Registrant

Cowan Group Engineering, LLC
CA No. 6414 (Expires 6/30/24)



Michael Taylor, PE
Project Manager
OK PE 27655

Advertisement for Bids

Notice is hereby given that the City of Shawnee (hereinafter called the "Owner") will receive sealed bids at the City Clerk's Office, 16 W. 9th Street, Shawnee, Pottawatomie County, Oklahoma until the ____ day of _____, 20__ for the Thompson Heights Waterline.

Funding for this project is provided through American Rescue Plan Act (ARPA) grant program. As such, compliance with Labor Standards Contract Provisions is mandatory. Compliance with the Davis Bacon Act is mandatory **if the total project cost exceeds \$10,000,000 (ten million dollars)**.

All bids received at said time will be opened and evaluated for completeness and correctness. All work shall be performed, and all construction and materials used and furnished shall be in accordance with the Plans and Specifications prepared by Cowan Group Engineering, and on file in the office of the City Clerk, 16 W. 9th Street, Shawnee, OK 74802-1448.

The Bid Packet and Contract Documents for this project may be examined at the following locations:

1. The City Clerk's Office, 16 W. 9th Street, Shawnee, OK 74802-1448.
2. Cowan Group Engineering, 7100 N. Classen, Suite 500, Oklahoma City, OK 73116

Hard copy plans and specifications may be obtained by the prospective bidders at these locations for \$100.00. No documents will be mailed until payment is received in full.

Complete digital project bidding documents are available for a non-refundable fee of \$50.00 by going to www.cowangroup.co, navigating to the Bid Documents page, and by entering Quest Project # 8558234 on the website's project search page. Please contact QuestCDN.com at 952.233.1632 or info@questcdn.com for assistance in free membership registration, downloading and working with this digital project information.

Each bidder shall accompany his original bid, filed with the City Clerk's Office with a certified or Cashier's Check on a solvent bank located in Oklahoma, or a Bidder's Bond, in the amount of five (5) percent of the amount bid, as a guarantee of his ability to perform the contract bid upon, and that he will enter into a written contract with the Owner to perform said work and/or furnish said materials in accordance with said Plans and Specifications and furnish the required bonds according to the Public Competitive Bidding Act of 1974.

The Owner will retain the deposit for liquidated damages in case the successful bidder fails to enter in said contract and furnish the required bonds provided for in the specifications within the time required. Deposit of the unsuccessful bidders will be returned upon the execution of the Contract and required bonds.

Each bidder shall accompany his bid with a sworn statement in writing that the bidder has not directly or indirectly entered into an agreement, expressed or implied, with any other bidder concerning the price or amount of such bid or any bids, the limiting of the bids or bidders, the paying to anyone any money for promotion expenses, the parceling or farming out to any bidder or bidders or other persons of any part of the contract or any part of the subject matter of the bid or of the profits thereof.

Construction, Maintenance and Statutory Payment Bonds in the amount of 100% of the contract price are required for this project. These bonds must be obtained from a Corporate Surety licensed in Oklahoma and approved by the Owner and Consulting Engineer. The bidder shall state in the proposal the name and address of the Surety or Sureties who will sign this bond in case the contract is awarded. The Maintenance Bond required will guarantee the repair of all damage due to improper materials or workmanship for a period of one (1) year after the acceptance of the work by the Owner.

This project is to be financed by the ARPA grant program managed by the Oklahoma Water Resources Board (OWRB) and shall be referred to as Project No. ARP-23-0188-G. The following requirements and regulations must be complied with:

- A. "Equal Opportunity in Employment: All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age or physical handicap. Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended."
- B. "Each bidder must fully comply with the requirements, terms and conditions of the Environmental Protection Agency's Disadvantaged Business Enterprise Requirements, which have been adopted for the OWRB ARPA program, and include employing the six (6) good faith efforts and soliciting disadvantaged business enterprises during the performance of this contract. Requirements are contained in OWRB's Guidance and Procedures, ARP-267. The bidder commits itself to following the good faith efforts to solicit disadvantaged business enterprises contained herein and all other requirements, terms, and conditions of these bid conditions by submitting a properly signed bid."
- C. **If the total project cost exceeds \$10,000,000 (ten million dollars)** "Davis Bacon Act wage rules shall apply. All laborers and mechanics employed by contractors and sub- contractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of Chapter 31 of Title 40, United States Code and 29 CFR parts 1,3, and 5. The Department of Labor provides all pertinent information related to compliance with labor standards, including prevailing wage rates and instructions for reporting. More information is available at <http://www.sam.gov/>" and <https://www.dol.gov/agencies/whd/government-contracts/construction>
- D. System for Award Management (SAM) registration is required for all Applicants and Awardees (Entities, Prime Contractors, Subcontractors, Vendors) in order to receive funds from the ARPA program. SAM replaced the Central Contractor Registration/Federal Agency Registration, Online Representations and Certifications Application, and Excluded Parties List System. Applicants and awardees are required to complete a one-time free registration to provide basic information relevant to procurement and financial transactions. On April 4, 2022, the unique entity identifier used across the federal government changed from the DUNS Number to the Unique Entity ID (generated by SAM.gov). Registrants must retain an active status to be eligible for ARPA funding. Applicants and Awardees can go to SAM.gov to complete the registration process.

The bids filed with the City Clerk's Office will be opened and considered by the Owner, at a meeting to be held in _____, on the day of _____, 20___. Bids received more than ninety-six (96) hours prior to the Bid Opening will be returned.

The contract is to be awarded to the lowest, responsive, responsible bidder. The Owner reserves the right to correct any non-material clerical errors in the bidding as allowed under Oklahoma Law. The Owner reserves the right to reject any and all bids in accordance with the Oklahoma Public Competitive Bidding Act of 1974. Conditional bids shall not be accepted.

A pre-bid conference will be held on this project at:
_____ on the _____ day of _____, 20__.

Approved on this _____ day of _____, 20__

Information for Bidders

Notice is hereby given that the City of Shawnee (hereinafter called the "Owner") will receive sealed bids at the City Clerk's Office, 16 W. 9th Street, Shawnee, Pottawatomie County, Oklahoma until the ____ day of _____, 20____, for the Thompson Heights Waterline.

This project is to be financed by the ARPA grant program managed by the Oklahoma Water Resources Board (OWRB) and shall be referred to as Project No. ARP-23-0188-G. The following requirements and regulations must be complied with:

- A. "Equal Opportunity in Employment: All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age or physical handicap Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended."
- B. " Each bidder must fully comply with the requirements, terms, and conditions of the Environmental Protection Agency's Disadvantaged Business Enterprise Requirements, which have been adopted for the OWRB ARPA program, and include employing the six (6) good faith efforts and soliciting disadvantaged business enterprises during the performance of this contract. Requirements are contained in OWRB's Guidance and Procedures, ARP-267. The bidder commits itself to following the good faith efforts to solicit disadvantaged business enterprises contained herein and all other requirements, terms, and conditions of these bid conditions by submitting a properly signed bid."
- C. **If the total project cost exceeds \$10,000,000 (ten million dollars)** "Davis Bacon Act wage rules shall apply. All borers and mechanics employed by contractors and sub-contractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of Chapter 31 of Title 40, United States Code and 29 CFR parts 1,3, and 5. The Department of Labor provides all pertinent information related to compliance with labor standards, including prevailing wage rates and instructions for reporting. More information is available at <https://www.dol.gov/agencies/whd/government-contracts/construction> and <http://www.sam.gov/>"
- D. System for Award Management (SAM) registration is required for all Applicants and Awardees (Entities, Prime Contractors, Subcontractors, Vendors) in order to receive funds from the ARPA program. SAM replaced the Central Contractor Registration/Federal Agency Registration, Online Representations and Certifications Application, and Excluded Parties List System. Applicants and awardees are required to complete a one-time free registration to provide basic information relevant to procurement and financial transactions. On April 4, 2022, the unique entity identifier used across the federal government changed from the DUNS Number to the Unique Entity ID (generated by SAM.gov). Registrants must retain an active status to be eligible for ARPA funding. Applicants and Awardees can go to SAM.gov to complete the registration process.

Each sealed envelope containing a bid must be plainly marked on the outside as "Bid for Independence Avenue Waterline", and the envelope should bear on the outside the bidder's name, address, and license number (if applicable). If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to the Owner at: City of Shawnee, City Clerk's Office, 16 W. 9TH St., Shawnee, OK 74802-1448.

All bids must be made on the required bid form, where all blank spaces for bid prices must be filled in, in ink or typewritten. The bid form must be fully completed and executed when submitted. Only one copy of the bid form is required. The Owner may waive any informalities or minor defects or reject any and all bids as allowed under Oklahoma Law. Any bid may be withdrawn prior to the above scheduled time for bid opening, or authorized postponement thereof. Bids received more than ninety-six (96) hours before the time specified, or those received after the time set for bid opening will not be considered and will be returned unopened. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the Owner and the bidders.

Bidders must satisfy themselves of the accuracy of estimated quantities in the bid proposal by review of the Plans and Specifications, including any existing addenda, and by examination of the project site. Once a bid is submitted, the bidder shall not assert that there was a misunderstanding concerning the quantities or the nature of work to be performed. The failure or omission of any bidder to do any of the foregoing shall in no way relieve any bidder from any obligation in respect to its bid.

Prior to bidding, the Owner shall provide to the bidders all pertinent information that delineates and describes the land owned and rights-of-way acquired or to be acquired.

The Contract Documents contain the provisions required for the construction of the product. Information obtained from an officer, agent, or employee of the Owner or any other person shall not affect the risks or obligations assumed by the contractor or relieve the contractor from fulfilling any of the conditions of the contract.

Each bid exceeding \$100,000 must be accompanied by a Bid Bond for five percent of the total amount of the bid and payable to the Owner. A certified check may be used in lieu of the Bid Bond. As soon as the bid prices have been compared, the Owner will return the bonds of all except the three lowest responsive, responsible bidders. The bid securities of the successful bidder and the two remaining unsuccessful bidders will be returned upon Owner's approval of the successful bidder's executed certificate of insurance and construction bonds.

Construction bonds (Performance, Statutory, and Maintenance) in the amount of 100 percent with a corporate surety approved by the Owner will be required for the faithful performance of the contract. Attorneys-in-fact who sign bid and construction bonds must file with each bond a certified and effective dated copy of their Power-of-Attorney.

The Owner shall award a contract to the lowest, responsive, responsible bidder or bidders within thirty (30) calendar days after bid opening. The Owner may extend the award period not to exceed fifteen (15) calendar days by formal recorded action and for good cause. The time may be extended further by mutual agreement between the Owner and the bidder per O.S. Title 61 Section 111, Public Competitive Bidding Act of 1974 (PCBA).

The Notice of Award shall be accompanied by the necessary contract, bonds, and insurance. In the event of failure of the bidder to execute the contract, the Owner may consider the bidder in default, in which case the Bid Bond accompanying the proposal shall become the property of the Owner.

The party to whom the contract is awarded will be required to execute the contract and obtain the construction bonds (Performance, Statutory and Maintenance) and certificate of insurance within **calendar days** (not to exceed 60 days) from the date when the Notice of Award is delivered to the bidder. The time may be extended further by mutual agreement between the Owner and the bidder per O.S. Title 61 Section 113 (PCBA).

With an acceptable contract, bonds and certificate of insurance signed by the party to whom the Contract was awarded, the Owner shall sign the contract and return to such party an executed duplicate. Should the Owner not execute the contract within the agreed upon period, the bidder may by written notice withdraw the signed contract. Such notice of withdrawal shall be effective upon its receipt by the Owner.

The Owner shall issue the Notice to Proceed after the execution of the contract, approval of bonds and certificate of insurance. If the Notice to Proceed has not been issued within the agreed upon period, the contractor may terminate the contract without further liability on the part of either party.

The Owner may make such investigations as deemed necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of such bidders fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

A conditional or qualified bid will not be accepted. Tied bids are non-restrictive, and in order for a tied bid to be accepted it must be lower than the sum of low separate bids.

All applicable laws, ordinances, rules, and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout. The successful bidder will be required to meet all requirements of the Underground Facilities Damage Prevention Act when engaged in work within public rights-of-way.

When using alternate bids, they will be listed in numerical order, with the highest priority being number one, the second highest priority being number two, etc. The lowest bidder will be determined by comparing all bids that contain the selected alternates and computing the total value of the base bid plus the alternates.

All bidders and owners shall comply with the Oklahoma PCBA of 1974.

The awarded bidder shall supply the names and addresses of all subcontractors and material suppliers when required to do so by the Owner.

To avoid bypassing of raw sewage during construction, the contractor shall use the methods and/or schedule(s) described in Section 33 11 00 of these Specifications, or the method(s) and/or schedule(s) described as follows:

The Contractor will be required to begin work within calendar days of the date shown on the Notice to Proceed. The time for completion is 120 calendar days. Liquidated damages will be \$ 500 per calendar day.

In the event of a conflict between the Plans and the Specifications, the Specifications will govern.

The following items, included in this Bid Packet, shall be submitted along with the bid:

- Bid Proposal
- Bid Bond
- Non-Collusion Affidavit
- Business Relationship Affidavit
- Contractor's Statement about Equal Opportunity (ARP-211)
- Contractor's Certificate of Non-Segregated Facilities (ARP-212)
- Sub-Contractor's Certificate of Non-Segregated Facilities (ARP-212a)
- Bidder's/Supplier's List (ARP-249)
- Subcontractor Performance form (ARP-6100-3)
- Subcontractor Utilization form (ARP-6100-4)
- DBE documentation (if applicable)
- Statement of Qualifications

The consulting engineer is Cowan Group Engineering. The consulting engineer's contact person for this project is Michael Taylor, PE, with phone number 405.463.3369 and email michael@cowangroup.co.

BID PROPOSAL FORM

CITY OF SHAWNEE BID NOTICE: **ARP 23-0188-G**

THE UNDERSIGNED BIDDER, having examined the plans, specifications, the locations, arrangements, and conditions of roads, street, utilities and other facilities or appurtenances which affect or may be affected by the proposed work, the actual sites of the proposed improvements and being acquainted with and fully understanding: (1) the extent and character of the work covered by this proposal; (2) the locations and specified requirements of and for the proposed improvements and other items of work appurtenant thereto; and (3) the normal existing and probable construction difficulties, hazards or all other factors or conditions which may or may not be apparent, which may affect or be affected by the specified work.

HEREBY PROPOSES to furnish all required materials, supplies, equipment, tools, and plant; to perform all necessary labor; and to construct, erect, equip, and complete all work stipulated in, required by, and in accordance with the contract documents hereto attached and the specifications referred to therein (as altered, changed, or modified by any and all addenda thereto), for and in connection with the Contract for which this proposal is herein submitted for and in consideration of the prices set out herein.

The undersigned bidder hereby agrees to furnish the required Performance Bond, Statutory Bond, Maintenance Bond, and evidence of insurance and to enter into a contract within fifteen (15) days after the acceptance of this proposal, and further agrees to complete the work in 120 days (stipulated in the Contract Agreement) from the date of the issuance by the City's Engineer of a Work Order authorizing commencement of work.

Attached hereto is a Certified Check, Cashier's Check or Bidder's Surety Bond in the amount of: _____ DOLLARS \$ _____ which the undersigned agrees is to be forfeited to and become the property of the City of Shawnee, as liquidated damages, should this proposal be accepted and the Contract be awarded to him, he fails to enter into a Contract in the form prescribed and to furnish the required bonds and evidence of insurance within fifteen (15) days as above stipulated, but otherwise the proposal guarantee shall be returned to the undersigned upon the signing of the Contract and delivery of the approved bonds and evidence of insurance to the City of Shawnee.

DATED this _____ day of _____ 20 _____.

Signature: _____

Name and Title: _____

Company: _____ Circle One: Corporation Partnership Individual

Address: _____

Phone: _____ Fax: _____

E-mail Address: _____

Federal Tax I.D. _____

Attest: _____

Secretary

Corporate Seal

(if applicable)

THOMPSON HEIGHTS WATERLINE

BID SCHEDULE: ARP 23-0188-G

BASE BID

ITEM #	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
1	MOBILIZATION	LS	1		
2	CLEARING AND GRUBBING	LS	1		
3	SOLID SLAB SOD	SY	2,708		
4	STORMWATER POLLUTION PREVENTION PLAN	LS	1		
5	8" HDPE DR-11 WATERLINE (HDD)	LF	5,322		
6	8" HDPE DR-11 WATERLINE (TRENCHING)	LF	282		
7	6" GATE VALVE & BOX	EA	10		
8	8" GATE VALVE & BOX	EA	7		
9	1" AIR RELIEF VALVE	EA	1		
10	HDPE WALL ANCHOR	EA	17		
11	FIRE HYDRANT ASSEMBLY	EA	10		
12	MECHANICAL JOINT FITTINGS	LB	3,837		
13	WATER SERVICE RECONNECTION (SHORT)	EA	72		
14	WATER SERVICE RECONNECTION (LONG)	EA	77		
15	LEAD SERVICE REPLACEMENT (SHORT)	EA	1		
16	LEAD SERVICE REPLACEMENT (LONG)	EA	1		
17	REMOVE & REPLACE CONCRETE PAVEMENT	SY	3		
18	REMOVE & REPLACE CONCRETE DRIVE	SY	19		
19	REMOVE EXISTING FIRE HYDRANT	EA	6		
20	CONSTRUCTION SIGNING AND TRAFFIC CONTROL	LS	1		
21	TEMPORARY EROSION AND SEDIMENT CONTROL	LS	1		
22	PRESSURE AND LEAKAGE TESTING	LS	1		
23	DISINFECTION AND TESTING	LS	1		

ALL ITEMS TO INCLUDE ALL APPURTENANCES NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM AS DESCRIBED IN THE PLANS AND SPECIFICATIONS.

TOTAL BASE BID \$ _____

TOTAL BASE BID IN WORDS _____

Bidder's Statement about: Equal Opportunity Clause (ARP-211)

Mark one:

- ☐ I have participated in previous contract(s) or subcontract(s) subject to the equal opportunity clause under Executive Orders 11246 and 11375 or preceding Executive Orders 10925 and 11114. I have filed all reports due under the requirements contained in 40 CFR, Part C, 8.11.
- ☐ I have not participated in previous contract(s) subject to the equal opportunity clause under Executive Orders 11246 and 11375 or preceding Executive Orders 10925 and 11114.

- ☐ I will obtain a similar statement from any proposed subcontractor(s), when appropriate.

Bidder's Statement about: Non-Segregated Facilities (ARP-212 and ARP-212a)

- ☐ I hereby certify that I do not and will not maintain any facilities provided for my employees in a segregated manner or permit my employees to perform their services at any location under my control where segregated facilities are maintained; and that I will obtain a similar certification prior to the award of any subcontract exceeding \$10,000 which is not exempted from the equal opportunity clause.

Bidder's Statement about: Bonds

- ☐ I hereby certify that I will obtain and provide a Bid Bond along with my Bid.
- ☐ I hereby certify that, in the event of being awarded a Contract, I will provide a Performance Bond for 100% of the contract amount.
- ☐ I hereby certify that, in the event of being awarded a Contract, I will provide a Statutory/Payment Bond for 100% of the contract amount.
- ☐ I hereby certify that, in the event of being awarded a Contract, I will provide a Maintenance Bond for at least 1 year after construction completion, and 100% of the contract amount

Bidder's Statement about: sam.gov registration

Mark one:

- ☐ I have registered in SAM.gov and my status is "active".
- ☐ I am not currently registered in SAM.gov, but I will be registered and holding an "active" status prior to the beginning of any construction.

- ☐ I certify that I will actively review the SAM.gov status of all of the subcontractors in this work to verify they are registered and their status is "active".

Bidder's Statement about: Davis Bacon Act

If the total project cost exceeds \$10,000,000 (ten million dollars):

- ☐ I hereby certify that all of my employees will be paid according to the Davis Bacon Act.

Name and Title of Prospective Prime Contractor's Representative

Signature of Prospective Prime Contractor's Representative

Name and address of Prospective Prime Contractor

AFFIDAVITS

State of _____ ss.
County of _____

_____, of lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by the bidder to submit the attached bid.

Non-Collusion

Affiant further states that the bidder has not been a party to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or with any government official or employee as to quantity, quality, or price in the prospective contract, or any other terms of said prospective contract; or in any discussions between bidders and any government official concerning exchange of money or other value for special consideration in the letting of a contract; that the bidder/contractor had not paid, given or donated or agreed to pay, give or donate to any officer or employee of the _____ (or other entity) any money or other thing of value, either directly or indirectly in the procurement of a contract or pursuant to this bid.

Business Relationships

Affiant further states that the nature of any partnership, joint venture, or other business relationship presently in effect or which existed within one (1) year prior to the date of this statement with the architect, engineer, or other party to the project is as follows:

Affiant further states that any such business relationship presently in effect or which existed within one (1) year prior to the date of this statement between any officer or director of the bidding company and any officer or director of the architectural or engineering firm or other party to the project is as follows:

Affiant further states that the names of all persons having any such business relationships and the positions they hold with their respective companies or firms are as follows:

If none of the business relationship herein above mentioned exists, affiant should so state.

Subscribed and sworn to before me this ____ day of _____, 20__.

Notary Public Signature

My Commission Expires: _____

ARP-249 BIDDERS/SUPPLIERS LIST

To be completed by Project Owner with documentation from all bidding Prime Contractors & Subcontractors
(List of all firms that bid or quote on Prime Contracts and Subcontracts on the project including Services and Supplies)

Project Name: _____ OWRB Project Number: ARP-__-__-__

Company Name:	
Address:	
Contact Name:	
Phone:	
Email:	
Quote/Bid Amount (\$)	
Date:	
Utilized: Yes No	If <u>utilized</u> and >\$10,000 then ARP 212a form is required (from all subcontractors and suppliers).
DBE: Yes No	If <u>yes</u> , MBE or WBE? _____ Check one: Construction _____ Equipment _____ Services _____ Supplies _____ ARP 6100-3 form is <u>required</u> for all DBEs that bid/quote, even if not utilized. <u>Submit with Bidders List.</u> If <u>utilized</u> submit the following with Bidders List: - A copy of the companies MBE or WBE certificate is <u>required</u>. - ARP 6100-4 form is also <u>required</u>.

Company Name:	
Address:	
Contact Name:	
Phone:	
Email:	
Quote/Bid Amount (\$)	
Date:	
Utilized: Yes No	If <u>utilized</u> and >\$10,000 then ARP 212a form is required (from all subcontractors and suppliers).
DBE: Yes No	If <u>yes</u> , MBE or WBE? _____ Check one: Construction _____ Equipment _____ Services _____ Supplies _____ ARP 6100-3 form is <u>required</u> for all DBEs that bid/quote, even if not utilized. <u>Submit with Bidders List.</u> If <u>utilized</u> submit the following with Bidders List: - A copy of the companies MBE or WBE certificate is <u>required</u>. - ARP 6100-4 form is also <u>required</u>.

Company Name:	
Address:	
Contact Name:	
Phone:	
Email:	
Quote/Bid Amount (\$)	
Date:	
Utilized: Yes No	If <u>utilized</u> and >\$10,000 then ARP 212a form is required (from all subcontractors and suppliers).
DBE: Yes No	If <u>yes</u> , MBE or WBE? _____ Check one: Construction _____ Equipment _____ Services _____ Supplies _____ ARP 6100-3 form is <u>required</u> for all DBEs that bid/quote, even if not utilized. <u>Submit with Bidders List.</u> If <u>utilized</u> submit the following with Bidders List: - A copy of the companies MBE or WBE certificate is <u>required</u>. - ARP 6100-4 form is also <u>required</u>.

STATEMENT OF QUALIFICATIONS: _____
Bidder

Address

Similar Projects Completed by Bidder:

1.

NAME OF PROJECT:

OWNER:

ADDRESS:

DATE STARTED:

DATE COMPLETED:

APPROX. QUANTITIES OF MAJOR ITEMS:

VALUE OF CONTRACT:
2.

NAME OF PROJECT:

OWNER:

ADDRESS:

DATE STARTED:

DATE COMPLETED:

APPROX. QUANTITIES OF MAJOR ITEMS:

VALUE OF CONTRACT:
3.

NAME OF PROJECT:

OWNER:

ADDRESS:

DATE STARTED:

DATE COMPLETED:

APPROX. QUANTITIES OF MAJOR ITEMS:

VALUE OF CONTRACT:
4.

OTHER PROJECT REFERENCES:

NOTE: THIS FORM IS TO BE RETURNED WITH THE BID.

BID BOND

We, the undersigned, _____, as Principal, and _____, as Surety, are hereby held and firmly bound unto **City of Shawnee**, as Owner, in the penal sum of _____ for the payment of which, well and truly to be made, hereby jointly and severally bind ourselves, our successors and our assigns.

Signed this _____ day of _____, _____.

The condition of the above obligation is such that, whereas the Principal has submitted to **City of Shawnee**, a certain bid, attached hereto and hereby made a part hereof, to enter into a contract, in writing, for the **Thompson Heights Waterline**;

NOW, THEREFORE, if said bid shall be rejected or if said bid shall be accepted and the Principal shall execute and deliver a contract in the form of the contract attached hereto (properly completed in accordance with said bid) and shall furnish a bond for faithful performance of said contract and for the payment of all persons performing labor or furnishing materials in connection therewith and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void; otherwise, the same shall remain in force and effect, it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bonds shall in no way be impaired or affected by any extension of the time within which the Owner may accept such bid and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers the day and year first set forth above.

Principal

Surety

By:_____

ATTEST: (if by corporation)

Type Name & Title

Corporate Seal

NOTE: THIS FORM IS TO BE RETURNED WITH THE BID.

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____,
hereinafter called the Principal, and the _____
of, _____, a corporation duly organized under the laws of the State
of _____, hereinafter called the Surety, as Surety, are held and firmly bound unto the City of
Shawnee, hereinafter call the Obligee, in the sum of _____
Dollars (\$_____), for the payment of which sum well and truly to be made, the said Principal
and the said Surety, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and
severally, firmly by these presents.

WHEREAS, said Principal entered into a written Contract with said Obligee dated _____,
for Thompson Heights Waterline, all in compliance with the plans and specifications therefore, made a part of said
Contract and on file in the office of Cowan Group Engineering, LLC, 7100 N. Classen Blvd., Suite 500, Oklahoma
City, OK 73116.

WHEREAS, this bond is given in compliance with Title 61, Oklahoma Statutes 2001, Section 113(B)(3).

NOW THEREFORE, if said Principal shall pay or cause to be paid to Obligee all damage, loss, and expense which
may result by reason of defective materials and/or workmanship in connection with said work, occurring within a
period of one (1) year after acceptance of said project by Obligee; and if Principal shall pay or cause to be paid all
labor and materials, including the prime contractor and all subcontractors; and if Principal shall save and hold Obligee
harmless from all damages, loss, and expense occasioned by, or resulting from, any failure whatsoever of said
Principal, then this obligation shall be null and void, otherwise to be and remain in full force and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alternations in said Contract
and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or
any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, this instrument is executed in 4 counterparts, each of which shall be deemed an original,
this ____ day of _____, 2023.

WITNESS AS TO PRINCIPAL ((PRINCIPAL
BY: _____

WITNESS AS TO SURETY ((SURETY
BY: _____
ATTORNEY-IN-FACT

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list
(Circular 570 as amended) and be authorized to transact business in the State of Oklahoma. Attach a certified Copy
of the Power of Attorney.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____,
hereinafter called the Principal, and the _____
of, _____, a corporation duly organized under the laws of the State
of _____, hereinafter called the Surety, as Surety, are held and firmly bound unto the City of
Shawnee, hereinafter call the Obligee, in the sum of _____
Dollars (\$_____), for the payment of which sum well and truly to be made, the said Principal
and the said Surety, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and
severally, firmly by these presents.

WHEREAS, said Principal entered into a written Contract with said Obligee dated _____,
for Thompson Heights Waterline, all in compliance with the plans and specifications therefore, made a part of said
Contract and on file in the office of Cowan Group Engineering, 7100 N. Classen Blvd., Suite 500, Oklahoma City, OK
73116.

WHEREAS, this bond is given in compliance with Title 61, Oklahoma Statutes 2001, Section 113(B)(2).
NOW THEREFORE, if said Principal shall, in all particulars, well, truly and faithfully perform and abide by said
Contract and each and every covenant, condition, and part thereof, and shall fulfill all obligations resting upon said
Principal by the terms of said Contract and said specifications, and if said Principal shall protect and save harmless
said Obligee from any pecuniary loss resulting from the breach of any of the items, covenants and conditions of said
Contract resting upon said Principal, the this obligation shall be null and void, otherwise to be and remain in full force
and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alternations in said Contract
and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or
any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, this instrument is executed in 4 counterparts, each of which shall be deemed an original,
this ____ day of _____, 2023.

_____	(	_____
	(	PRINCIPAL
WITNESS AS TO PRINCIPAL	(	
	BY: _____	
_____	(	_____
	(	SURETY
WITNESS AS TO SURETY	(	
	(	BY: _____
	(	ATTORNEY-IN-FACT

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list
(Circular 570 as amended) and be authorized to transact business in the State of Oklahoma. Attach a certified Copy
of the Power of Attorney.

STATUTORY BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____,
hereinafter called the Principal, and the _____
of, _____, a corporation duly organized under the laws of the State
of _____, hereinafter called the Surety, as Surety, are held and firmly bound unto the City of
Shawnee, hereinafter call the Obligee, in the sum of _____
Dollars (\$_____), for the payment of which sum well and truly to be made, the said Principal
and the said Surety, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and
severally, firmly by these presents.

WHEREAS, said Principal entered into a written Contract with said Obligee dated _____,
for Thompson Heights Waterline, all in compliance with the plans and specifications therefore, made a part of said
Contract and on file in the office of Cowan Group Engineering, LLC, 7100 N. Classen Blvd., Oklahoma City, OK
73116.

WHEREAS, this bond is given in compliance with Title 61, Oklahoma Statutes 2001, Sections 1 and 113(B)(1).
NOW THEREFORE, if said Principal shall fail or neglect to pay all indebtedness incurred by said Principal or
subcontractors of said Principal who perform work in the performance of such contract, for labor and materials and
repairs to and parts for equipment used and consumed in the performance of said contract after the same becomes
due and payable the person, firm, or corporation entitled thereto may sue and recover on this bond, the amount so
due and unpaid.

It is further expressly agreed and understood by the parties hereto that no changes or alternations in said Contract
and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or
any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, this instrument is executed in 4 counterparts, each of which shall be deemed an original,
this ____ day of _____, 2023.

_____	(	_____
WITNESS AS TO PRINCIPAL	(	PRINCIPAL
	(	
	(	BY: _____

_____	(	_____
WITNESS AS TO SURETY	(	SURETY
	(	
	(	BY: _____
	(	ATTORNEY-IN-FACT

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list
(Circular 570 as amended) and be authorized to transact business in the State of Oklahoma. Attach a certified
Copy of the Power of Attorney

APPLICATION AND CERTIFICATE FOR PAYMENT

PROJECT: THOMPSON HEIGHTS WATERLINE
TO: (OWNER): CITY OF SHAWNEE

ENGINEER: Cowan Group Engineering, LLC

CONTRACTOR:

CONTRACT FOR:

APPLICATION DATE:

APPLICATION NO:

PERIOD FROM:

TO:

CHANGE ORDER SUMMARY

Application is made for Payment, as shown below, in connection with the Contract. The present status of the account for this Contract is as follows:

Change Orders approved		ADDITIONS \$	DEDUCTIONS \$	ORIGINAL CONTRACT SUM	\$ _____
in previous months by					
Owner					
TOTAL				Net change by Change Orders	\$ _____
Subsequent Change Orders				CONTRACT SUM TO DATE	\$ _____
No. Approved					
(Date)					
				TOTAL COMPLETED TO DATE	\$ _____
				RETAINAGE _____%	\$ _____
				TOTAL EARNED LESS RETAINAGE	\$ _____
				LESS PREVIOUS CERTIFICATES FOR PAYMENT	\$ _____

TOTALS

Net change by Change Orders \$ _____

CURRENT PAYMENT DUE \$ _____

The undersigned Contractor certifies that the work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by him for work for which previous Certificates for Payment were issued and payments received from the Owner, and that the current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

In accordance with the Contract Documents, based on on-site observations and the data comprising the above application, the Engineer certifies to the Owner that to the best of the Engineer's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED. \$ _____

INSPECTOR:

ENGINEER:

OWNER:

By: _____

By: _____

By: _____

Item No.	Description of Item	Scheduled Quantities	Unit Price	<u>Quantities of Work Completed</u>				
				<u>Previous Applications</u>		<u>This Application</u>		Amount Completed to Date
				Quantities	Amount	Quantities	Amount	

Subtotal or Total

CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION.

TO OWNER: **City of Shawnee**
16 W. 9th Street
Shawnee, OK 74822-1448

PROJECT: Thompson Heights Waterline

CONTRACT DATED: _____

STATE OF: _____

COUNTY OF: _____

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered against any property of the Owner arising in any manner out of the performance of the Contract referenced above:

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

The following supporting documents should be attached hereto if required by Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens.

CONTRACTOR:

(Name and address)

BY: _____
(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn before me on this date:

Notary Public: _____

My Commission Expires: _____

CLAIM OR INVOICE AFFIDAVIT

State of _____ ss.
County of _____

The undersigned (engineer or supervisory official), of lawful age, being first duly sworn, on oath says that this (invoice, claim, or contract) is true and correct. Affiant further states that the (work, services, or materials) as shown by this invoice or claim have been (completed or supplied) in accordance with the plans, specifications, orders, or requests furnished to the affiant. Affiant further states that (s)he has made no payment, given, or donated or agreed to pay, give, or donate, either directly or indirectly, to any elected official, officer, or employee of the State of Oklahoma, of money or any other thing of value to obtain payment or the award of this contract.

Engineer/Supervisory Official signature

Subscribed and sworn to before me this ____ day of _____, 20 ____.

Notary Public signature

My Commission Expires: _____

NOTICE OF AWARD

Date: ____/____/____

Project: _____

Grant#: ARP-____-____-____

The _____ has considered the bid submitted by
Owner
_____ for the above referenced project in response to the
Contractor
Advertisement for Bids dated ____/____/____ and Information for Bidders. You are hereby notified
that your bid has been accepted for items in the amount of \$ _____.

You are required per the Information for Bidders to execute the Agreement and furnish the required Contractor's Performance Bond, Statutory Bond, Maintenance Bond, and Certificate of Insurance within ____ calendar days from the date of this Notice. If you fail to provide these in the specified time, the Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

Owner's Authorized Representative signature

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged by _____,

Contractor's Representative name

Authorized Representative of _____

Contractor

Contractor's Authorized Representative signature

____/____/____
Date

AGREEMENT

This Agreement made this ____ day of _____, 20__ between _____
(hereinafter called the Owner) and _____ (hereinafter called the Contractor).

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The Contractor will commence and complete the work for:

_____.

2. The Contractor will furnish all of the materials, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the project described herein.

3. The Contractor will commence the work required by the Contract documents within ____ calendar days after the date of the Notice to Proceed and will complete the same within ____ calendar days unless the period for completion is extended otherwise.

4. The Contractor agrees to perform all the work described in the Contract documents and comply with the terms therein for the sum of \$ _____ or as shown in the Bid Schedule.

5. The term "Contract documents" means and includes the following:

- | | |
|---|---------------------------------|
| (A) Advertisement for Bids | (I) Standard Requirements |
| (B) Information for Bidders | (J) Statutory Bond |
| (C) Bid Proposal | (K) Performance Bond |
| (D) Bid Schedule | (L) Maintenance Bond |
| (E) Business Relationships Affidavit | (M) Certificate of Insurance |
| (F) Non-collusion Affidavit | (N) Notice of Award |
| (G) Bid Bond | (O) Notice to Proceed |
| (H) Agreement | (P) Change Order |
| (Q) Drawings prepared by _____. | |
| Numbers ____ through ____ and dated ____/____/____. | |
| (R) Specifications prepared by _____, dated ____/____/____. | |
| (S) ADDENDA: | |
| No. _____, dated ____/____/____ | No. _____, dated ____/____/____ |
| No. _____, dated ____/____/____ | No. _____, dated ____/____/____ |

6. The Owner will pay to the Contractor in the manner and at such times as set forth in the Standard Requirements such amounts as required by the Contract documents.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

8. It is understood that the following are also required of the Contractor in performance of this contract:

- a. Liquidated damages for failure to complete the work within the time specified shall be assessed at the rate of \$_____ per day for each additional calendar day until the work is completed.
- b. Contractor shall comply with the Underground Facilities Damage Prevention Act (63 O.S. 42.1 et seq.).

IN WITNESS WHEREOF, the parties hereto have executed or caused to be executed by their duly authorized officials, this Agreement in _____ copies each of which shall be deemed an original on the date first above written.

Owner's Authorized Representative	Title	Signature	____/____/____ Date
Attested by	Title	Signature	____/____/____ Date
Contractor's Authorized Representative	Title	Signature	____/____/____ Date
Attested by	Title	Signature	____/____/____ Date

NOTICE TO PROCEED

Date: ____/____/____

Project: _____

Grant#: ARP- ____ - ____ - ____

Notice is hereby given to _____ to commence work on the above
Contractor
referenced project on or before ____/____/____. In accordance with the Agreement dated
____/____/____, you are to complete the work within ____ consecutive calendar days. The date of
completion of all work is ____/____/____.

Owner's Authorized Representative signature

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by _____,
Contractor's Representative name

Authorized Representative of _____
Contractor

Contractor's Authorized Representative signature

____/____/____
Date

**CERTIFICATE OF APPROVAL OF CONTRACTS AND BONDS BY LOCAL
ATTORNEY**

I, the undersigned _____,
the duly authorized and acting legal representative of the _____,
after careful examination of the Contract between this Entity and
_____, and the surety bonds given by the contractor in
connection with the performance of said contract, do hereby certify that:

1. Each of the aforesaid agreements has been duly executed by the proper parties thereto, acting through their duly authorized representatives.
2. Said representatives have full power and authority to execute said agreements on behalf of the respective parties named therein.
3. The foregoing contract and surety bonds, as applicable, constitute valid and legally binding obligations upon the parties executing the same in accordance with the terms, conditions, and provisions thereof.

Dated this ____ day of _____, 20 ____.

Attorney's signature

Disadvantaged Business Enterprise Program (DBE) Guidance (ARP-267)

Important note: All OWRB ARPA information can be found at: <https://www.owrb.ok.gov/financing/grant/arpa.php>

The OWRB is administering the State of Oklahoma's ARPA funding for various wastewater and water quality projects. The ARPA program is federally funded, and one of the conditions of federal grant awards is for recipients and sub-recipients (i.e., prime contractors and subcontractors) make a good-faith effort to award a fair share of work to DBEs who are small business enterprises (SBEs), minority business enterprises (MBEs) and women's business enterprises (WBEs).

To ensure compliance with federal DBE requirements, both Grant Recipients (Project Owners) and Prime Contractors must undertake the good faith efforts to provide opportunities for DBE firms to participate in contracts. Federal regulations require evidence of the demonstration of the six good faith efforts in trying to achieve the DBE participation goals. The Oklahoma Department of Transportation has a Directory of Certified DBE Firms. This directory can be accessed at <https://okdot.gob2g.com/Default.asp>

Good Faith Efforts: EPA's Good Faith Efforts for the Clean Water State Revolving Fund (CWSRF) will be used for the OWRB ARPA grant program. The following good faith efforts will apply to all procurement categories involving ARPA funds (See Appendices A & B).

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For state and local government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For state and local government recipients, this will include dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the Small Business Administration (SBE) and the Minority Business Development Agency of the Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the above steps.

Please submit all information to:
Financial Assistance Division, OWRB
3800 North Classen Blvd, Oklahoma City, OK 73118
Phone: 405.530.8800, FAX: 405.530.8900
<http://www.owrb.ok.gov>

Disadvantaged Business Enterprise Program (DBE) Guidance

Demonstration of the Six Good Faith Efforts. See Appendices A & B for additional bidding instructions and contract administrative provisions.

A: Project Owners are required to create and maintain a bidders list in accordance with Subpart E of Part 33 of EPA's Disadvantaged Business Enterprise Program rule, (§ 33.501(b)). This requirement will be adopted for projects funded through the OWRB ARPA program. The list must include all firms that bid or quote on prime contracts, or bid or quote subcontracts, on competitively bid ARPA funded projects. The bidders list must only be kept until the project period for the identified grant has ended. The following information must be obtained from all prime and subcontractors and can be provided on Bidders List (ARP-249):

1. Entity's name with point of contact
2. Entity's mailing address, telephone number, and e-mail address
3. The procurement on which the entity bid or quoted, and when; and
4. Entity's status as an MBE/WBE or non-MBE/WBE

B: Project Owners are required to undertake good faith efforts. Steps 1 through 5 can be utilized during the project planning, design and/or pre-bidding phase, to assure that qualified DBE firms have procurement opportunities in construction, equipment, services, and supplies.

To provide procurement opportunities to DBE Firms, the Project Owner should undertake the following:

- Conduct pre-bid meetings to inform potential bidders/contractors about DBE requirements and provide guidance in undertaking the required good faith efforts.
- Use listings of certified DBEs from the U.S. Small Business Administration (SBA), Oklahoma Department of Transportation (ODOT), etc., to solicit DBE firms as prime contractors whenever they are potential candidates. Project Owners should advertise in minority, local and regional newspapers.
- Invite DBE firms, where appropriate, to meetings, conferences etc., to inform them of procurement opportunities and develop, where possible, reasonable contract and delivery schedules that encourage and facilitate participation by DBE's. This includes, whenever possible, a minimum of 30 calendar days for bids or request for proposals.
- Determine if a project can be broken down into smaller components/contracts to allow opportunity for DBE firms to bid both as prime-contractors and as sub-contractors.
- For projects broken down into smaller components (e.g., painting, roofing, excavation, pipe laying, etc.) ensure that the delivery schedules are reasonable.
- Encourage DBE firms, where appropriate, to apply as a consortium of DBEs, when a contract is too large for one of these firms to handle individually.
- Require prime contractor to complete ARP Form 6100-3 & ARP Form 6100-4 and submit with bid proposal to Project Owner.

C: Project Owners must require the prime contractor to undertake steps 1 through 5 of the Good Faith Efforts in providing DBE firms opportunity for sub-contracts.

Project Owner must provide the DBE Guidance (ARP-267) and associated forms to Prime Contractors for utilization of DBEs in the bidding documents.

APPENDIX A: Project Owner, Prime Contractor and Sub-Contractor Responsibilities

EPA's Disadvantaged Business Enterprise Program rule applies to contract procurement actions funded in part by EPA assistance agreements awarded after May 27, 2008. The rule is found at Federal regulation Title 40, Part 33. Specific responsibilities are highlighted below.

Project Owner Responsibilities:

- Include OWRB's DBE guidance (ARP-267) in each contract with a primary contractor.
- Employ the six Good Faith Efforts during prime contractor procurement (§33.301).
- Require prime contractor to comply with the following prime contractor requirements of Title 40 Part 33:
 - a) To employ the six Good Faith Efforts steps in paragraphs (a) through (e) of § 33.301 if the prime contractor awards subcontracts (§ 33.301(f)).
 - b) To provide **ARP form 6100-2 – DBE Subcontractor Participation Form** to all DBE subcontractors (Optional submittal by subcontractors) (§ 33.302(e)).
 - c) To submit **ARP form 6100-3 – DBE Program Subcontractor Performance Form** and **ARP form 6100-4 – DBE Program Subcontractor Utilization Form** with bid package or proposal. (§ 33.302 (f) and (g)).
 - d) To pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the recipient (§ 33.302(a)).
 - e) To notify recipient in writing by its prime contractor prior to any termination of a DBE subcontractor for convenience by the prime contractor (§ 33.302(b)).
 - f) To employ the six good faith efforts described in § 33.301 if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason. (§ 33.302(c)).
 - g) To employ the six good faith efforts described in § 33.301 even if the prime contractor has achieved its fair share objectives under subpart D of Part 33. (§33.302(d)).
 - h) Provide Project Owner DBE participation achievements with bid proposal – this includes all information necessary for the Owner to complete the **Bidders List (ARP-249)**. The Owner may allow the prime contractor to complete the Bidders List (ARP-249); however, the Owner is responsible for review and submittal.
- Maintain records documenting compliance with the requirements of Title 40 Part 33, including **Bidders List (ARP-249)** and documentation of the good faith efforts (§ 33.301(a)) by the project owner and prime contractor.

Prime Contractor Responsibilities:

- Employ the six Good Faith Efforts steps in paragraphs (a) through (e) of § 33.301 if the prime contractor awards subcontracts (§ 33.301(f)).

- Provide ARP form 6100-2 – *DBE Program Subcontractor Participation Form* and ARP form 6100-3 – *DBE Program Subcontractor Performance Form* to each DBE subcontractor as part of the bid conference and prior to opening of the contractor's bid or proposal (§ 33.302(e) and (f)). Complete ARP form 6100-4 – *DBE Program Subcontractor Utilization Form* (§ 33.302(g)).
- Submit to recipient with bid package or proposal the completed ARP form 6100-4, plus an ARP form 6100-3 for each DBE subcontractor used in the contractor's bid or proposal (§ 33.302(f) and (g)).
- Pay subcontractors for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the Project Owner (§ 33.302(a)).
- Notify the recipient in writing prior to prime contractor termination of a DBE subcontractor for convenience (§ 33.302(b)).
- Employ the six good faith efforts described in (§ 33.301) if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason. (§ 33.302(c)).
- Employ the six good faith efforts described in (§ 33.301) even if the prime contractor has achieved its fair share objectives under subpart D of Part 33. (§33.302(d)).
- Provide Project Owner DBE participation achievements with bid proposal. This includes information necessary for Owner's completion of the Bidders List (ARP-249).
- Maintain records documenting its compliance with the requirements of Title 40 Part 33, including Bidders List (ARP-249) and documentation of the good faith efforts (§ 33.301(a)) by the project owner and prime contractor.

Subcontractor Responsibilities:

- May submit ARP form 6100-2 – *DBE Subcontractor Participation Form* to Debra Bradford, EPA Region 6 DBE Coordinator (§ 33.302(e)). Submitted if concerns with EPA funded project (e.g., termination, late payment, etc.)
- Must complete ARP form 6100-3 – *DBE Program Subcontractor Performance Form* and submit it to the prime contractor soliciting services from the subcontractor prior to the opening of bids for the prime contract.

Summary of ARP Forms

ARP Form	Requirement	Provided By	Completed By	Submitted To
6100-2: DBE Subcontractor Participation Form	Project Owners required to have prime contractors provide form to Subcontractors	Prime Contractors to DBE Subcontractors	DBE Subcontractors if concerns with EPA funded project (e.g., termination, late payment, etc.)	EPA Region 6 DBE Coordinator, Debra Bradford
6100-3: DBE Subcontractor Performance Form	Project Owners required to have prime contractors provide form to Subcontractors	Prime Contractors to DBE Subcontractors	DBE Subcontractors with Prime Contractor's Signature. Completed when bidding on a job.	Project Owners as part of a bid or proposal package
6100-4: DBE Subcontractor Utilization Form	Project Owners required to have prime contractors complete the form	Project Owners to Prime Contractors	Prime Contractors to indicate the utilization of a DBE.	Project Owners as part of bid or proposal

APPENDIX B: TITLE 40 PART 33 SUBPART C—GOOD FAITH EFFORTS

§ 33.102 When do the requirements of this part apply?

The requirements of this part apply to procurement under ARPA Grant program agreements performed entirely within the United States, whether by a Project Owner or its prime contractor, for construction, equipment, services, and supplies.

§ 33.106 What assurances must ARPA Grant program recipients obtain from their contractors?

The recipient must ensure that each procurement contract it awards contains the term and condition specified in Appendix A to this part concerning compliance with the requirements of this part.

§ 33.206 Is there a list of certified MBEs and WBEs?

The Oklahoma Department of Transportation has a Directory of Certified DBE Firms. This database can be found at this website: <https://okdot.gob2g.com/Default.asp>.

§ 33.301 What does this subpart require?

A recipient, including one exempted from applying the fair share objective requirements by § 33.411, is required to make the following good faith efforts whenever procuring construction, equipment, services, and supplies under an ARPA Grant program agreement, even if it has achieved its fair share objectives under subpart D of this part:

- a) Ensure DBEs are made aware of contracting opportunities fully practicable through outreach and recruitment activities. For State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- b) Make information on forthcoming opportunities available to DBE's, arrange periods for contracts, and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- c) Consider in the contracting process whether firms competing for large contracts could subcontract with DBE's. For state and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
- d) Encourage contracting with a consortium of DBE's when a contract is too large for one of these firms to handle individually.
- e) Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
- f) If the prime contractor awards subcontracts, require the prime contractor to take the steps in paragraphs (a) through (e) of this section.

§ 33.302 Are there any additional contract administration requirements?

- a) Project Owners must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the recipient.
- b) Its prime contractor must notify Project Owner in writing prior to any termination of a DBE subcontractor for convenience by the prime contractor.
- c) If a DBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the six good faith efforts described in § 33.301 if soliciting a replacement subcontractor.
- d) A project owner must require its prime contractor to employ the six good faith efforts described in §33.301 even if the prime contractor has achieved its fair share objectives under §33.301 subpart D above.

- e) A recipient must require its prime contractor to provide ARP Form 6100-2—DBE Program Subcontractor Participation Form to all of its DBE subcontractors. ARP Form 6100-2 gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the prime contractor, how much the DBE subcontractor was paid and any other concerns the DBE subcontractor might have, for example reasons why the DBE subcontractor believes it was terminated by the prime contractor. DBE subcontractors may send completed copies of ARP Form 6100-2 directly to the appropriate EPA DBE Coordinator.
- f) A recipient must require its prime contractor to have its DBE subcontractors complete ARP Form 6100-3—DBE Program Subcontractor Performance Form. A recipient must then require its prime contractor to include all completed forms as part of the prime contractor's bid or proposal package.
- g) A recipient must require its prime contractor to complete and submit ARP Form 6100-4—DBE Program Subcontractor Utilization Form as part of the prime contractor's bid or proposal package.
- h) Copies of ARP Form 6100-2—DBE Program Subcontractor Participation Form, ARP Form 6100-3—DBE Program Subcontractor Performance Form and ARP Form 6100-4—DBE Program Subcontractor Utilization Form may be obtained from EPA OSDBU's Home Page on the Internet or directly from EPA OSDBU.
- i) A recipient must ensure that each procurement contract it awards contains the term and condition specified in the Appendix A concerning compliance with the requirements of this part. A recipient must also ensure that this term and condition is included in each procurement contract awarded by an entity receiving a grant under federal financial assistance agreement.

§ 33.410 Can a recipient be penalized for failing to meet its fair share objectives?

A recipient cannot be penalized or treated by EPA as being in noncompliance with this subpart, solely because its MBE or WBE participation does not meet its applicable fair share objective. However, EPA may take remedial action under § 33.105 for a recipient's failure to comply with other provisions of this part, including, but not limited to, the good faith efforts requirements described in subpart C of this part.

Source: Federal Requirements and Contract Provisions for Special Appropriation Act Projects, US Environmental Protection Agency, Region III, June 2008

APPENDIX C: RESOURCE LISTING AND CONTACT INFORMATION
FOR UTILIZATION OF MINORITY AND WOMEN'S BUSINESS ENTERPRISES

Resource Listing	Contact Information	Website if applicable
U.S. Small Business Administration (SBA) In addition to the national office, the SBA has local district and regional offices to assist small businesses in contracting with the public and private sector.	US Small Business Administration 409 3rd St, SW Washington DC 20416 Phone: 800-827-5722	https://www.sba.gov/
U. S. Small Business Administration (SBA) - OK. District Office	301 NW 6 th St. Oklahoma City, OK 73102 Phone: 405.609.8000	https://www.sba.gov/offices/district/ok/oklahoma-city
Minority Business Development Administration (MBDA): The MBDA is an agency within the U.S. Dept. of Commerce, created to foster the development and growth of minority businesses in the U.S. and coordinates resources in the public and private sectors to help MBEs.	1401 Constitution Ave NW Washington, D.C. 20230 Email: support@mbda.gov Phone: (202) 482-2000	http://www.mbda.gov/
Standard Industrial Classification Codes (SIC) or North American Industry Classification System (NAICS) codes visit the websites.	U.S. Bureau of Labor Statistics Postal Square Building, 2 Massachusetts Ave. NE Washington, DC 20212-0001 Phone: 1-202-691-5200	http://www.bls.gov/iag/tgs/iag_index_naics.htm
Oklahoma Department of Transportation (ODOT) and the <u>Minority/Disadvantaged Business Enterprise (ODOT – MBE/DBE)</u> . Project Owners and bidders may locate qualified M/WBE's through the MBE/WBE Directory	200 NE 21 st Street Oklahoma City, OK 73105 Phone: 405.521.2082	https://okdot.gob2g.com/Default.asp
US EPA Office of Small and Disadvantaged Business Utilization (OSDBU): advocates and advances the business, regulatory, and environmental compliance concerns of small and socio-economically disadvantaged businesses. The Small Business Vendor Profile System contains information of number of small and disadvantaged companies registered with OSDBU.	USEPA Office of Small Programs 1200 Pennsylvania Ave. NW Mail Code 1230T Washington, D.C. 20460 Phone: 202 566-2075	https://www.epa.gov/aboutepa/about-office-small-and-disadvantaged-business-utilization-osdbu Select "search the OSBP Registry" Click on the search criteria of interest (ethnicity, size, SIC, etc.)

National Black Chamber of Commerce	4400 Jenifer St NW #331, Washington, DC 20015 Phone: 202 466-6888 Fax: 202 466-4918 Email: info@nationalbcc.org	http://www.nationalbcc.org
U.S. Hispanic Chamber of Commerce	424 K St NW #401, Washington, DC 20005 Phone: (202) 842-1212	http://www.ushcc.com
National Association of Minority Contractors (NAMC)	910 17th Street, NW, Suite 413 Washington, DC 20006 Phone: 202.296.1600 info@namcnational.org	http://namcnational.org/
National Association of Women's Business Owners (NAWBO)	601 Pennsylvania Ave NW South Building, Ste 900 Washington, DC 20004 Phone: 800-556-2926 Fax: 202-403-3788	www.nawbo.org
National Minority Supplier Development Council, Inc. (NMSDC)	1359 Broadway, 10th Floor, Suite 1000 New York, NY 10018 Phone: (212) 944-2430 Fax: (212) 719-9611	http://www.nmsdc.org/
Native American Development Corporation (NADC) - provides technical assistance, financial lending opportunities, and champions small businesses	17 N. 26th St. Billings, MT 59101 Phone: (406) 259-3804 Fax: (406) 259-4569 Email: nadcptac@nadc-nabn.org	http://www.nadc-nabn.org/
City of Tulsa – Small Business Enterprise Program Maintains a list of Minority and Female business Enterprises that are certified through the “building Resources in Developing and Growing Enterprises	175 E. 2nd St. Tulsa, OK. 74103 Phone: (918) 596-7818	https://www.cityoftulsa.org/developmentbusiness/small-business-enterprise-program/ Click on the ‘member list’
Southwest Minority Supplier Development Council: Maintains lists of certified Minority Business Enterprises in Oklahoma	7301 Broadway Ext Ste 224, OKC, OK 73116 Phone: (405) 767-9900	http://www.smsdc.org/

National Association of Women in Construction (NAWIC)	327 S. Adams Street Fort Worth, TX 76104 Phone: 800-552-3506 817.877.5551 Fax: 817.877.0324	http://www.nawic.org/
Bureau of Indian Affairs - Maintains a list of Native American Contractors and Suppliers by Trade	P.O. Box 368 (1 Mile North on Hwy 281) Anadarko, OK 73005 Phone: (405) 247-6673 Fax: (405) 247-5611	https://www.bia.gov/as-ia/eed/division-economic-development/native-american-business-development
Oklahoma Department of Commerce Certification Programs and information	900 N Stiles Ave. Oklahoma City, OK 73104 Phone: (405) 815-6552 Toll-Free: (800) 879-6552	https://www.okcommerce.gov/doing-business/#business-services
Cherokee Nation Tribal Employment Rights Office - Maintains a directory of Indian-owned businesses	Cherokee Nation TERO Dept. P.O. Box 948 Tahlequah, OK 74465 Phone: (918) 453-5334 or Toll Free: 800-256-0671 ext. 5334	http://cherokeetero.com/

ARP-6100-2 DBE Subcontractor Participation Form

OWRB Financial Assistance Agreement Recipients must require prime contractors to provide this form to their DBE subcontractors. This form gives a DBE subcontractor the opportunity to describe work received and/or report any concerns regarding the project.

Subcontractor Name	Project Name	
Bid/Proposal No.		Point of Contact
Address		
Telephone No.	Email address	
Prime Contractor Name		Funding entity Oklahoma Water Resources Board

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Amount Received by Prime Contractor

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Subcontractor Signature	Print Name
Title	Date

ARP-6100-3 DBE Subcontractor Performance Form

This form is intended to capture the DBE₁ subcontractor's₂ description of work to be performed and the price of the work submitted to the prime contractor. OWRB Financial Assistance Agreement Recipients must require prime contractors to provide this form to their DBE subcontractors.

Subcontractor Name	Project Name
Bid/Proposal No.	Point of Contact
Address	
Telephone No.	Email Address
Prime Contractor Name	Funding Entity Oklahoma Water Resources Board

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: ____ DOT ____ SBA ____ Other: _____		Meets/ exceeds EPA certification standards? ____ YES ____ NO ____ Unknown

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

Subcontractor Signature	Print Name
Title	Date

ARP-6100-4 DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE₁ subcontractors₂ and the estimated dollar amount of each subcontract. OWRB Financial Assistance Agreement Recipients must require their prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name	Project Name
Bid/Proposal No.	Point of Contact
Address	
Telephone No.	Email address
Funding Entity Oklahoma Water Resources Board	

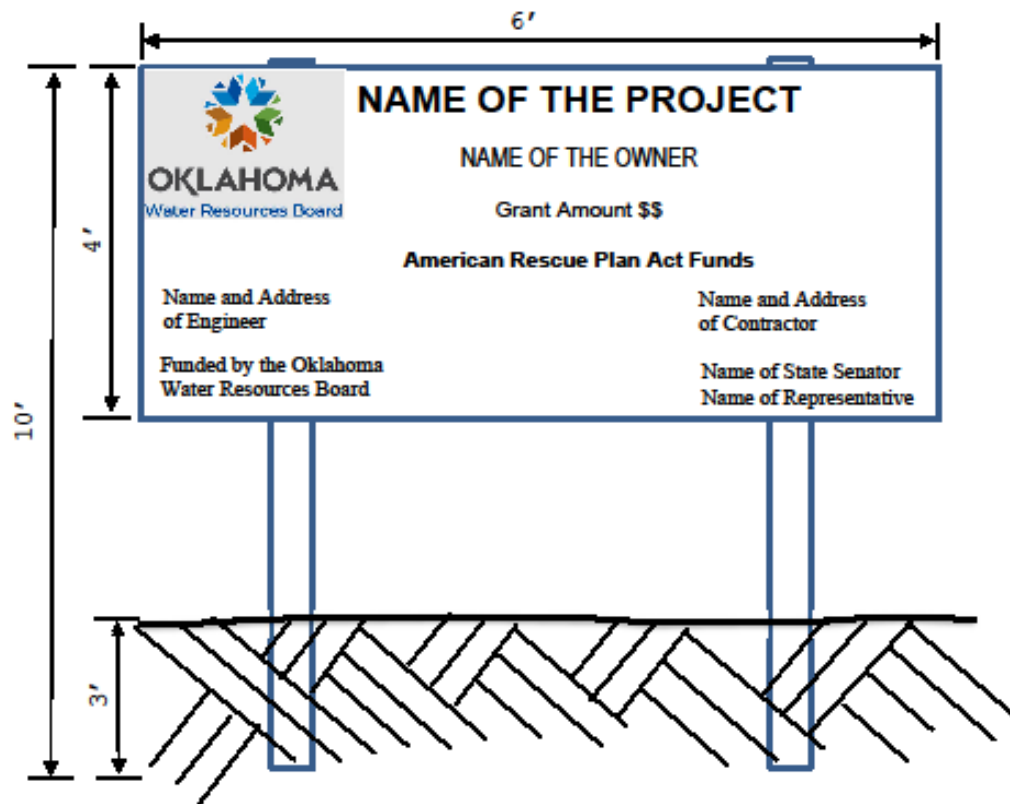
I have identified potential DBE certified Subcontractors	___ YES	___ NO	
If yes, please complete the table below. If no, please explain:			
Subcontractor Name/ Company Name	Company Address/ Phone/ Email	Est. Dollar Amt.	Currently DBE Certified?

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

PROJECT SIGN

- The general contractor shall erect and maintain for the life of the construction contract a suitable sign, 4' x 6' in size, and detailed hereon, lettered black on white background. Sign shall be professionally painted. Lettering to be appropriate size. No separate bid item. Sign shall be the general obligation of the Contractor.
- The OWRB logo is required on the project sign if the project is funded in part with OWRB Financial Assistance Program funds. The OWRB logo is available at <http://www.owrb.ok.gov/about/index.php> or may be provided directly by OWRB.
- Redwood Posts shall be 4" x 4" x 10' buried securely a minimum of 3 feet below ground.
- Sign face shall be constructed of 3/4" x 4' x 6' - 5 ply Dura-plywood board & mounted to Posts with four (4) 5/8" x 6" Carriage Bolts.



CONTRACT SPECIFICATIONS

A. General

1. This Contract is intended to, and hereby does, provide for complete in place, **Thompson Heights Waterline (ARP-23-0188-G)**, including all necessary work and material for a total job, whether or not such work and material is shown or implied in the plans and specifications.
2. All construction and materials shall conform to the City of Shawnee Standard Specifications as contained herein. All work necessary to make for a complete and operable Independence Avenue Waterline as intended by these plans and specifications for which bid items are not provided, shall be considered incidental work and the cost thereof shall be included in other appropriate bid items.
3. The cost to include the furnishing and installation of all temporary sheeting, shoring, timbering and bracing required to maintain any excavation in a condition to furnish safe working conditions and to permit the safe and efficient installation of all items of contract work shall be included in other items of work. The CONTRACTOR shall further, at his own expense, shore up or otherwise protect all fences, buildings, walls, walks, curbs, or other property adjacent to any excavation which might be disturbed during the progress of the work. The CONTRACTOR will be held liable for any damage which may result to neighboring property from excavation or construction operations.
4. Whenever any excavation is carried beyond the lines and grades shown on the Contract Drawings, written in the Contract Documents, and/or given by the ENGINEER, the CONTRACTOR shall, at his own expense, refill all such excavated space with such materials and in such a manner as may be directed. Beneath and around concrete structures, space excavated without authority shall be thoroughly compacted when refilling, or if deemed necessary by the ENGINEER, shall be refilled with concrete at the CONTRACTOR'S expense.
5. If the materials encountered on any excavation are not suitable for structural foundations, or if necessary, to go an additional depth or width from that designated on the contract drawings to provide proper bearing for pipe and concrete, the CONTRACTOR shall make such additional excavations outside the regular limits of the work as may be directed by the ENGINEER. The cost of such additional excavation shall be merged into the appropriate unit price.
6. Excavated material shall be deposited so as to interfere as little as possible with the execution of the whole work or its several parts. Such material as cannot be placed in its final position in fills and embankment shall be removed to a temporary spoil bank, from which it shall later be taken and placed in embankment or fills.
7. Unsuitable and surplus excavated material not incorporated in the improvement shall be disposed of by the CONTRACTOR at his own expense unless otherwise designated in the project specifications, or on the contract drawings.
8. If private land is used by the CONTRACTOR as a spoil site, the CONTRACTOR shall obtain written permission from the OWNER or agent of the land agreeing to its use for this purpose and provide the project OWNER with a certified copy of such agreement.
9. The CONTRACTOR shall notify residents and business OWNERS of construction by distributing door hangers to each and every house, business, and /or occupied structure located

on the street or alley where the construction shall occur, at least 48 hours in advance of the commencement of construction.

B. Site Conditions

The CONTRACTOR shall be responsible for familiarizing himself with surface and subsurface conditions. The base bid as shown in the proposal shall include cost for unclassified excavating of earth, rock, dewatering, stabilizing unsuitable soils such as quicksand or other unsuitable materials, or any hazard that may be encountered. The cost for such work shall be included in the appropriate bid item. No additional compensation shall be given for such work. The CONTRACTOR shall satisfy himself as to the accuracy of all measurements before constructing any permanent structure.

C. Surveys

The CONTRACTOR shall develop and make all detailed surveys needed for construction such as slope stakes, batter boards, stakes for construction location and other working points, lines and elevations. The CONTRACTOR shall carefully preserve all benchmarks, reference points and stakes established by the ENGINEER and in case he causes damage or disturbance, he will be charged for the cost of replacement and shall be responsible for any mistakes that may be caused by their loss.

D. Utility Locations

The elevation and location of all utilities shown on the contract drawings were taken from public records. It shall be the duty of the CONTRACTOR to make final and exact determination of the location and extent of these utilities, and he will be liable for any expense resulting from damage to them. Unless otherwise indicated on the contract drawings or unless otherwise taken care of by the OWNER thereof, all utilities and all structures of any nature, whether below or above ground, that may be affected by the work shall be protected and maintained by the CONTRACTOR and shall not be disturbed or damaged by him during the progress of the work. Should the CONTRACTOR disturb, disconnect or damage any utility or any structure, all expenses of whatever nature arising from such disturbance or the replacement or repair thereof shall be borne by the CONTRACTOR. This provision shall apply whether or not said utility or structure is shown on the plans. All utility locations shown or not shown on these plans shall be the responsibility of the CONTRACTOR prior to excavation. Utility location telephone numbers are:

1-800-522-6543	Statewide
1-800-654-8349	Out of State

E. As-Built Records

The CONTRACTOR is required to keep a current record of all field changes on jobsite at all times. They shall be legibly marked on his plan and shall become property of the City of Shawnee prior to completion for purposes of constructing an as-built record of this project.

F. Arrangement and Charge for Water Furnished by the City

If the CONTRACTOR desires to use City water, he shall pay the rate established by City Ordinance for such service and he shall make complete and satisfactory arrangements with the City Utility Department for so doing. Flush meters will be used and the CONTRACTOR shall deposit the cost of the flush meter with the Utility Department and will pay for repairs and maintenance of the meter

for the period which he has the meter in use in his possession. CONTRACTOR shall be charged for the amount of water he uses, including any monthly minimum charge.

G. Use of Fire Hydrants

The CONTRACTOR or his employees shall not open, turn off, interfere with, attach pipe or hose to, or connect anything with any fire hydrant, stop valve or stop cock or tap any water-main belonging to the City unless duly authorized to do so by the OWNER.

H. Protection and Opening to Pedestrians and Traffic

The CONTRACTOR is required to receive permission from the CITY ENGINEER to close any traffic lanes or alleys or roads during construction. No road shall be permanently or temporarily closed without prior approval by the CITY ENGINEER. The CONTRACTOR shall conduct his work so as to interfere as little as possible with public travel, whether vehicular or pedestrian; whenever it is necessary to cross, obstruct, or temporarily close roads, driveways and walks, whether public or private. The CONTRACTOR shall, at his own expense, provide and maintain suitable and safe bridges, detours, barricades, signing, lighting, striping and/or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to OWNERS of private drives before interfering with them; provided, however, that such maintenance of traffic will not be required at any point where the CONTRACTOR has obtained permission from the OWNER and/or tenant of private property, or from the authority having jurisdiction over public property involved to obstruct traffic at any designated point thereon and for the duration of whatever period of time as may be agreed upon. All work pertaining to traffic control shall be in accordance with the latest revision of "The Manual on Uniform Traffic Control Devices."

I. Materials and Construction

All materials and construction shall be in accordance with the City of Shawnee Standard Specifications for Construction (Standard Specifications) and Construction Standards as contained herein.

J. Testing and Acceptance Requirements

The CONTRACTOR shall be responsible for paying the cost of all testing outlined in the Standard Specifications. Testing shall be performed by a qualified testing laboratory approved by the OWNER.

K. Protection and Preservation of Property and Landscape

The CONTRACTOR will be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours. The CONTRACTOR shall furnish such watchmen, guards, fences, warning signs, lights and walkways, and shall take all other precautions as shall be necessary to prevent damage to persons or property. All structures and improvements damaged by the CONTRACTOR, his employees, SUBCONTRACTORS, or agents, shall be restored to a condition as good as when he entered upon the work. The duty of the ENGINEER to conduct construction inspection of the CONTRACTOR'S performance does not include any review of the adequacy of the CONTRACTOR'S safety measures in, on, or near the construction site or sites. The ENGINEER has not been retained or compensated to provide design and construction review services relating to the CONTRACTOR'S safety precautions or to means, methods, techniques, sequences, or procedures required for the CONTRACTOR to perform his work.

No trees shall be removed on the site of the work where outside of excavation limits, except where their removal is authorized by the ENGINEER. Where trees are on the line of the trench or adjacent thereto such trees and roots shall be removed and disposed of by and at the expense of the CONTRACTOR.

Trees remaining at the end of construction shall be adequately protected from permanent damage by reason of construction operations. Trimming of remaining trees where required shall be as directed by the ENGINEER.

All turf, shrubbery, and other landscaping, damaged or removed by the CONTRACTOR shall be replaced under the direction and to the satisfaction of the OWNER, by and at the expense of the CONTRACTOR.

Any traffic signal loop wire, pull box, or conduit that is damaged or destroyed shall be replaced under the direction and to the satisfaction of the OWNER, by and at the expense of the CONTRACTOR.

L Administrative Matters

All permits, fees, and licenses required under City Ordinance not regulated by state or federal law will be collected.

DIVISION 01 – GENERAL REQUIREMENTS**SECTION 01 00 00 – GENERAL CONDITIONS****PART 1 – GENERAL****1.1 DESCRIPTION**

The General Conditions shall govern and control all work to which they apply; however, since these specifications are of a general nature, they may refer to work not found in this project, in which case such non-applicable stipulations will have no meaning in this Contract. In case of conflict between the General Conditions and the Special Conditions, the Special Conditions shall govern. In case of conflict with either the General or Special Conditions by Supplemental Conditions of a funding agency such as EPA, FMHA, EDA or HUD, the Supplemental Conditions will govern.

PART 2 – DEFINITIONS**2.1 DEFINITIONS**

DEFINITIONS: Whenever the words defined below, or pronouns used in their stead occur hereinafter, they shall have the meanings given as follows:

- A. "OWNER" shall mean the City of Shawnee or Shawnee Public Works Authority.
- B. "ENGINEER" shall mean Cowan Group Engineering, LLC, who has been employed by the OWNER for this work, or his duly authorized agent.
- C. "Inspector" shall mean the engineering or technical inspector or inspectors duly authorized by the ENGINEER, limited to the particular duties entrusted to him or them.
- D. "CONTRACTOR" shall mean the person, persons, partnership, company, firm or corporation entering into this contract for the performance of the work, or the agent appointed to act for such party.
- E. "Specification" shall mean, collectively, all of the terms and stipulations contained in the written portion of information furnished.
- F. "Drawings or Plan Sheets" shall mean, collectively, all of the drawings pertaining to the contract and made a part thereof, and also such supplementary drawings as the ENGINEER may issue from time to time in order to clarify the drawings, or for the purpose of showing authorized changes in the work, or for showing details which are not shown thereon.
- G. The term "Grade" used in these Specification is understood to refer to and indicate the established elevations of the paving, flow line of waterlines and other appurtenances as shown on the drawings.
- H. Whenever in these CONTRACT DOCUMENTS the words "as ordered", "as directed", "as permitted", "as allowed", or words or phrases of like import are used, it shall

be understood that the order, direction, requirements, permission, or allowance of the OWNER and ENGINEER is intended.

- I. Similarly, the words "approved", "reasonable", "suitable", "acceptable", "properly", "satisfactory", or words of like effect and import, unless otherwise particularly specified herein, shall mean approved, reasonable, suitable, acceptable, proper, or satisfactory in the judgment of the OWNER and ENGINEER.
- J. Whenever the term "or equal" is used in the drawings and/or Specification it shall refer to a material which will adequately perform the same function, in the opinion of the ENGINEER, as the material specified or shown on the drawings.

PART 3 - SCOPE OF WORK

The work to be covered under these contracts in accordance with the drawings listed herein and, in these specifications, consists of the furnishing of all materials, equipment, tools, labor, transportation and services necessary to complete the construction as outlined herein and as shown on the drawings. The complete installation shall not lack any part which can be reasonably implied as necessary to its proper functioning nor any subsidiary which is customarily furnished.

PART 4 - EXAMINATION OF SITE OF WORK

It is the obligation of the bidder to examine carefully the site of the proposed work; to ascertain for himself all the facts concerning conditions therein, including all physical characteristics above, on and below the surface of the ground; to investigate the subsurface conditions and to determine for his information the character and proportionate quantities of soils, rock and other subsurface material which may be encountered in the work; to inform himself by independent research of the difficulties to be encountered and judge for himself the accessibility of the work and all other circumstances affecting the cost of doing the work or the time required for its completion; and the bidder agrees to this obligation in signing the proposal. When provided, the soils boring and testing report is attached to these Specification for the CONTRACTOR'S information and is not a part of the contract. No guarantee is made as to their accuracy or completeness. The OWNER assumes no responsibility whatsoever with respect to ascertaining for the bidder such facts covering physical characteristics at the site of the work. The bidder agrees that, if awarded the contract, he will make no claim for, and will have no right to, additional payment or extension of time for completion of the work or any other concession because of any failure on his part to fully acquaint himself with all conditions relating to the work. The bidder shall rely exclusively upon his own estimate, investigation and evaluation of site conditions.

PART 5 - SITE CONDITIONS

Where connections to existing utilities are shown on the drawings, the work may be required to be done at night or at a time which will least interfere with the operation of the existing facility.

The tie to existing utilities will be coordinated with personnel of the OWNER of the existing lines and will be done at a time to least inconvenience their operation. The work may be required to be done at night or weekends or both.

Where possible the existing utilities (water, gas, etc.) have been noted on the drawings. There may be additional buried lines that are not shown and if such is encountered, said lines will be left in service. CONTRACTOR shall take all precautions available prior to construction to locate, identify, and verify utilities. If said lines are broken by the CONTRACTOR, they shall be repaired as soon as possible.

The work along or across state highways shall be done in accordance with the permit from Division Engineer, Department of Transportation. The right-of-way shall be maintained in a satisfactory manner at all times. All roads, streets, drives, etc., cut during construction shall be properly protected by barricades, flashing lights, etc., and shall be made passable as soon as possible after laying of lines during the day and always at night. CONTRACTOR shall maintain the above cut roads in a passable condition until the wearing surface is replaced and then kept in a satisfactory condition for five (5) years after job is completed.

PART 6 - EXPLOSIVES

In handling explosives used during the construction of the project, the CONTRACTOR shall adhere to all Federal and State laws and City ordinances regulating the purchase, transportation, storage, handling, and use of such explosives. No blasting shall be done without 12-hour notification of the OWNER and ENGINEER, proof of insurance, and the presence of the Inspector. All equipment, tools, and materials used shall be of the correct type and in good condition for the operation. The CONTRACTOR shall take all necessary precautions to avoid damage to property resulting from the transportation, storage, handling and use of explosives. Before blasting, the CONTRACTOR shall take all necessary precautions to ensure that rock and debris will be confined to the excavation. Any blasting within 10 ft. of a water, sewer, gas or pipeline shall be done with very light charges, and utmost care shall be taken to avoid disturbance to these lines.

PART 7 - SUBMITTALS

Engineering data covering all equipment and fabricated materials to be furnished under this contract shall be submitted to the ENGINEER for review. This data shall include drawings and operation of component materials and devices; the external connections; anchorages and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment. Data submitted shall include drawings showing essential details of any changes proposed by CONTRACTOR and all required structural layout and wiring diagrams.

No work shall be performed in connection with the fabrication or manufacture of materials and equipment, nor shall any accessory or appurtenance be purchased until the drawings and data therefore have been reviewed, except at the CONTRACTOR'S own risk and responsibility.

At least five (5) copies of each drawing and necessary data with statement of approval by the CONTRACTOR, shall be submitted to the ENGINEER. Each drawing or data sheet shall be clearly marked with the name of the project, the ENGINEER'S name, CONTRACTOR'S name and references to applicable specification paragraphs and drawing sheets. When catalog pages are submitted, the applicable items shall be identified.

The ENGINEER'S review of drawings and data submitted by the CONTRACTOR will cover only general conformity to the drawings and specifications, external connections and

dimensions which affect the layout. The ENGINEER'S review of drawings returned marked NO EXCEPTIONS NOTED or EXCEPTIONS NOTED does not indicate a thorough review of all dimensions, quantities and details of the material, equipment, device or items shown and does not relieve the CONTRACTOR from any responsibility for errors, omissions, or deviations from the contract requirements.

All drawings and data, after final processing by the ENGINEER, shall become a part of the contract documents, and the work shown or described thereby shall be performed in conformance therewith unless otherwise authorized by the OWNER or the ENGINEER.

After drawings and data have been accepted by OWNER or ENGINEER, the CONTRACTOR shall submit three (3) additional copies of all data and one (1) set of reproducible of all drawings to OWNER for file records. Also, CONTRACTOR shall keep accurate "record drawings" records of the work and turn these records over to the OWNER at the completion of the work.

PART 8 - SURVEYS

The OWNER shall establish base lines or control points for the location of the principal component parts of the work together with benchmarks adjacent to the work as shown or indicated on the Drawings. The CONTRACTOR shall develop and make all detail surveys necessary for construction. The CONTRACTOR shall be responsible for the accuracy of all lines and grades for all parts of the work. He shall do all field work necessary to lay out and maintain the work and shall make available to the OWNER all facilities and information necessary for properly checking the accuracy of such field work. Such checking shall in no way relieve the CONTRACTOR of his responsibility of the correctness of all field work.

The OWNER will provide survey of property including reference points, property corners and benchmarks where necessary in the opinion of the ENGINEER. If necessary, the CONTRACTOR shall transfer these reference points and benchmarks to permanent locations where they will not be disturbed. If disturbed, the CONTRACTOR shall re-install them to OWNER'S satisfaction, at CONTRACTOR'S cost.

PART 9 - PERMITS AND REGULATIONS

The CONTRACTOR shall secure and pay for all construction permits required to carry out the work unless otherwise specified and shall produce same upon demand of the OWNER. The CONTRACTOR shall give all notices and pay all fees and shall, before starting work, ascertain whether the drawings and specification are at variance with any codes or regulations applying at the site. The CONTRACTOR shall obtain completion survey, certificate of completion or occupancy if required by local regulations.

All features of design and construction shall comply with the local building regulations and/or other lawful or public regulations which apply at the site. If any features of construction as shown on the OWNER'S plan, do not conform to the regulations, the CONTRACTOR shall notify the OWNER of such discrepancy, and shall base his quotation and work on features of construction which do conform to the regulations.

If the CONTRACTOR performs any work contrary to such laws, ordinances, rules and regulations and without such notice to the OWNER, he shall bear all costs arising therefrom.

PART 10 - INSPECTION

The CONTRACTOR will provide access to the work site and facilities for representatives of the Environmental Protection Agency, Oklahoma Department of Environmental Quality and other agencies, as well as, OWNER and ENGINEER, as required whenever the work is in progress.

PART 11 - SATURDAY, SUNDAY, HOLIDAY AND NIGHT WORK

No work shall be done between the hours of 7:00 p.m. and 7:00 a.m., nor on Saturday, Sunday or legal holidays without the written approval or permission of the ENGINEER in each case, except such work as may be necessary for the proper care, maintenance and protection of work already done, or of equipment, or in the case of an emergency.

PART 12 - PROTECTION OF PROPERTY

- A. The protection of City, State and Government monuments, street signs and other OWNER's property is of prime importance, and if the same be damaged, destroyed or removed, they shall be repaired, replaced or paid for by the CONTRACTOR. Disturbance to this property must first be approved by the agency which controls it.
- B. No valves or other control on any utility main or building service line shall be operated for any purpose by the CONTRACTOR.
- C. At places where the CONTRACTOR'S operations are adjacent to the plant of railway, telegraph, telephone, electric and gas companies, or water, sanitary sewers and storm sewers, damage to which might result in expense, loss or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.
- D. The OWNER has attempted to locate all storm sewers, culverts, buried telephone or electrical conduits, sanitary sewers and water mains that might interfere with the construction of this project. The CONTRACTOR shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner and duplication or rearrangement work may be reduced to a minimum and that services rendered by those parties will not be unnecessarily interrupted. The revision and crossings of the various types of lines shall be made as follows:
 - 1. Storm sewers and culverts may be removed at the time of crossing or may be adequately braced and held in position while the pipe is placed beneath them. If the storm sewer or culvert is removed, it shall be replaced with pipe of the same type and size as that removed and it shall be re-joined to the undisturbed line with a joint satisfactory to the ENGINEER. Backfill over the main up to and around the storm sewer shall be thoroughly compacted in order that no settlement will occur. The revision and crossing of said lines shall be at the expense of the CONTRACTOR.
 - 2. All overhead and buried telephone and electrical conduits, to be revised or crossed by the construction of this project shall be protected in accordance with the directions of the utility company owning the conduits and/or mains. The CONTRACTOR shall notify the companies and obtain their permission before

making any crossing or revisions. The revision and crossing of said lines shall be at the expense of the CONTRACTOR. Any overhead cables or buried cables or conduits damaged by the CONTRACTOR shall be repaired at his expense to the satisfaction of the ENGINEER and of the OWNER.

3. The CONTRACTOR shall not remove any water or sanitary sewer lines except as directed by the ENGINEER or as required by the Drawings and specifications and shall adequately brace and protect them from any damage during construction. Any existing water main or sewer main or lateral damage caused by the CONTRACTOR'S operations will be repaired by the CONTRACTOR. The repairs will be made at the CONTRACTOR'S expense.
- E. The location of utility service lines serving individual properties may or may not be shown on the Drawings, but the CONTRACTOR shall assume that such service lines exist whether or not they are shown on the Drawings, and it shall be the responsibility of the CONTRACTOR to make any necessary changes in the line and/or grade of such services, or to secure the necessary changes therein to be made by the particular utility company involved or other OWNER thereof, or by an agent or individual CONTRACTOR approved by such utility company or other OWNER. CONTRACTOR shall pay the cost of all such revisions whether performed by CONTRACTOR, the utility company or other OWNER, or an approved CONTRACTOR. In the event of interruption of a utility service as a result of accidental breakage, CONTRACTOR shall promptly notify the ENGINEER and the OWNER of the utility and shall repair or cause the same to be repaired, in the same manner as necessary changes above are provided for, the CONTRACTOR shall do all things necessary to see that the restoration of services is done as promptly as may be reasonably done. All sanitary sewer service lines damaged shall be replaced with cast iron pipe regardless of type or kind damaged.
- F. In the event the CONTRACTOR in any way fails to comply with the requirements of protecting, repairing and restoring of any utility or utility service, the OWNER may, upon forty-eight (48) hours written notice proceed to protect, repair, rebuild or otherwise restore such utility or utility service as may be deemed necessary, and the cost thereof will be deducted from any money due, or which may become due the CONTRACTOR pursuant to the terms of his contract.

PART 13 - FIELD OFFICE

Copies of the drawings, specification, and other contract documents shall be kept at the site of the work available for use at all times.

PART 14 - ALTERATION OF QUANTITIES

The CONTRACTOR agrees that the quantities of work as stated in the Bid Schedule or indicated on the drawings are only approximate, and that the OWNER shall have the right to omit portions of the work and to increase or decrease the quantities of any item of work. Final payment will be based on the actual quantities used and installed in accordance with the drawings and Specification.

PART 15 - QUALITY CONTROL

When required in writing by the ENGINEER, the CONTRACTOR shall make such tests as may be necessary to show that the requirements of the Specification have been fulfilled.

All tests shall be made under the supervision and direction of the ENGINEER, and the CONTRACTOR will provide all required materials, labor and apparatus, etc., or so directed, engage an approved testing laboratory for making same. Any work found defective shall be removed, replaced and retested until satisfactory to the ENGINEER, all at the CONTRACTOR'S expense.

Should tests required by the ENGINEER, except those specifically called for elsewhere in these General Requirements or in the Specification show that the requirements of the Specification have been fulfilled, then the costs of such tests shall be paid for by the OWNER.

PART 16 - MEASUREMENT AND FITTING OF PARTS

The CONTRACTOR, without extra charge, shall make such slight alterations as may be necessary to make adjustable parts fit the fixed parts, leaving all complete and in proper shape when done. The CONTRACTOR shall verify all dimensions given in the drawings and shall report any error or inconsistency to the ENGINEER before commencing work.

PART 17 - CONTRACTOR'S SUPERINTENDENT

The CONTRACTOR shall keep a competent Superintendent and any necessary assistants at the site throughout the progress of the work. All directions given to said Superintendent shall be as binding as if given to the CONTRACTOR. Upon request, such directions will be confirmed, in writing, to the CONTRACTOR.

The CONTRACTOR'S Superintendent and/or any of his assistants shall be promptly replaced in the event he or they shall prove to be incompetent and/or unsatisfactory to the ENGINEER.

PART 18 - ASSISTANCE BY ENGINEER

It is distinctly understood and agreed that such assistance as the ENGINEER may render to the CONTRACTOR in connection with the interpretation of drawings and specification shall not relieve the CONTRACTOR from any responsibility for the work. Any work which proves faulty shall be made right by the CONTRACTOR without delay. The failure of the ENGINEER, or his Inspectors to call the CONTRACTOR'S attention to faulty work or work done which is not in accordance with drawings and specification shall not prevent the OWNER from insisting that the CONTRACTOR make all work right.

PART 19 - INCIDENTAL WORK

Work called for on the drawings and/or specifications and are not set forth in the Bid Schedule as pay items, shall be considered as incidental work and will not be paid for directly, but shall be included in the price bid for the various pay items.

PART 20 - TERMINATION OF CONTRACT

If the CONTRACTOR shall be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse, or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workmen, equipment or proper materials, or if he should fail to make prompt payment to SUBCONTRACTOR or for material or labor, or persistently disregard laws, ordinances or the instructions of the ENGINEER, or otherwise be guilty of a substantial violation of any provision of the Contract, then the OWNER upon the certificate of the ENGINEER that sufficient cause exists to justify such action, may without prejudice to any other right or remedy and after giving the CONTRACTOR seven days written notice, terminate the employment of the CONTRACTOR and take possession of the premises and of all materials, tools and appliances thereon and finish the work by whatever method the OWNER may deem expedient. In such case, the CONTRACTOR shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract Price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the CONTRACTOR. If such expense shall exceed such unpaid balance, the CONTRACTOR shall pay the difference to the OWNER as herein provided, and the damage incurred through the CONTRACTOR's default shall be certified by the ENGINEER.

In the event of termination of Contract before completion of the work, due to abandonment of the project or discontinuance thereof, the CONTRACTOR will be paid in proportion to the work completed and in progress as per scope of work described in the drawings and specification and in accordance with the unit price schedule.

PART 21 – PROGRESS PAYMENTS, ACCEPTANCE AND FINAL PAYMENT

Basis for Progress Payments: The Schedule of Quantities as shown in the Plans will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period. The amount of retainage with respect to progress payments will be 5% until 50 percent completion after which retainage shall be 2.5%.

Upon receipt of written notice from the CONTRACTOR that the work is ready for final inspection and acceptance, the ENGINEER shall promptly make such inspection and when he finds the work acceptable under the Contract and the Contract fully performed, he shall promptly issue a final certificate over his own signature, stating that the work provided for in this Contract has been completed and is accepted by him under the terms and conditions thereof, and the entire balance found to be due the CONTRACTOR, including the retained percentage, shall be paid to the CONTRACTOR, as approved by the OWNER, at the office of the OWNER within 30 days after the date of said final certificate.

If, after receipt of written notice from CONTRACTOR requesting final inspection and the performance of said final inspection by ENGINEER, additional inspections are necessary in order for ENGINEER to issue a final certificate; the OWNER shall withhold the cost associated with said additional inspections from the final payment due the CONTRACTOR.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the ENGINEER that all payrolls, material bills, equipment rentals, and all other indebtedness connected with the work have been paid.

PART 22 - PLACING WORK IN SERVICE

If desired by the OWNER, portions of the work may be placed in service when completed and the CONTRACTOR shall give prior access to the work for this purpose, but such use and operation shall not constitute an acceptance of the work.

PART 23 - SCHEDULES

The CONTRACTOR shall furnish the ENGINEER with a tentative schedule, in a format approved by the ENGINEER, setting forth in detail the procedure he proposes to follow, and giving the dates on which he expects to start and to complete separate portions of the work. If at any time, in the opinion of the ENGINEER, proper progress is not being maintained, such changes shall be made in the schedule of operations which will satisfy the ENGINEER that the work will be completed within the period stated in the proposal, or extension thereof made as herein provided.

CONTRACTOR is to prepare list of proposed SUBCONTRACTORS including material suppliers; submit to ENGINEER for approval before subcontracts are awarded. No SUBCONTRACTOR is to be employed on work unless approved by OWNER and ENGINEER.

PART 24 - PROJECT SIGN

A project sign is required for this project. See Division 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS, page 44 for project sign requirements and an example.

PART 25 - INSURANCE

The CONTRACTOR shall protect, indemnify, save and hold harmless the OWNER, their officers, agents, and employees from all suits, actions or claims of any kind or character brought because of bodily injuries, sickness, disease or personal injury, or damages received or sustained by any person, persons, or property on account of any operations of the CONTRACTOR, his agents, employees, his subcontractors or any others authorized by the CONTRACTOR to perform work on the project.

Third Party Beneficiary Clause. It is specifically agreed by and between the parties executing this Contract, that it is not intended by any of the provisions of any part of the Contract to create in the public or any member thereof any third-party beneficiary provisions or to authorize anyone not a party to this Contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of this Contract.

The CONTRACTOR shall carry insurance of the following kinds and amounts on all City Contracts:

A. CONTRACTOR'S Public Liability, Auto Liability and Property Damage Liability

Insurance. The CONTRACTOR shall provide regular CONTRACTOR'S Public Liability Insurance for a combined amount of one million (\$1,000,000) dollars of coverage for all damages arising out of bodily injury, death, and property damage for each occurrence with an aggregate limit of two million (\$2,000,000) dollars.

The CONTRACTOR shall provide business auto liability coverage for an aggregate limit of one million (\$1,000,000) dollars of coverage for bodily injury and property damage arising out of the operation or maintenance of any vehicle including owned, non-owned and hired vehicles, and employee non-ownership use.

B. Insurance for SUBCONTRACTOR'S and CONTRACTOR'S Protective Public Liability and Property Damage Liability Insurance. In the event that any of the work to be performed by the CONTRACTOR on the project is sublet or assigned or is otherwise to be performed by anyone other than the CONTRACTOR'S own employees, then the insurance specified above shall extend to cover such work.

C. Workmen's Compensation Insurance and Employer's Liability Insurance. The CONTRACTOR shall furnish satisfactory evidence to the City that, with respect to the work to be performed by him on the project, he carries regular Workmen's Compensation and Employers Liability Insurance covering his liability under the "Workmen's Compensation Law of the State of Oklahoma". The CONTRACTOR shall maintain the aforementioned insurance in full force and effect for the duration of the Contract. Should the CONTRACTOR fail or neglect to maintain the aforementioned insurance, the City specifically reserves the right to withhold all funds due and owing the CONTRACTOR until such time as the required insurance is in effect.

In addition to the aforementioned insurance coverage, on any project in which the CONTRACTOR shall perform any Railway-Highway work, the CONTRACTOR shall also secure the following: "Railroads' Protective Liability and Property Damage Insurance".

D. Railroads' Protective Liability and Property Damage Insurance. In addition to the above, the CONTRACTOR shall furnish satisfactory evidence to the City that, with respect to the work to be performed by him under the Contract, he has provided for and on behalf of the Railway Company or Railway Companies involved, Protective Public Liability Insurance in an amount as may be required by the Railway Company, which amount shall be specified in the bid documents. Policies shall not include liability for negligence on the part of the Railway Company, its agents or employees, except as set out in Coverage A, B, or C of the form of policy, or amendments thereto, referred to under paragraph 6 below. This insurance applies to each and all Railway Companies involved in the work.

E. General. The insurance hereinbefore specified shall be carried in Insurance Companies approved by the City, and where applicable the Railway Company, during all times when work is being carried on under the terms of the Contract, until all work required to be performed under the Contract is satisfactorily completed as evidenced by the formal acceptance by the City.

F. Certificates of Insurance. Required insurance shall be documented by Certificates of Insurance which provide that the OWNER shall be notified at least thirty (30) days

in advance of cancellation, non-renewal or adverse change. The Certificate of Insurance shall show the OWNER as the named insured.

For general liability, the CONTRACTOR shall provide an indication of the amounts of claims, payments or reserves chargeable to the aggregate amount of liability coverage.

PART 26 - SAFETY STANDARDS AND ACCIDENT PREVENTION

With respect to all work performed under this Contract, the CONTRACTOR shall:

- A. Comply with the safety standards provisions of applicable laws, building and construction codes and the Manual of Accident Prevention in Construction published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1910 or 1926 as applicable.
- B. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
- C. Trench Excavation and Safety System: All work under this item shall be in accordance with the current edition of the OSHA Standard for Excavation and Trench Safety Systems, 29 CFR 1926 Subpart P.

The CONTRACTOR shall notify all utility companies and OWNERS in accordance with the OSHA requirements given in 29 CFR 1926.651 (b) (2) for the purpose of locating utilities and underground installations.

Where the trench or excavation endangers the stability of a building, wall, street, highway, utilities, or other facility, the CONTRACTOR shall provide support systems such as shoring, bracing, or underpinning to ensure the stability of such facility. The CONTRACTOR may elect to remove and replace or relocate such facilities with the written approval of the facility owner, the ENGINEER, and the OWNER.

Payment for the work required by this item shall be included in the lump sum price bid. With each periodic payment request, CONTRACTOR shall submit a certification that the CONTRACTOR has complied with the provisions of the OSHA standards.

PART 27 - WAGE RATES

NO SPECIFIC REQUIREMENTS FOR THIS PROJECT.

PART 28 - WORKMEN

The CONTRACTOR shall employ foreman and skilled laborers where necessary, and if any person employed on the work shall refuse or neglect to obey orders of the ENGINEER or Inspector when such orders are in keeping with the provisions of these specifications or shall appear to the ENGINEER or his Inspector to be incompetent, disorderly or unfaithful, he shall, upon order of the ENGINEER, be at once discharged and not again employed upon any part of the work. It shall be the responsibility of the superintendent representing the CONTRACTOR to transmit all necessary orders and instructions. If requested by the ENGINEER, the CONTRACTOR shall submit, in written form, qualifications including work experience of any workman used on the project.

PART 29 - NUMBER OF WORKING DRAWINGS AND SPECIFICATIONS

The ENGINEER will furnish to the CONTRACTOR not more than two (2) sets of drawings and specifications for construction. The CONTRACTOR may procure additional copies of drawings and specifications for construction at cost of reproduction. Such costs are reimbursable by the ENGINEER.

PART 30 - PRECONSTRUCTION CONFERENCE

Prior to the commencement of work at the site, a preconstruction conference will be held at a mutually agreed time and place. The conference shall be attended by:

- A. CONTRACTOR and his superintendent.
- B. Principal SUBCONTRACTORS.
- C. Representatives of principal suppliers and manufacturers as appropriate.
- D. ENGINEER and its Resident Project Representative.
- E. Representatives of OWNER.
- F. Government representatives as appropriate.
- G. Others as requested by CONTRACTOR, OWNER, or ENGINEER.
- H. Unless previously submitted to ENGINEER, CONTRACTOR shall bring to the conference a preliminary schedule for each of the following:
 - 1. Progress.
 - 2. Procurement.
 - 3. Values for progress payment purposes.
 - 4. Shop Drawings and other submittals.

The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include:

- A. CONTRACTOR'S preliminary schedules.

- B. Transmittal, review, and distribution of CONTRACTOR'S submittals.
- C. Processing applications for payment.
- D. Maintaining record documents.
- E. Critical work sequencing.
- F. Field decisions and change orders.
- G. Use of premises, office and storage areas, security, housekeeping, and OWNER'S needs.
- H. Major equipment deliveries and priorities.
- I. CONTRACTOR'S assignments for safety and first aid.

ENGINEER will preside at the conference and will arrange for keeping the minutes and distributing the minutes to all persons in attendance.

PART 31 - PROGRESS MEETINGS

CONTRACTOR shall schedule and hold regular progress meetings at least monthly and at other times as requested by ENGINEER or required by progress of the work. CONTRACTOR, ENGINEER, and all SUBCONTRACTORS active on the site shall be represented at each meeting. CONTRACTOR may at its discretion request attendance by representatives of its suppliers, manufacturers, and other SUBCONTRACTORS.

CONTRACTOR shall preside at the meetings. Meeting minutes will be prepared and distributed by CONTRACTOR. The purpose of the meetings will be to review the progress of the work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.

PART 32 - SUBSTANTIAL AND FINAL COMPLETION

All work including site restoration shall be finished within the time called out on the Bid Form for final completion.

PART 33 - EXCAVATION

All excavation shall be unclassified. No additional payment shall be made for rock, groundwater, or other natural formations encountered. Payment for excavation shall be included in other items of work.

PART 34 - SUBCONTRACTORS

CONTRACTOR is to prepare a list of proposed SUBCONTRACTORS including material suppliers and submit to ENGINEER for approval before SUBCONTRACTORS are awarded.

No SUBCONTRACTOR is to be employed on work unless approved by OWNER and ENGINEER.

PART 35 - RIGHT-OF-WAY/PROJECT VIDEO

CONTRACTOR shall video the complete right-of-way of the project prior to initiating construction and deliver video tape to the ENGINEER at the pre-construction conference. The video shall be taken in such a way to document pre- construction conditions for use in documenting satisfactory right-of-way restoration and other issues relative to initial conditions prior to construction.

PART 36 - RECORD DRAWINGS**36.1 GENERAL**

- A. The CONTRACTOR shall be responsible for accumulation and maintenance of a complete set of Project Record Documents and upon completion and acceptance of the project shall submit these documents to the ENGINEER, as the OWNER'S representative, for a permanent record.
- B. The Project Record Documents shall consist of:
 - 1. One complete set of drawings, with revisions.
 - 2. One complete Project Manual with all addenda, field bulletins and change orders.
 - 3. Complete set of all field test data.
 - 4. Complete set of approved shop drawings, product data brochures and samples.
 - 5. Six complete sets of maintenance and operating instructions, parts lists and supplier identification on all operating fixtures and equipment.

36.2 MAINTENANCE OF RECORD DOCUMENTS

- A. The CONTRACTOR shall maintain, on the site, one complete set of contract documents, other than those used for construction, throughout the life of the job.
 - 1. This set of documents shall be marked "Record Set" and shall be maintained up to date at all times and available to the ENGINEER for inspection.
 - 2. The only notations or other markings to be made on this set are notations of field variations made from the work shown on the drawings for purposes of "Record Drawings" revisions when the project is complete. Failure to record revisions by each CONTRACTOR, shall be considered a breach of contract.
 - 3. This set of Documents will be turned over to the ENGINEER for preparation of "Record Drawings" prior to approval of final application for payment.

36.3 MAINTENANCE AND OPERATING INSTRUCTIONS

- A. A complete set of maintenance and operating instructions on the project shall be prepared for the OWNER'S continual use.
 - 1. To be bound in booklet form, 8-1/2" x 11" in size, labeled "Operating Manual".
 - 2. To be indexed for quick reference use.
 - 3. To contain manufacturer's printed data, record forms, diagrams, parts lists,

maintenance procedures, start-up procedures, operating procedures, service requirements and schedules, and names, addresses and phone numbers of SUBCONTRACTOR, manufacturer and local service agent.

4. To contain all written warranties and guarantees.
- B. Each CONTRACTOR shall submit six complete copies of this "Operating Manual" material from his trade to the ENGINEER at the completion of the project.
- C. The ENGINEER shall assemble, bind, label and index this material for the OWNER as stated above. Failure to submit the data listed on the part of any CONTRACTOR may be considered cause to withhold final payment until all such information is received.

PART 37 - CHANGES IN THE WORK

ALL CHANGES SHALL BE MADE IN WRITING AND APPROVED BY THE OWNER OR ENGINEER. THIS INCLUDES CHANGES INVOLVING COST OR THOSE NOT INVOLVING COST. NO CHANGE WILL BE ACCEPTABLE UNLESS APPROVED IN WRITING.

The OWNER, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the work with the Contract Total being adjusted accordingly. All changes involving cost shall be made using a written modification order and shall be supported with necessary documentation as to the increase or decrease in cost and time. No increase or decrease in cost or time will be made without an approved modification order that is completed at or before the change is made. Increases in cost or time will not be allowed at the end of the job for work completed earlier without an approved change order. The OWNER shall have authority to make minor changes in the work which do not involve extra cost, and which do not significantly change the design. All such changes shall be made with a written field order.

END OF SECTION 01 00 00

SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work covered by these specifications and drawings shall consist of all materials, transportation costs, equipment, and tools that are related to, or are to be incorporated in this contract and must be received, unloaded, stored, installed, erected, service connections provided, and coordinated with the construction by the CONTRACTOR under this contract. Installation of equipment and materials shall mean furnishing of all labor and materials as required to place the improvements in successful operation. The CONTRACTOR shall be responsible for all equipment and materials and shall replace at his own expense all such equipment and materials found defective in manufacture or damaged in handling after delivery by the manufacturer. The improvements are as listed:

CITY OF SHAWNEE / PUBLIC WORKS AUTHORITY

THOMPSON HEIGHTS WATERLINE

- B. This contract shall include minor items not specifically mentioned herein but shown on the accompanying plans or obviously necessary to provide a complete job.
- C. The following description, while not intended to cover all details, outlines some items of the work to be accomplished under this Contract:
- 1.
 - 2.

Note: The water treatment plant must stay in operation throughout construction. Temporary pumping, piping, plugs, shut offs, etc. shall be considered incidental and included in the cost of other bid items.

- D. The price named in the Proposal shall include the furnishing of all labor, material, transportation costs, equipment rental, etc., necessary to construct the project as herein specified and as shown on the accompanying plans.
- E. The CONTRACTOR shall cooperate with the OWNER during construction so as to place the improvements in operation at minimum inconvenience and without significant disruption of the OWNER. The CONTRACTOR shall minimize his area of operation. Any areas disturbed will be restored to the OWNER'S satisfaction.

END OF SECTION 01 11 00

SECTION 01 11 50 – MEASUREMENTS AND PAYMENTS**PART 1 – PAY REQUESTS****1.1 CONTRACTOR TO SUBMIT DETAILED BREAKDOWN OF CONTRACT AMOUNT**

- A. Except in the cases where the unit prices form the basis for payment under the contract, the CONTRACTOR shall, within ten (10) days of receipt of the Notice to Proceed, submit a complete breakdown of the contract amount showing the value assigned to each part of the work, including an allowance for profit and overhead. Upon approval of the breakdown of the contract amount by the ENGINEER, it shall be used as the basis for all requests for payment.

1.2 CONTRACTOR MONTHLY PAY REQUESTS

- A. The CONTRACTOR may submit periodically, but not more than once each month, a request for payment for work done and materials delivered and stored on the site. The CONTRACTOR shall furnish the ENGINEER all reasonable facilities required for obtaining the necessary information relative to the progress and execution of the work. Payment for materials stored on the site will be conditioned upon evidence submitted to establish the OWNER'S title to such materials. Each request for payment shall be computed from the work completed on all items listed in the detailed breakdown of contract amount, less five (5) percent to be retained until 50 percent completion and acceptance of the work, and less previous payments, provided that any after 50 percent of the work has been satisfactorily completed, the OWNER shall reduce the percentage retainage to two and one-half (2 ½) percent where unit prices are specified. The request for payment shall be based on the quantities completed.

1.3 MATERIAL STORED ON SITE

- A. The following items will be required if the CONTRACTOR requests payment for material stored on the site.
1. CONTRACTOR must furnish invoices showing quantity, size, costs, etc. of the material.
 2. The invoices must be approved by the OWNER, PROJECT INSPECTOR and/or ENGINEER.
 3. Payment will be made only for material stored in a location approved by the ENGINEER and the OWNER. The storage area must provide adequate protection from the weather and vandalism.
 4. The 5 percent retainer which applies to materials installed will also apply to materials stored.
 5. Payment for materials stored on the site for this project will be made as follows: The above items must be furnished with the current pay estimate, and the CONTRACTOR will be paid as per invoice. In order for the CONTRACTOR to receive payment for the next pay estimate, he must furnish a notarized statement of payment in full from the suppliers for materials invoiced in preceding pay estimate. The procedure shall hold true for all successive materials payments until all materials have been acquired by the CONTRACTOR.

1.4 ENGINEER'S ACTIONS TO PENDING PAY REQUESTS

- A. Within ten (10) days of submission of any request for payment by the CONTRACTOR, the ENGINEER shall:
1. Approve the request for payment as submitted.
 2. Approve such other amount as he shall decide is due the CONTRACTOR, informing the CONTRACTOR in writing of his reasons for approving the amended amount.
 3. Withhold the request for payment, informing the CONTRACTOR in writing for his reasons for withholding it.

1.5 OWNER'S ACTIONS TO APPROVED PAYMENT REQUEST

- A. Within thirty (30) days from the date of approval of a request for payment by the ENGINEER, the OWNER shall:
1. Pay the request of payment as approved.
 2. Pay such other amount in accordance as herein provided as he shall decide is due the CONTRACTOR, informing the CONTRACTOR and the ENGINEER in writing of his reasons for paying the amended amount.
 3. Withhold payment in accordance as herein provided informing the CONTRACTOR and the ENGINEER of his reasons for withholding payment in writing.

1.6 OWNER'S RIGHT TO WITHHOLD PAYMENT ON APPROVED REQUESTS

- A. The OWNER may withhold payment in whole or in part on an approved request for payment to the extent necessary to protect himself from loss on account of any of the following causes discovered subsequent to approval of a request for payment by the ENGINEER:
1. Defective work.
 2. Evidence indicating the probable filing of claims by other parties against the CONTRACTOR.
 3. Failure of the CONTRACTOR to make payments to SUBCONTRACTORS, material suppliers or labor.
 4. Damage to another CONTRACTOR.

1.7 PAYMENT FOR UNCORRECTED WORK

- A. If, in the opinion of the ENGINEER, it is undesirable to replace any defective or damaged material or to reconstruct or correct any portion of the work injured or not performed in accordance with the contract documents, the compensation to be paid the CONTRACTOR hereunder shall be reduced by such amount as in the judgment of the ENGINEER shall be equitable.

1.8 PAYMENT FOR REJECTED WORK AND MATERIALS

- A. The removal of work and materials rejected by the OWNER and the re-execution of acceptable work by the CONTRACTOR shall be at the expense of the CONTRACTOR, and he shall pay the cost of replacing the work of other CONTRACTORS destroyed or damaged by the removal of the rejected work or materials and the subsequent replacement of acceptable work.
- B. Removal of rejected work or materials and storage of materials by the OWNER shall be paid by THE CONTRACTOR within thirty (30) days after written notice to pay is given by the OWNER. If the CONTRACTOR does not pay expenses of such removal and after ten (10) days written notice being given by the OWNER of his intent to sell the materials, the OWNER may sell the materials at auction or at private sale and shall pay to the CONTRACTOR the net proceeds therefrom after deducting all the costs and expenses that should have been borne by the CONTRACTOR.

1.9 ACCEPTANCE AND FINAL PAYMENT

- A. When the CONTRACTOR shall have completed the work in accordance with the terms of the contract documents, the ENGINEER shall certify his acceptance to the OWNER and his approval of the CONTRACTOR'S final request for payment, which shall be the contract amount plus all approved additions less all approved deductions and less previous payments made. The CONTRACTOR shall furnish evidence that he has fully paid all debts for labor, materials, and equipment incurred in connection with the work, following which the OWNER shall accept the work and release the CONTRACTOR except as to the conditions of the Performance Bond, any legal rights of the OWNER, required guarantee and correction of faulty work after final payment, and shall authorize payment of the CONTRACTOR'S final request for payment. The CONTRACTOR must allow sufficient time between the time of completion of the work and approval of the final request for payment for the ENGINEER to assemble and check the necessary data.

1.10 CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT

- A. The approval of the final request for payment by the ENGINEER and the making of the final payment by the OWNER to the CONTRACTOR shall not relieve the CONTRACTOR of responsibility for faulty materials or workmanship. The OWNER shall promptly give notice of faulty materials or workmanship and the CONTRACTOR shall promptly replace any such defects discovered within one year from the date of written acceptance of the work. The ENGINEER shall decide all questions arising under this paragraph.

END OF SECTION 01 11 50

SECTION 01 21 19 - TESTING LABORATORY-SERVICES (CONTRACTOR-Employed Lab)

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. CONTRACTOR shall employ and pay for the services of an independent testing laboratory to perform specified services and testing.

1.2 RELATED REQUIREMENTS

- A. Conditions of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders, or approvals of public authorities.
- B. Respective sections of specifications: Certification of products.
- C. Respective sections of specifications, laboratory tests required, and standards for testing.

1.3 QUALIFICATION OF LABORATORY

- A. Meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
- B. Meet basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction."
- C. Authorized to operate in the state in which the project is located.
- D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.
- E. Testing Equipment
 - 1. Calibrated at reasonable intervals by devices of accuracy traceable to either
 - a. National Bureau of Standards.
 - b. Accepted values of natural physical constants.

1.4 LABORATORY DUTIES

- A. Cooperate with OWNER'S REPRESENTATIVE and CONTRACTOR; provide qualified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1. Comply with specified standards.
 - 2. Ascertain compliance of materials with requirements of Contract Documents.

- C. Promptly notify OWNER'S REPRESENTATIVE and CONTRACTOR of observed irregularities or deficiencies of work or products.
- D. Promptly submit written report of each test and inspection; one copy each to OWNER'S REPRESENTATIVE, OWNER, CONTRACTOR, and one copy to Record Document File. Each report shall include:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Testing laboratory name, address, telephone number.
 - 4. Name and signature of laboratory inspector.
 - 5. Date and time of sampling or inspection.
 - 6. Record of temperature and weather conditions.
 - 7. Date of test.
 - 8. Identification of product and specification section.
 - 9. Location of sample or test in the project.
 - 10. Type of inspection or test.
 - 11. Results of tests & compliance with Contract Documents.
 - 12. Interpretation of test results, when requested by OWNER'S REPRESENTATIVE.
- E. Perform additional tests as required by OWNER'S REPRESENTATIVE or the OWNER.

1.5 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
 - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
- B. Approve or accept any portion of the work.
- C. Perform any duties of the CONTRACTOR.

1.6 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel, provide access to work, to manufacturer's operations.
- B. Secure and deliver to the laboratory adequate quantities of representation samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.

- D. Furnish copies of products test reports as required.
- E. Furnish incidental labor and facilities:
 - 1. To provide access to work to be tested.
 - 2. To obtain and handle samples at the project site or at the source of the product to be tested.
 - 3. To facilitate inspections and tests.
 - 4. For storage and curing of test samples.
- F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
 - 1. When tests or inspections cannot be performed after such notice, reimburse OWNER for laboratory personnel and travel expenses incurred due to CONTRACTOR'S negligence.
- G. Employ and pay for the services of a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required:
 - 1. For the CONTRACTOR'S convenience.
 - 2. When initial tests indicate work does not comply with Contract Documents.

1.7 CONTRACTOR'S GENERAL RESPONSIBILITIES

- A. No failure of test agencies to perform adequate inspections or tests or to properly analyze or report results shall relieve CONTRACTOR of responsibility for fulfillment of requirements of contract documents. It is recognized that required inspection and testing program is intended to assist the CONTRACTOR, OWNER, ARCHITECT, ENGINEER, and governing authorities in nominal determination of probable compliances with requirements for certain elements of work. The program is not intended to limit the CONTRACTOR'S regular quality control program, as needed for general assurance of compliances.

END OF SECTION 01 21 19

SECTION 01 33 00 - SUBMITTALS AND SUBSTITUTIONS**PART 1 - GENERAL****1.1 DESCRIPTION****A. Work Included**

1. Wherever possible throughout the contract documents, the minimum acceptable quality of workmanship and materials has been defined by manufacturer's name and catalog number, reference to recognized industry and government standards, or description of required attributes and performance.
2. To ensure that the specified products are furnished and installed in accordance with design intent, procedures have been established for advance submittal of design data and for their review by the ENGINEER.
3. Make all submittals required by the contract documents, and revise and resubmit as necessary to establish compliance with the specified requirements.

B. Related Work Described Elsewhere: Individual requirements for submittals are described in pertinent other Sections of these specifications.

1.2 QUALITY ASSURANCE

A. Coordination of Submittals: Prior to each submittal, carefully review and coordinate all aspects of each item being submitted and verify that each item and the submittal for it conforms in all respects with the requirements of the contract documents. By affixing the CONTRACTOR'S signature to each submittal, certify that this coordination has been performed.

B. Certificates of Compliance

1. When requested, certify that materials used in the work comply with specified provisions thereof. Certification shall not be construed as relieving the CONTRACTOR from furnishing satisfactory materials if, after tests are performed on selected samples, the material is found to not meet specified requirements.
2. Show on each certification the name and location of the work, name and address of CONTRACTOR, quantity and date or dates of shipment or delivery to which the certificate applies, and name of the manufacturing or fabricating company. Certification shall be in the form of letter or company-standard forms containing all required data. Certificates shall be signed by an officer of the manufacturing or fabricating company.
3. In addition to the above information, all laboratory test reports submitted with certificates of compliance shall show the date or dates of testing, the specified requirements for which testing was performed, and results of the test or tests.

1.3 SUBMITTALS

- A. Submittal Schedule: Within 10 days after award of Contract, and before any items are submitted for approval, submit to the ENGINEER two copies of the schedule described in Article 2.1 of this Section.
- B. Certificates of Compliance: Upon completion of the work, and as a condition of its acceptance, submit to the ENGINEER all Certificates of Compliance.
- C. Procedures: Make submittals in strict accordance with the provisions of this Section.
- D. Schedule of Values: Within 10 days of the Pre-Construction Conference, submit a schedule of values for lump sum bid items indicating the cost breakdown of lump sum bid items for use in progress payment preparation. Submit to the ENGINEER two copies of the schedule described in Article 2.2 of this Section.

PART 2 - PRODUCTS

2.1 SUBMITTAL SCHEDULE

- A. General: Compile a complete and comprehensive schedule of all submittals anticipated to be made during progress of the work. Include a list of each type of item for which CONTRACTOR'S drawings, Shop Drawings, Certificates of Compliance, material samples, guarantees, Operations and Maintenance manuals or other types of submittals are required. Upon approval by the ENGINEER this schedule will become part of the Contract and the CONTRACTOR will be required to adhere to the schedule except when specifically otherwise permitted.
- B. Coordination: Coordinate the schedule with all necessary subcontractors and materials suppliers to ensure their understanding of the importance of adhering to the approved schedule and their ability to so adhere. Coordinate as required to ensure the grouping of submittals as described in Article 1.3.
- C. Revisions: Revise and update the schedule on a monthly basis as necessary to reflect conditions and sequences. Promptly submit revised schedules to the ENGINEER for review and comment.

2.2 SCHEDULE OF VALUES

- A. The ENGINEER will review the tentative schedule of values to determine whether, in his judgment, the schedule of values is of sufficient detail and if the prices included are "unbalanced" or "front-end loaded", in an effort to inflate the prices of those items of work to be completed in the early stages of the work.
- B. Breakdown cost to list major products or operations for each line item which has an installed value of more than \$5,000.00. The sum of the items listed on the schedule of values shall equal the contract lump sum price.

- C. The ENGINEER will provide the CONTRACTOR with his comments and/or may request additional information from the CONTRACTOR to justify certain item quantities and prices, therefore. On the basis of the ENGINEER'S comments, the CONTRACTOR shall revise and resubmit the tentative schedule for further review and/or approval.
- D. Once the ENGINEER accepts the tentative schedule, it shall become the schedule of values to be used in determining partial payment estimates. Two (2) copies of this schedule shall be submitted to the ENGINEER for distribution and his use. No modifications will be made to the schedule of values, except as required by approved change orders.
- E. No partial payment request (including the first) shall be approved until the schedule of values has been approved by the OWNER and ENGINEER.

2.3 SHOP DRAWINGS AND COORDINATION DRAWINGS

- A. Shop Drawings
 - 1. Scale and Measurements: Make all Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the work.
 - 2. Type of Prints Required: Submit all Shop Drawings in the form of electronic (.pdf) or hardcopy, minimum of 8 ½" by 11".

2.4 MANUFACTURERS' LITERATURE

- A. General: Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly indicate which portion of the contents is being submitted for review.
- B. Number of Copies Required: Submit the number of copies which are required to be returned plus two copies which will be retained by the ENGINEER. Under no circumstances shall less than five copies be submitted.

2.5 SAMPLES

- A. Accuracy of Samples: Samples shall be of the precise article proposed to be furnished. Samples shall have stickers or tags which bear identification of the project, the subcontractor, the vendor or manufacturer, the product color name or number, model, style or series, and the size and thickness of components.
- B. Number of Samples Required: Unless otherwise specified, submit all Samples in the quantity which is required to be returned plus one which will be retained by the ENGINEER.
- C. Reuse of Samples: In situations specifically so approved by the ENGINEER, the ENGINEER'S retained sample may be used in the construction as one of the installed items.

- D. Match Existing Materials: Brick or other materials that are to match existing materials shall require a "test panel" to be erected adjacent to the existing material to allow the OWNER to approve the match in size, color, and texture.

2.6 COLORS AND PATTERNS

- A. Unless the precise color and pattern is specifically described in the contract documents, and whenever a choice of color or pattern is available in a specified product, submit accurate color and pattern charts to the ENGINEER for review and selection.

2.7 SUBSTITUTIONS

A. Approval Required

1. The Contract is based on the standards of quality established in the contract documents.
2. All products proposed for use, including those specified by required attributes and performance, shall require approval by the ENGINEER before being incorporated into the work.
3. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved for this work by the ENGINEER.

B. "Or Equal":

1. Where the phrase "or equal" or "approved or equal" occurs in the contract documents, do not assume that materials, equipment, or methods will be approved as equal unless the item has been specifically approved for this work by the ENGINEER.
2. The decision of the ENGINEER shall be final.

PART 3 - EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

- A. General: Bind submittals with cover label that identifies project, division of work, subcontractor, and vendor/manufacturer. Consecutively number all submittals. Accompany each submittal with a letter of transmittal containing all pertinent information required for identification and checking of submittals.
- B. Internal Identification: On at least the first page of each copy of each submittal, and elsewhere as required for positive identification, clearly indicate the submittal number in which the item was included.
- C. Resubmittals: When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new submittal number.

3.2 COORDINATION OF SUBMITTALS

- A. General: Prior to submittal for approval, use all means necessary to fully coordinate all material including, but not necessarily limited to:
 - 1. Determine and verify all interface conditions, catalog numbers, and similar data.
 - 2. Coordinate with other trades as required.
 - 3. Clearly indicate all deviations from requirements of the contract documents.
- B. Grouping of Submittals: Unless otherwise specified, make all submittals in groups containing all associated items to ensure that information is available for checking each item when it is received. Partial submittals may be rejected as not complying with the provisions of the contract documents and the CONTRACTOR shall be strictly liable for all delays so occasioned.

3.3 TIMING OF SUBMITTALS

- A. General: Make all submittals far enough in advance of scheduled dates for installation to provide all time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.
- B. ENGINEER'S Review Time: In scheduling, allow at least 21 calendar days for review by the ENGINEER following his receipt of the submittal. Should unanticipated circumstances prevent the normal review time, a minimum of 10 working days review time must be allowed for reviews.
- C. Delays: Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the contract completion date.

3.4 ENGINEER'S REVIEW

- A. CONTRACTOR'S approval: Prior to submission to the ENGINEER, all submittals shall have been reviewed and approved by the CONTRACTOR.
- B. General: Review by the ENGINEER shall not be construed as a complete check, but only that the general method of construction and detailing is satisfactory. Review shall not relieve the CONTRACTOR from responsibility for errors which may exist.
- C. Authority to Proceed: The notations "Reviewed, No Exceptions Noted" or "Reviewed, Exceptions Noted" authorize the CONTRACTOR to proceed with fabrication, purchase, or both, of the items so noted, subject to the revisions, if any, required by the ENGINEER'S review comments.
- D. Revisions: Make all revisions required by the ENGINEER. If the CONTRACTOR considers any required revision to be a change, he shall so notify the ENGINEER as provided for under "Changes" in the General Considerations. Show each drawing revision by number, date, and subject in a revision block on the drawing. Make only those revisions directed or approved by the ENGINEER.

- E. Revisions After Approval: When a submittal has been reviewed by the ENGINEER, resubmittal for substitution of materials or equipment will not be considered unless accompanied by an acceptable explanation as to why the substitution is necessary.

END OF SECTION 01 33 00

SECTION 01 45 00 - QUALITY CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Section Includes

1. Quality assurance - control of installation.
2. Tolerances
3. References and standards.
4. Mock-up.
5. Testing laboratory services.
6. Inspection services.
7. Manufacturers' field services.
8. Subcontracting.

B. Related Sections

1. Section 01 33 00 – Submittals and Substitutions: Submission of manufacturers' instructions and certificates.

1.2 QUALITY ASSURANCE

- A. The CONTRACTOR will be held strictly to the intent of the contract documents in regard to the quality of materials, workmanship, and execution of the work. Inspections may be made at the factory or fabrication plant of the source of material supply.
- B. The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedure, or construction safety.
- C. The CONTRACTOR shall monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- D. The CONTRACTOR will supervise and direct the work. He will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The CONTRACTOR will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervisor and coordination of the work.
- E. The CONTRACTOR shall comply with manufacturers' instructions, including each step in sequence.

- F. Should the manufacturers' instructions conflict with Contract Documents, the CONTRACTOR shall request clarification from ENGINEER before proceeding.
- G. The CONTRACTOR shall comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- H. The CONTRACTOR shall perform work by persons qualified to produce required and specified quality.
- I. The CONTRACTOR shall verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- J. The CONTRACTOR shall secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 IMPROPER COVERAGE OF BURIED CONSTRUCTION

- A. If any work is covered contrary to the written instructions of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for the ENGINEER'S observation, and replaced at the CONTRACTOR'S expense.
- B. If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction; if, however, such work is not found to be defective, the CONTRACTOR will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate change order shall be issued.
- C. Defect Assessment
 - 1. Replace the work, or portions of the work, not conforming to specified requirements.
 - 2. If, in the opinion of the ENGINEER it is not practical to remove and replace the work, the ENGINEER will direct an appropriate remedy or adjust payment.
- D. Tolerances
 - 1. The CONTRACTOR shall monitor fabrication and installation tolerance control of all products to produce acceptable work. Do not permit products and installation outside of allowable tolerances to accumulate.
 - 2. The CONTRACTOR shall comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from ENGINEER before proceeding.

3. The CONTRACTOR shall adjust products to appropriate dimension and position before securing products in place.

E. References and Standards

1. For products or workmanship specified by association, trade, or other consensus standards, the CONTRACTOR shall comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
2. The CONTRACTOR shall conform to reference standard by date of issue current date for receiving bids, except where a specific date is established by code.
3. The CONTRACTOR shall obtain copies of standards where required by product specification sections.
4. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the ENGINEER shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

F. Mock-Up

1. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
2. The CONTRACTOR shall assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
3. Accepted mock-ups shall be a comparison standard for the remaining work.
4. Where mock-up has been accepted by ENGINEER and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

G. Testing Services

1. The OWNER will appoint and employ services of an independent firm to perform testing. OWNER shall pay for services.
2. The independent firm will perform tests and other services specified in individual specification sections and as required by the ENGINEER.
3. Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the ENGINEER or the OWNER.
4. Reports will be submitted by the independent firm to the ENGINEER and CONTRACTOR, in duplicate indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
5. The CONTRACTOR shall cooperate with the independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

- a. Notify ENGINEER and independent firm 24 hours prior to expected time for operations requiring services.
- b. Make arrangements with independent firm and pay for additional samples and tests required for CONTRACTOR'S use.
- 6. Testing does not relieve CONTRACTOR to perform work to contract requirements.
- 7. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the ENGINEER. Payment for re-testing will be charged to the CONTRACTOR or by deducting testing charges from the Contract Sum/Price.

J. Removal of Defective and Unauthorized Work

- 1. All work which has been rejected or condemned shall be repaired, or, if it cannot be satisfactorily repaired it shall be removed and replaced at the CONTRACTOR'S expense. Defective materials shall be removed immediately from the site of the work.
- 2. Work done without lines and grades having been given, work done beyond the lines or not in conformity with the grades shown on the plans or as given, save as herein provided, work done without proper inspection will be done at the contractor's risk and will be considered unauthorized and at the option of the ENGINEER may not be accepted and may be ordered removed at the CONTRACTOR'S expense.
- 3. If any work is covered contrary to the written instructions of the ENGINEER it must, if requested by the ENGINEER, be uncovered for the ENGINEER'S observation, and replaced at the CONTRACTOR'S expense.
- 4. If the ENGINEER considers it necessary or advisable that covered work be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction; if, however, such work is not found to be defective, the CONTRACTOR will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate change order shall be issued.

K. Inspection Services

- 1. Owner will appoint, employ, and pay for specified services of an independent firm to perform inspection.

L. Manufacturers' Field Services

- 1. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of

equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

2. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
3. Refer to Section 01 33 00 – Submittals and Substitutions, Manufacturers' Field Reports article.
4. Coordination of Plans, Specifications, and Special General Conditions: The plans, these specifications, Special General Conditions, and all supplementary documents are intended to describe a complete work and are essential parts of the contract. A requirement occurring in any of them is binding. In case of discrepancies, figured dimensions shall govern over scaled dimensions; plans shall govern over specifications. Special General Conditions shall govern over both General and Standard Specifications, and the plans and quantities shown on the plans shall govern over those shown on the proposal. The CONTRACTOR shall take no advance of any apparent error or omission in the plans and specifications, and the ENGINEER shall be permitted to make such corrections or interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specification.

In the event the CONTRACTOR discovers any apparent error or discrepancy, he shall immediately call such error or discrepancy to the attention of the ENGINEER, and request in writing an interpretation thereof by the ENGINEER.

M. Subcontracting

1. The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the work which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.
2. The CONTRACTOR shall not award work to SUBCONTRACTOR(S) in excess of fifty (50) percent of contract price, or in excess of fifty (50) percent of the labor and equipment required to install the project, without prior written approval of the OWNER.
3. The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of its SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as the CONTRACTOR is for the acts and omissions of persons directly employed by the CONTRACTOR.
4. The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the contract documents insofar as applicable to the work of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.
5. Nothing contained in this CONTRACT shall create any contractual relationship between the SUBCONTRACTOR and the OWNER.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Beginning new work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION 01 45 00

SECTION 01 60 00 – PRODUCT REQUIREMENTS**PART 1 - GENERAL****1.1 DESCRIPTION****A. Section Includes**

1. Products.
2. Transportation and handling.
3. Storage and protection.
4. Product options.
5. Substitutions.

B. Related Sections

1. Section 01 45 00 - Quality Control: Product quality monitoring.

C. Products

1. The CONTRACTOR shall not use materials and equipment removed from existing premises, except as specifically permitted by the contract documents.
2. The CONTRACTOR shall provide interchangeable components of the same manufacture for components being replaced.

D. Transportation and Handling

1. The CONTRACTOR shall:
 - a. Transport and handle products in accordance with manufacturer's instructions.
 - b. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
 - c. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

E. Storage and Protection

1. The CONTRACTOR shall:
 - a. Store and protect products in accordance with manufacturers' instructions.
 - b. Store with seals and labels intact and legible.
 - c. Store sensitive products in weathertight, climate controlled enclosures in an environment favorable to product.
 - d. Provide for exterior storage of fabricated products, which shall be placed on sloped supports above ground.

- e. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- f. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- g. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- h. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- i. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

F. Product Options

- 1. The CONTRACTOR shall provide products specified by reference standards or by description only: any product meeting those standards or description.
- 2. The CONTRACTOR shall provide products specified by naming one or more manufacturers with a provision for substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

G. Substitutions

- 1. ARCHITECT / ENGINEER will consider requests for substitutions only within 15 days after date established in Notice to Proceed.
- 2. Substitutions may be considered when a product becomes unavailable through no fault of the CONTRACTOR.
- 3. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

A request constitutes a representation that the BIDDER or CONTRACTOR:

- a. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - b. Will provide the same warranty for the substitution as for the specified product.
 - c. Will coordinate installation and make changes to other work which may be required for the work to be completed with no additional cost to OWNER.
 - d. Waives claims for additional costs or time extension which may subsequently become apparent.
 - e. Will reimburse OWNER and ARCHITECT / ENGINEER for review or redesign services associated with re-approval by authorities.
- 4. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the contract documents.

5. Substitution Submittal Procedure:
 - a. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - b. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - c. The ARCHITECT / ENGINEER will notify CONTRACTOR in writing of decision to accept or reject request.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION 01 60 00

SECTION 01 70 00 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures
- B. Final cleaning
- C. Adjusting
- D. Project record documents
- E. Operation and maintenance data
- F. Spare parts and maintenance products
- G. Maintenance service

1.2 CLOSEOUT PROCEDURES

- A. The CONTRACTOR shall:
 - 1. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for ENGINEER'S review.
 - 2. Provide submittals to ENGINEER that are required by governing or other authorities.
 - 3. Submit final Application for Payment identifying total adjusted contract sum, previous payments, and sum remaining due.

1.3 FINAL CLEANING

- A. The CONTRACTOR shall:
 - 1. Execute final cleaning prior to final project assessment.
 - a. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
 - b. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
 - c. Replace filters of operating equipment.
 - d. Clean debris from roofs, gutters, downspouts, and drainage systems.
 - e. Clean site, sweep paved areas, rake clean landscaped surfaces.
 - f. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.4 ADJUSTING

- A. The CONTRACTOR shall adjust operating products and equipment to ensure smooth and unhindered operation.

1.5 PROJECT RECORD DOCUMENTS

- A. The CONTRACTOR shall maintain on site one set of the following record documents and record actual revisions to the work:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other modifications to the Contract
 - 5. Reviewed Shop Drawings, Product Data, and Samples
 - 6. Manufacturer's instruction for assembly, installation, and adjusting
- B. The CONTRACTOR shall ensure entries are complete and accurate, enabling future reference by OWNER.
- C. The CONTRACTOR shall store record documents separate from documents used for construction.
- D. The CONTRACTOR shall record information concurrent with construction progress.
- E. Specifications: The CONTRACTOR shall legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 1. Product substitutions or alternates utilized.
 - 2. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: The CONTRACTOR shall legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original contract drawings.

1.6 OPERATION AND MAINTENANCE DATA

A. The CONTRACTOR shall:

1. Submit data bound in 8 ½ x 11-inch text pages, three D side ring binders with durable plastic or cloth covers.
2. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
3. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
4. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, typed on 20-pound white paper, in three parts as follows:
 - a. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, CONTRACTOR, SUBCONTRACTORS, and major equipment suppliers.
 - b. Part 2: Operation and maintenance instructions, arranged by system. For each category, identify names, addresses, and telephone numbers of SUBCONTRACTORS and suppliers. Identify the following:
 - 1) Significant design criteria
 - 2) List of equipment
 - 3) Parts list for each component
 - 4) Operating instructions
 - 5) Maintenance instructions for equipment and systems
 - 6) Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents
 - c. Part 3: Project documents and certificates, including the following:
 - 1) Shop drawings and product data
 - 2) Air and water balance reports
 - 3) Certificates
 - 4) Photocopies of warranties and bonds
5. Submit one (1) draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with ENGINEER'S comments. Revise content of all document sets as required prior to final submission.
6. Submit five sets of revised final volumes, prior to final payment.

1.7 SPARE PARTS AND MAINTENANCE PRODUCTS

A. The CONTRACTOR shall:

1. Provide spare parts, maintenance, and extra products in quantities specified in individual specification sections.
2. Deliver to project site and place in location as directed and obtain a receipt prior to final payment.

1.8 MAINTENANCE SERVICE

A. The CONTRACTOR shall:

1. Furnish service and maintenance of components indicated in specification sections during the warranty period.
2. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
3. Maintenance service shall not be assigned or transferred to any agent or SUBCONTRACTOR without prior written consent of the OWNER.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION 01 70 00

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Maintain at the site for the OWNER one record copy of:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the contract.
 - 5. Approved shop drawings, product data and samples.
 - 6. Field test records.
- B. Related Requirements in other parts of the Project Manual:
 - 1. Conditions of the Contract.

1.2 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in CONTRACTOR'S field office apart from documents used for construction.
 - 1. Provide files and racks for storage of documents.
 - 2. Provide locked cabinet or secure storage space for storage of samples.
- B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- C. Make documents and samples available at all times for inspection by OWNER'S REPRESENTATIVE.

1.3 RECORDING

- A. Label each document "PROJECT RECORD" in neat large printed letters.
- B. Record information concurrently with construction progress.
 - 1. Do not conceal work until required information is recorded.
- C. Drawings: Legibly Mark to Record Actual Construction:
 - 1. Location of waste water treatment plant, referenced to permanent improvements.
 - 2. Actual construction of waste water treatment plant.
 - 3. Actual construction of permanent installation.

- D. Specifications and Addenda; Legibly Mark Each Section to Record:
 - 1. Manufacturer, trade name, catalog number, and supplier of Representative for the OWNER.
 - 2. Changes made by Change Order.
- E. Drawings and Specifications: Post addenda items, whether written or drawn, on the pages affected such that:
 - 1. Cut-outs of items are securely attached to the sheet that the addenda modified.
 - 2. The addenda number is reflected in each posted item.
 - 3. Completely revised sheets are posted over the sheet revised and the outdated sheet is labeled "void".

1.4 SUBMITTALS

- A. At contract close-out, deliver Record Documents to OWNER'S REPRESENTATIVE.
- B. Accompany submittal with transmittal letter in duplicate, containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. CONTRACTOR'S name and address.
 - 4. Title and number of each Record Document.
 - 5. Signature of CONTRACTOR or his authorized REPRESENTATIVE.

END OF SECTION 01 78 39

DIVISION 02 – EXISTING CONDITIONS

SECTION 02 10 00 – SITE REMEDIATION

PART 1 - GENERAL

1.1 SCOPE

Work under this heading shall include all items of demolition and clearing necessary to prepare the site for construction.

PART 2 - PRODUCTS

2.1 MATERIALS

All salvage materials from demolition or other clearing shall remain the property of the OWNER, unless specifically noted otherwise.

PART 3 - EXECUTION

- A. Protection of trees and improvements: CONTRACTOR shall exercise extreme care in the protection of all existing trees and other improvements on the site designated by the OWNER'S REPRESENTATIVE to remain.
- B. Topsoil shall be stripped from the area to be occupied by building, walks, drives, parking etc., and stockpiled in area designated by OWNER'S REPRESENTATIVE where it will not interfere with building or utility operations. Use topsoil for finish grading.
- C. Remove from site all brush, rubbish and miscellaneous debris resulting from demolition and clearing ahead of construction to meet all safety standards on the site. All wood, vegetation and non-vegetable matter to be removed from topsoil as it is being stockpiled and hauled off with other debris.
- D. Care must be taken to confine clearing operation to the building site with no encroachments on adjacent foliage or possible damage to adjacent areas.
- E. OWNER shall designate area to be cleared for parking, storage of materials and other workspace in addition to building site. This area shall not be cleared of trees and no soil to be stripped or disturbed. Fill and level holes and depressions, prior to final acceptance of project.

END OF SECTION 02 10 00

SECTION 02 42 00 - REMOVALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General Supplementary Conditions and Division 01 Specification Sections, apply to this section.

1.2 WORK INCLUDED

- A. The work required under this section consists of operations, methods, labor, and materials for partial interior, exterior, and/or site underground removals with all related items necessary to complete the Work indicated on the contract drawings.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 CONDITION OF SITE AND BUILDINGS

- A. The condition of site and buildings shall be accepted as found. The OWNER will not assume responsibility for conditions found or continuation of conditions existing at time of Proposal Invitation or thereafter. Any damage or loss, whether by reason of fire, theft, or other casualty or happening on the site, will not relieve the CONTRACTOR'S obligations to complete the work.

3.2 PROTECTION OF LIFE, STRUCTURES AND PROPERTY

- A. Execute work to insure against damages to remaining property. Do not interfere with property or portions of building without permission from authorized persons approved by the OWNER. Maintain free and safe passages in and around work areas. Do not seal off required exits without permission from authorities having jurisdiction.
- B. Provide, erect, and maintain lights, barriers, barricades as necessary to protect life, meeting all Federal, OSHA, State and local laws and regulations.

3.3 UTILITY SERVICES

- A. Remove all utility services as required and/or indicated on the drawings. Provide temporary utilities and services into areas requiring continued services before and after removal work.
- B. All electrical equipment and circuits shall be restored to original condition that are damaged or destroyed during removals and are not called out to be removed on the contract drawings.

3.4 REMOVALS

- A. Before starting demolition work, review all requirements for final remodeling work so that useable existing system components as required for completion of the new work is not destroyed. Coordinate all work with other CONTRACTORS.
- B. Remove any personal property, equipment, machinery, or other fixtures and turn them over to the OWNER as called for on the contract drawings.

3.5 DEBRIS

- A. Remove from the areas of removals, all debris as it accumulates. Do not store or permit debris to accumulate on the site. If the CONTRACTOR fails to remove excess debris promptly, the ENGINEER shall reserve the right to have debris removed by others at CONTRACTOR'S expense.
- B. Upon work completion, remove all tools, materials, equipment, apparatus, temporary toilets, and rubbish of every sort. Leave all existing building surfaces, not scheduled to be removed, swept clean condition at completion of work within any given area. Leave buildings and site clean, neat, and orderly.

3.6 REMOVAL OF PAVEMENT, SIDEWALKS, CURBS, ETC.

- A. Break concrete pavement, base course, and other similar materials designated for removal into pieces no heavier than 150 lbs. [68 kg]. Stockpile at locations shown on the plans.
- B. If the contract documents require the removal of asphalt concrete or Portland cement concrete pavement, saw the joint to the line and depth, as approved by the ENGINEER, to prevent under-break or shatter of adjacent areas.

3.7 REMOVAL AND DISPOSAL OF SALVAGED MATERIALS, STRUCTURES, AND OBSTRUCTIONS

- A. Unless otherwise required by the contract documents, all salvaged material shall become the property of the CONTRACTOR. Ownership of salvaged materials implies the responsibility to dispose of the salvaged material in accordance with all applicable local, state, and federal rules and regulations. CONTRACTOR is not allowed to bury or otherwise dispose of material within the project's boundaries or on any publicly owned property without the ENGINEER'S prior written approval.

END OF SECTION 02 42 00

SECTION 02 44 00 - ADJUSTMENT OF EXISTING STRUCTURES**PART 1 - GENERAL REQUIREMENTS****1.1 SCOPE**

This work shall consist of the necessary adjustments, alterations, relocating, or resetting to the required grade and alignment of existing structures, equipment or appurtenances which are not to be removed or abandoned and which are not the property of a private company, firm, or corporation required to move their own property, in accordance with these specifications and in reasonably close conformity with the lines, grades, elevations and dimensions shown on the drawings or established by the ENGINEER.

PART 2 - PRODUCTS**2.1 MATERIALS**

Materials for use in this work shall be as set out on the drawings, or if not specified, shall be of the same grade of material as specified elsewhere in these specifications for a similar type of work or of a material equivalent to that in the structure being adjusted.

PART 3 - EXECUTION**3.1 CONSTRUCTION METHODS****A. General**

1. The materials and workmanship necessary in raising, lowering, or otherwise adjusting or resetting existing structures shall conform to the requirements of the drawings and specifications for the class of work involved, or as directed by the ENGINEER. Whole bricks salvaged in good condition from structures may be used in rebuilding such structures provided the bricks are cleaned satisfactorily and approved by OWNER. Existing structures shall be rebuilt in accordance with the drawings and specifications. The final adjustment to grade shall be completed after the final surface course has been placed if the structure is in the pavement.
2. The CONTRACTOR shall guard against damage or breakage to any portion of the structure or appurtenance to be altered, removed, or reset. Any damage or breakage due to the CONTRACTOR'S negligence or failure to properly protect such structure or appurtenances, shall be repaired or replaced at the CONTRACTOR'S expense.

B. Manholes

1. Where the tops of the manholes are to be lowered to a new grade, the walls shall be removed and rebuilt to an elevation far enough below the new grade so that the maximum batter of the walls does not exceed 4 in. (10.1 cm) per foot (30.5 cm).
2. Where manholes are to be built up a distance of one foot (0.305 m) or less to a new grade, the walls may be carried up vertically and one new standard step shall

be set. Where the walls are to be built up a distance exceeding one foot (0.305 m), the existing walls shall first be removed to the bottom of the batter section of the walls, or to such elevation that the inside diameter of the manhole is not less than 3.5 ft. (1.1 m). The manhole shall then be rebuilt in conformity with the size and shape requirements for new manholes.

C. Catch Basins, Inlets, Manholes

1. Where inlets, catch basins, manholes or similar structures are to be revised to grade or rebuilt, the work shall be done in conformity with the requirements for new construction of this class of work as provided elsewhere in these specifications.

D. Valve Boxes, Meter Boxes, Lampholes

1. Care shall be taken in removing and resetting to grade, valve boxes, meter boxes, etc., to avoid breaking and any breakage shall be replaced by the CONTRACTOR at his expense.

E. Fire Hydrants, Valves, Water Meters, Water Line, etc.

1. Where adjustment or relocation of water lines and appurtenances is to be done by the OWNER, the CONTRACTOR shall be responsible for coordinating the arrangements with the OWNER for lowering or relocating of all water lines and the resetting of water valves, meters, manholes, and fire hydrants. When the alteration is part of the work to be performed by the CONTRACTOR as a part of his contract, such work shall be done in conformity with the requirements of the OWNER and in accordance with the requirements of these specifications for new work of this type.

F. Electric Traffic Signals or Right-of-Way Systems

1. Where the adjustment or relocation of electric traffic signals, highway lighting standard or conduits, cables, or appurtenances is to be done by the OWNER where the work is located, the CONTRACTOR shall make complete arrangements with the proper City or ODOT officials for the work to be done. When the alteration is part of the work to be performed by the CONTRACTOR as a part of his contract, such work shall be done in conformity with requirements of the OWNER, or as specified on the Drawings or in the Proposal and as directed by the ENGINEER.

G. Sewer Pipe

1. Sewer pipe removed to be re-laid shall be re-laid in conformity with the requirements of new sewers.

3.2 METHOD OF MEASUREMENT

Unless otherwise shown on bid form, the cost for various items, listed in Part 3.3, but not limited to, shall be included in other items of work.

3.3 BASIS OF PAYMENT

A. Accepted items, measured as provided above, will be paid for at the contract unit price for:

1. MANHOLES ADJUST TO GRADE	EA.
2. MANHOLES REBUILT	EA.
3. CATCH BASINS ADJUST TO GRADE	EA.
4. CATCH BASINS REBUILT	EA.
5. INLETS ADJUST TO GRADE	EA.
6. INLETS REBUILT	EA.
7. VALVE BOXES ADJUST TO GRADE	EA.
8. METER BOXES ADJUST TO GRADE	EA.
9. LAMPHOLES ADJUST TO GRADE	EA.
10. FIRE HYDRANT RESET	EA.
11. VALVES RESET	EA.
12. WATER METERS RESET	EA.
13. WATER LINE LOWERED	L.F.
14. WATER LINE REMOVED AND RELAID	L.F.
15. ELECTRIC TRAFFIC SIGNALS RESET	EA.
16. HIGHWAY LIGHTING STANDARDS RESET	EA.
17. ELECTRIC CABLE RELAID	L.F.
18. ELECTRIC CABLE CONDUIT RELAID	L.F.
19. PIPE SEWER REMOVED AND RELAID	L.F.
20. REMOVE AND RESET MANHOLE FRAME AND COVER	EA.

B. Valve boxes, meter boxes, etc., in conjunction with valves or meters to be reset will be considered as part of the valve or meter and will not be paid for as a separate item.

C. Valves in water lines or fire hydrant leads will not be considered as a separate pay item, but the cost of resetting same, and shall be included in the price bid for the water line or lead.

D. When the valve is under pavement, adjustment of valve box will be a separate pay item.

END OF SECTION 02 44 00

DIVISION 03 - CONCRETE**SECTION 03 10 00 - FORMWORK****PART 1 - GENERAL****1.1 SCOPE OF WORK**

- A. Furnish, install all labor, materials, equipment, and services as required to complete all formwork for all cast-in-place concrete as shown on drawings, and/or specified herein.

1.2 SHOP DRAWINGS

- A. Per Division 01 General Conditions, submit Shop Drawings showing location, layout of construction joints, form joints, locations of tie holes or plugs, and procedure for pouring into formwork.

1.3 COORDINATION

- A. Secure all pipe sleeves, anchors, bolts, including those for angle frames, inserts, supports, ties, other materials in connection with concrete construction, in position before concrete is placed.
- B. Obtain information, instructions from other trades, suppliers in ample time to schedule, coordinate installation of items furnished by them to be embedded in concrete so provisions for their work can be made without delaying project.
- C. Make cutting and/or patching made necessary by failure or delay in complying with these requirements at no cost to OWNER.

1.4 GENERAL REQUIREMENTS

- A. Furnish formwork and formwork accessories according to ACI SPEC-301.
- B. Provide complete forms of such strength and construction as to prevent any spread, shifting, or settling when concrete is deposited, tight enough to avoid any leakage or washing out of cement mortar.
- C. Design forms, false-work supports so stresses indifferent members can be determined, including details. They shall have sufficient rigidity to resist deflection more than 1/8" between supports after concrete has been placed, to assure smooth, even appearance of surfaces.
- D. Plywood or lined forms will not be required for surfaces which are normally submerged or not ordinarily exposed to view. Other types of forms, such as steel or unlined wooden forms, may be used for surfaces which are not restricted to plywood and may be used as backing for form linings. Concrete forms are required above all extended footings.

- E. Where concrete is placed against a gravel or crushed rock which does not contain at least 25% material passing a No. 4 sieve, such surfaces shall be covered with polyethylene film 6 mil thick to protect the concrete from loss of water. Joints in the film shall be lapped at least 4".
- F. Use bolts, rods, other approved devices for internal ties, spreaders; of such construction that when forms are removed, no metal is within 1" of an exterior nor within 1/2" of an interior concrete surface.
- G. Take special care that forms are true to required lines, grades, surfaces so as to give uniform, neat, workmanlike finish to all concrete surfaces, and to make form supports of sufficient strength, well braced, on adequate foundations so there is no settling or distortion when weight of concrete is added.
- H. Remove all dirt, chips, sawdust, rubbish, water, etc., from forms by water hosing and air pressure before any concrete is deposited. Leave no wooden ties or blocking in concrete except where indicated for attachment of other work.
- I. ENGINEER will cooperate with CONTRACTOR in matter of removing forms and shoring as early as possible. Length of time forms must remain in place depends on rate of time required for concrete to obtain proper strength and on construction loads that will be placed on concrete. Forms shall not be removed until authorized by the ENGINEER.
- J. Forms shall not be removed or disturbed for at least seven (7) days from date of last pouring unless approved by the ENGINEER.
- K. On removal of forms, all bolts, wires for anchoring, etc., shall be either removed, cut off to lengths as directed, or left in place for anchorage of other work as specified.
- L. Forms to be reused shall be in good condition, thoroughly cleaned before being reused.
- M. Provide 3/4" chamfer at any wall, column and vertical corners unless otherwise shown.

1.5 CONSTRUCTION JOINTS

- A. Make and locate generally as indicated on drawings all construction joints so as not to impair strength of structure and only at locations approved by the ENGINEER. Form keys used in any cold joints shown or required.

PART 2 - MATERIALS

2.1 SLABS, WALLS AND EXPOSED CONCRETE:

- A. Forms for flat exposed surfaces shall be 5-ply Exterior B-B (Concrete Form) panels. Panels with raised or separate face veneers shall not be used for exposed concrete.

2.2 SURFACE TREATMENT

- A. Surface Treatment: Plywood panels shall have smooth surface treatment to prevent any development of bond or adhesion to concrete and to seal plywood surfaces against moisture. Master Finish RL Series as manufactured by Master Builder Solutions; Burke Form Sealer as manufactured by W. J. Burke Company, or approved equal, shall be used, applied in strict accordance with manufacturer's directions.

2.3 FORM TIES AND SPREADERS

- A. Form Ties and Spreaders: Shall be metal, cone nut type. No wood spreaders will be permitted.

2.4 ROUGH HARDWARE

- A. Rough Hardware: Nails, bolts, screws, anchors, etc., as shown or needed shall be furnished and set.

END OF SECTION 03 10 00

SECTION 03 20 00 - REINFORCEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Furnish all labor, materials, equipment, and services as required to complete all reinforcing steel work as shown on drawings, and/or specified herein.

1.2 SHOP DRAWINGS

- A. Per Division 01, General Conditions, submit Shop drawings showing bending and placing of all reinforcing. Drawings shall include diagrammatic elevations of all walls at a scale sufficiently large to clearly show the position, erection marks of marginal bars and their dowels and splices.

1.3 COORDINATION

- A. Coordinate with other trades so as not to interfere. Bring interferences between trades to ENGINEER'S attention; resolve before any concrete is poured.

1.4 STORAGE

- A. Store reinforcement to avoid rusting or coating with grease, oil, dirt, or other objectionable materials. Reinforcement coated with such materials will be rejected.

1.5 STANDARDS

- A. Comply with requirements set forth in the "Manual of Standard Practice for Detailing Reinforced Concrete Structures", published by the American Concrete Institute except where more exacting requirements are specified in Contract Documents.

PART 2 - MATERIALS

2.1 REINFORCEMENT

- A. Reinforcing bars shall be deformed bars conforming to ASTM A-615 Grade 60.
- B. Welded wire fabric shall conform to requirements of ASTM A-1064 using bright steel wire meeting ASTM A-1064. Gauges, dimensions shall be as noted on the drawings.
- C. All steel for reinforcement shall be new, non-rusted stock, free from mill scale, delivered without rust other than may have accumulated in prompt transportation to the work.
- D. Tie wire shall be No. 16 American Wire Gauge or heavier, black annealed.
- E. Supports for reinforcing bars in slabs shall be metal, of sufficient strength to adequately support bars, of a type approved by ENGINEER. Supports or spacers for

bars in walls shall be such that exterior face of wall will not be marred when forms are stripped, and final finish has been completed.

- F. Dowels from footings to walls shall be same size, spacing as wall reinforcement, unless otherwise shown. Dowels shall project 12 inches into wall, 12 inches into footing unless detailed or noted otherwise.

PART 3 - REINFORCING BARS TO BE FURNISHED TO OTHER TRADES

3.1 VERTICAL REINFORCING

- A. All vertical reinforcing bars required for vertically reinforcing masonry work shall be furnished by REINFORCING CONTRACTOR, properly cut, shaped as indicated on drawings. Masons shall install in place all reinforcements supplied them as required by Drawing details.

3.2 HORIZONTAL REINFORCING

- A. Horizontal mesh type masonry reinforcing shall be furnished.

PART 4 –REINFORCING STEEL

4.1 REQUIREMENTS FOR PLACEMENT OF REINFORCING STEEL

- A. Reinforcement shall be accurately placed, securely tied at intersections with 16-gauge black annealed wire; shall be maintained in proper position by chair, bars, supports, or approved devices.
- B. Bars shall lap 18 inches at splices, except as otherwise indicated. Splices in adjoining horizontal bars shall be staggered at least 6'. Where this is not feasible, submit suggestions for ENGINEER'S consideration. Horizontal bars shall be hooked around corners not less than 9 inches, with minimum of 12 inches as per typical details.

4.2 CONCRETE PROTECTION OF REINFORCING

- A. Shall be not less than the following:
 1. 3" where concrete is poured against ground.
 2. 2" where concrete is poured against forms but may be in contact with ground.
 3. 1-1/2" minimum in exterior face of exterior walls (exposed to weather but not in contact with ground).
 4. 3/4" minimum in interior walls and interior face of exterior walls.
 5. 1-1/2" in beams, girders, and columns.
 6. Clear distance between bars shall be not less than 1-1/2", 1-1/2 bar diameters, nor less than 1-1/3 times the maximum size of coarse aggregate. See details for any specific variations to these requirements. Where conduits, piping, inserts, sleeves, etc., interfere with placing of reinforcing steel as shown or called for,

CONTRACTOR must consult with ENGINEER, secure method of procedure from him before pouring any concrete. Bending or field cutting of bars around openings or sleeves will not be permitted.

END OF SECTION 03 20 00

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE**PART 1 - GENERAL****1.1 SCOPE**

- A. This section covers all cast-in-place concrete, including reinforcing steel, forms, finishing, curing and other appurtenant work.
- B. Transit mix concrete will be permitted if it meets the requirements of this section and is mixed and delivered in accordance with ASTM C94.

1.2 SUBMITTALS

- A. Submittals shall be made in accordance with all the requirements of the General Conditions and the Contract Documents.
- B. Submit for review a proposed design mix for each concrete strength and class required by these Specifications. Failure to include any items of information noted in this paragraph for a given concrete strength or type will be cause for requirement of a resubmittal. Information to be submitted for each strength and class shall include the following items:
 - 1. Concrete mix design
 - a. Constituent quantities per cubic yard.
 - b. Sources of all concrete mix components including coarse aggregate, fine aggregate, cement, water, admixtures, and pozzolans where included.
 - c. Cement type and manufacturer, include chemical analysis (mill test report) for each cement type to be used.
 - d. Pozzolan type and source; include chemical analysis for each pozzolan type to be used.
 - e. Water/cement ratio, by weight.
 - f. Air content
 - g. Mix design slump.
 - h. Average compressive strengths conforming to the requirements of ACI 318 at 28 days. Provide both average strengths and sample standard deviation. Provide results at 7 and 14 days if available.
 - i. Laboratory shrinkage test results for concrete mix designs, where specified.
 - 2. Aggregate:
 - a. Laboratory sieve analysis, conforming to ASTM C33.
 - b. Verification that aggregate is not "deleterious," or "potentially deleterious." Provide documentation or other certification that aggregate does not contain deleterious substances and has been used without issues on previous projects.

3. Admixtures. Submit Manufacturer's data brochures on all admixtures proposed for use and provide certification of compliance with specified ASTM standards for each admixture.
- C. Submit concrete placement drawings showing pour sequence, lift numbers, locations of all joints, concrete mix being placed, concrete finishes, and all pertinent embedments including embedded plates, sleeves, pipes, conduits, anchors, etc., where applicable. Where the Drawings permit the CONTRACTOR to select joint locations, show the selected dimensions on the placement drawings. Approval of the placement drawings shall not relieve the CONTRACTOR of the responsibility of placing all concrete and embedments as specified.
- D. If cold weather or hot weather concrete conditions are anticipated on the Project, submit a work plan for cold weather concreting and/or for hot weather concreting, describing proposed methods and procedures for mixing, delivering, placing, finishing, and curing concrete. Submit plans well in advance of cold or hot weather job conditions. Include procedures to be implemented upon abrupt changes in weather conditions or due to equipment failures. If a plan for either is not submitted and cold or hot weather concrete conditions are present, the CONTRACTOR will not be allowed to pour concrete until a plan is received and reviewed as long as cold or hot weather conditions are present on the Project.
- E. Furnish a delivery ticket for ready mixed concrete to the OWNER'S REPRESENTATIVE as each truck arrives. Each ticket shall provide a printed record of the weight of cement batched and each separate aggregate individually batched. Use the type of indicator that returns for zero punch or returns to zero after a batch is discharged. Clearly indicate the weight of fine and coarse aggregate, cement, and water in each batch, the quantity delivered, the time any water is added, and the numerical sequence of the delivery. Show the time of day batched and time of discharge from the truck. Indicate the number of revolutions of mix trucks.
- F. Submit Manufacturer's data sheets and product specifications for curing compounds and items specified in other Sections including form release agents, bonding agents, etc. Identify the locations where each will be used in the Work as a part of the submittal.
- G. Submitted data shall demonstrate compliance with all requirements of this Specification or deviations shall be clearly noted.

1.3 QUALITY ASSURANCE

A. Concrete Consistency

1. Test for slump shall be performed at the job site immediately prior to placing in accordance with ASTM C143. Slump tests shall be performed for every 35 CY separately for each construction item to indicate workability and consistency throughout the entire project.
2. If the slump is outside the allowed limits, the concrete shall be rejected. Concrete showing either poor cohesion or poor coating of the coarse

aggregate with paste shall be remixed or rejected.

3. If the slump is within the allowable limit, but excessive bleeding, poor workability, or poor finishability are observed, the concrete shall be rejected and changes in the concrete mix shall be made only by an adjustment of one or more of the following:
 - a. The gradation of aggregate.
 - b. The proportion of fine and coarse aggregate.
 - c. The percentage of entrained air, within the allowable limits.

B. Concrete Temperature

1. Concrete temperature shall be taken immediately before placement with the point of measurement being in the chute or bucket.
2. Perform temperature test for each batch and record result on batch ticket.
3. If fresh concrete temperature does not meet requirements in this section the concrete shall be rejected.

C. Concrete Air

1. Test for air content shall be made on a fresh concrete sample for every 35 CY separately for each construction item prior to placing in forms.
2. Air content for concrete made of ordinary aggregates having low absorption shall be made in accordance with either ASTM C231, or ASTM C173. If light weight aggregates or aggregates with high absorptions are used, use ASTM C173.
3. If air content of fresh concrete does not meet requirements specified in this Section, the concrete shall be rejected. Do not place concrete that does not meet the air entrainment requirements of this Section.

D. Compression Testing

1. Compression test specimens shall be made, cured and tested in accordance with ASTM C31 and ASTM C39.
2. Compressive strength tests shall be made on cylinders at 7 and 28 days. The value of each test result shall be the average compressive strength of a minimum of 2 cylinders taken at the same time from the same batch of concrete.
3. Compressive test specimens shall be 6" x 12" cylinders or 4" x 8" cylinders. Sets of concrete test cylinders shall be cast for each day's concrete pour as follows.
 - a. A "set" of test cylinders consists of a minimum of six cylinders, one to be broken and strengths recorded at seven days; and three broken and strengths averaged at 28 days. Two hold cylinders will remain unbroken so that they will be available to be broken upon unforeseen circumstances or upon the option of the Engineer to break cylinders at different times.

- b. A minimum of one “set” of cylinders will be made for each concrete pour up to 25 CY in volume. For pours larger than 25 CY, additional “sets” of cylinders will be made for each additional 50 CY of concrete poured.
- 4. Evaluation of compressive strength for compliance with design requirements will be conducted by the ENGINEER per ACI 318 – Section 26.12 based on the results of the 28-day test.
- 5. All test specimens shall be kept as near to the point of sampling as possible and yet receive the same protection from the elements as is given to the portions of the structure being built. Specimens shall be protected from injury. They shall be sent to a testing laboratory approved by the ENGINEER after a minimum of three days of field curing and while in the laboratory shall be kept in the ordinary air at the temperature of approximately 70°F until tested.

E. Failure to Meet Requirements

- 1. The OWNER may withhold payment for any section of concrete which does not meet the requirements of the plans and specifications. Withheld payment shall be based upon unit prices established for concrete, if available. Payment shall be withheld until the unacceptable concrete has been repaired or removed and replaced or otherwise brought into conformance with the plans and specifications.
- 2. Concrete Strength
 - a. If the 28-day strength test results fall below required values, additional curing may be performed and test cores may be obtained in accordance with ASTM C42 with approval of the ENGINEER. Additional curing, core removal and testing, if allowed by the ENGINEER, shall be at the CONTRACTOR'S expense.
 - b. If the strength results from test cores do not exhibit the required strength, the ENGINEER or OWNER'S REPRESENTATIVE reserve the right to require strengthening, replacement of substandard materials and/or additional testing at the CONTRACTOR'S expense. The choice of remedy is at the sole discretion of the ENGINEER or OWNER'S REPRESENTATIVE.
 - c. Other Concrete Properties
 - 1) If concrete properties besides strength do not meet required values, the ENGINEER may require concrete samples to be obtained in accordance with ASTM C42 and evaluated in accordance with ASTM C856 at the CONTRACTOR'S expense.
 - 2) If concrete properties besides strength do not meet required values, and the results of additional examination per ASTM C856 are deemed unsatisfactory at the sole discretion of the ENGINEER, the OWNER reserves the right to require strengthening, replacement of substandard materials and/or additional testing at the CONTRACTOR'S expense.

PART 2 - PRODUCTS**2.1 GENERAL**

Cement	ASTM C150, Type II or I/II
Coarse Aggregate	Crushed rock, washed gravel or other inert material conforming to ASTM C33
Fine Aggregate	Shall conform to ASTM C33
Crushed Water	Clean and free from deleterious substances
Reinforcing Steel	Per specification 03 20 00 "Reinforcement"
Welded Wire Fabric	Per specification 03 10 00 "Form Work"
Expansion Joints	Preformed, bituminous type ASTM D994
Joint Sealer	Per specification 03 31 00 "Construction Joint Sealing"

2.2 DESIGN CRITERIA

- A. Use ACI 211.1 as the basis for selecting the proportions of ingredients to produce concrete having proper durability, strength, workability appearance and other required properties. Proportion ingredients to produce a homogenous mixture, which will work readily into corners and angles of forms and around reinforcement by methods of placing and consolidation employed on the work, but without permitting materials to segregate or allowing excessive free water to collect on the surface.
- B. Strength:
 - 1. All concrete is required to have an average 28-day compressive strength equal to or greater than specified strength in section 2.2(F) unless otherwise specified.
- C. Entrained Air:
 - 1. Air-entrain all concrete, unless otherwise specified.
 - 2. Drilled shafts do not require air entrainment unless placed underwater.
 - 3. Provide for not less than three percent (3.0%) nor more than six percent (6.0%) by volume of total entrapped and entrained air for normal weight concrete.
 - 4. Do not air entrain finished floors that call for a troweled finish.
- D. Slump:
 - 1. Provide adequate slump to produce acceptable workability, do not exceed maximum specified slump.
- E. Admixtures:
 - 1. Proportion admixtures according to the Manufacturer's recommendations. All admixtures shall be batched at the batch plant only.

F. Concrete Classification

Class	Min. 28-Day Compressive Strength (psi)	Coarse Aggregate Size (in.)	Max. Water Cement Ratio	Max. Slump (in.)	Min. Cement Content (lb. per CY)
A	4000	1.5 (No. 467)	0.45	5	517
B	3000	1.5 (No. 467)	0.50	4	470
C	4000	1.0 (No. 57)	0.45	4	564
D	5000	0.75 (No. 67)	0.45	5	611
E	1500	1.5 (No. 467)	0.70	4	376
F	4000	0.375 (No. 8)	0.45	8	611

G. Concrete Usage

Class	Usage
A	All reinforced concrete unless otherwise specified
B	Concrete Encasement; Sidewalks, Curbs, Driveways
C	Drilled Shafts; Pumped Concrete; Thin Wall Sections
D	Precast Concrete and Panels
E	Lean Concrete Backfill; Foundation Seal; Blocking/Cradling
F	Underground Duct Banks

2.3 ADMIXTURES

A. Air-Entraining Admixture: ASTM C260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing intentionally added chlorides.

1. Water-Reducing Admixture: ASTM C494/C 494M, Type A. Products.
2. Retarding Admixture: ASTM C 494/C 494M, Type B. Products.
3. Water-Reducing and Retarding Admixture: ASTM C494 / C494M, Type D.
4. Accelerating Admixture: ASTM C494/C494M, Type C.
5. Water-reducing and Accelerating Admixture: ASTM C494/C494M, Type E.
6. High-Range, Water-Reducing Admixture: ASTM C494 / C494M, Type F.

7. High-Range, Water-Reducing and Retarding Admixture: ASTM C494 / C494M, Type G.
8. Plasticizing and Retarding Admixture: ASTM C1017 / C1017M, Type II.
9. Workability-Retaining Admixture: ASTM C494/C494M, Type S.
10. Other admixtures shall be as specified in Section 03 30 00.

2.4 FIBERS

A. Synthetic Microfibers

1. Shall be manufactured from a proprietary blend of polypropylene resins in compliance with ASTM D7508/D7508M for micro-chopped strands, for use in fiber-reinforced concrete meeting the requirements of ASTM C1116/C1116M, Type III.
2. Shall provide a minimum cracking reduction ratio (CRR) of 40 percent when tested in accordance with ASTM C1579.
3. Dosage shall be as recommended by the manufacturer.

B. Synthetic Macrofibers

1. Shall be manufactured from a proprietary blend of polypropylene resins in compliance with ASTM D7508/D7508M for macro-chopped strands or hybrids chopped strands for use in fiber-reinforced concrete meeting the requirements of ASTM C1116/C1116M, Type 111.
2. Shall provide a minimum average residual strength (f_{150}^D) [minimum average equivalent flexural strength ($f_{e,3}$)] of [] psi when tested in accordance with ASTM C1609/C1609M, using the roller support system in ASTM C1812/C1812M.
3. Dosage shall be as recommended by the manufacturer.

2.5 VAPOR RETARDER

- A. Plastic sheet, ASTM E1745, Class A or B.
- B. Polyethylene sheet, ASTM D4397, not less than 10 mils (0.25 mm) thick; or plastic sheet, ASTM E1745, Class C.

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.

- C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B.
- F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

2.7 STORAGE OF MATERIALS

- C. Cement shall be stored in suitable moisture-proof enclosures. Cement which has become caked or lumpy shall not be used.
- D. Aggregates shall be stored so that segregation and the inclusion of foreign materials is prevented. The bottom 6" of aggregate piles in contact with the ground shall not be used.
- E. Reinforcing steel shall be carefully handled and shall be stored on supports which will keep the steel from contact with the ground.

2.8 FORMS

- A. All forms shall be in accordance with Specification 03 10 00 "Form Work".

2.9 EMBEDMENTS

- A. Anchor bolts, castings, steel shapes, conduit, sleeves, masonry anchorage and other materials that are to be embedded in the concrete shall be accurately positioned in the forms and securely anchored. Conduits shall be installed between the reinforcing steel in walls or slabs which have reinforcements in both faces. In slabs which have only a single layer of reinforcing steel, conduits shall be placed under the reinforcement.
- B. Unless installed pipe sleeves, anchor bolts shall have sufficient threads to permit a nut to be installed on the concrete side of the form or template. A second nut shall be installed on the other side of the form or template and the two nuts shall be adjusted so that the bolt will be held rigidly to proper position.
- C. Embedments shall be clean when installed. After concrete placement, surfaces not in contact with concrete shall be cleaned of concrete spatter and other foreign substances.

2.10 BATCHING AND MIXING

- A. Concrete shall be furnished by an acceptable ready-mixed concrete supplier and shall conform to ASTM C94 and furnish batch ticket information.
 - 1. When air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- B. The consistency of concrete shall be suitable for the placement conditions. Aggregates shall float uniformly throughout the mass and the concrete shall flow sluggishly when vibrated or spaded. The slump shall be kept uniform.

PART 3 - EXECUTION**3.1 GENERAL**

- A. The limits of each concrete pour shall be predetermined by the CONTRACTOR and shall be acceptable to the ENGINEER. All concrete within such limits shall be placed in one continuous operation.
- B. Before test sampling and placing concrete, water may be added at project site at the direction and approval of the ENGINEER.
- C. Before concrete is placed, forms, reinforcements, water stops, anchor bolts and embedments shall be rigidly secured in proper position; all dirt, mud, water, and debris shall be removed from the space to be occupied by concrete; all surfaces incrustured with dried concrete from previous placement operations shall be cleaned; and the entire installation shall be acceptable to the ENGINEER.
- D. Concrete shall be conveyed to the point of final deposit by methods which will prevent separation or loss of ingredients. Concrete shall be placed in final position without being moved laterally in the forms more than 6 feet. Lateral placement beyond 6 feet shall require the use of tremie pipe to meet the lateral limit.
- E. Concrete for piers shall be carefully deposited to avoid contact with forms, reinforcing and earth sides until completion of the drop. Necessary precautions shall be taken to prevent earth or other material from falling into excavations and to prevent dislocation of reinforcing during concrete placement. Concrete shall be placed continuously to the top of each pier at a rate of vertical rise of not less than 2' per hour. Forms above grade, if required, shall be cylindrical steel or fiber forms acceptable to the ENGINEER.
- F. During and immediately after placement, concrete shall be thoroughly compacted and worked around all reinforcements and embedments and into the corners of the forms. Mechanical vibrators shall be used which will maintain at least 9000 cycles per minute when immersed in the concrete. Each vibrator shall be driven by not smaller than a 1-1/2 hp motor. The number and type of vibrators shall be acceptable to the ENGINEER.

3.2 HOT WEATHER CONCRETING

- A. Except as modified herein, hot weather concreting shall comply with ACI 305. At air temperatures of 90° F or above, concrete shall be kept as cool as possible during placement and curing. The temperature of the concrete when placed in the work shall not exceed 90° F.
- B. Plastic shrinkage cracking, due to rapid evaporation of moisture, shall be prevented. Concrete shall not be placed when the evaporation rate (actual or anticipated) equals or exceeds 0.2 lbs. per sq. ft. per hour, as determined in ACI 305.

3.3 COLD WEATHER CONCRETING

- A. Except as modified herein, cold weather concreting shall comply with ACI 306. The temperature of concrete at the time of mixing shall be not less than that shown in the following table for corresponding outdoor temperature (in shade) existing at the time of placement.

<u>Outdoor Temperature</u>	<u>Concrete Temperature</u>
Below 10° F	70° F
Between 10° F and 45° F	60° F
Above 45° F	45° F

- B. When placed, heated concrete shall not be warmer than 80° F.
- C. When freezing temperatures may be expected during the curing period, the concrete shall be maintained at a temperature of at least 50° F for five days or 70° F for three days after placement. Concrete and adjacent form surfaces shall be kept continuously moist. Sudden cooling of concrete shall not be permitted.

3.4 FINISHING

- A. All exposed surfaces shall be given a steel float finish.
- B. No Finish: A finish is not required on surfaces which are not visible from the inside or outside of the structure or more than 12 inches below finished grade.
- C. Screened surfaces shall be given an initial float finish as soon as the concrete has stiffened sufficiently for proper working. Any piece of coarse aggregate which is disturbed by the float or which causes a surface irregularity shall be removed and replaced with mortar. Initial floating shall produce a surface of uniform texture and appearance with no unnecessary working of the surface.
- D. Initial floating shall be followed by a second floating at the time of initial set. The second floating shall produce a finish of uniform texture and color. Unless additional finishing is specifically required, the completed finish for unformed surfaces shall be the float finish produced by the second floating.
- E. Floating shall be performed with hand floats or suitable mechanical compactor floats.

F. Smooth Form Finish:

1. Unless otherwise specified, all surfaces not meeting the requirements for “no finish” shall receive a smooth form finish. Use a smooth form finish on all surfaces exposed to view and liquid.
2. Provide a smooth, hard uniform texture on the concrete surface. Use plywood or fiberboard linings or forms in as large sheets as practicable and with smooth, even edges and close joints.
3. Patch tie holes and defects.
4. Provide a smooth, uniform, rubbed surface texture. Rub fins and joint marks and other irregularities with carborundum stone immediately after forms are stripped to leave a smooth, unmarred finish surface. If rubbing of surface is delayed to the point where the concrete surface is dry and cannot be rubbed to produce a smooth, uniform surface Contractor shall provide a blast finish to achieve a smooth uniform surface at no additional cost to the Owner.

G. Related Unformed Surfaces: Tops of piers, walls, bent caps and similar unformed surfaces occurring adjacent to formed surfaces shall be struck smooth after concrete is placed. Float unformed surfaces to a texture reasonably consistent with that of the formed surfaces. Final treatment on formed surfaces shall continue uniformly across the unformed surfaces.

3.5 FINISHING SLABS AND SIMILAR FLAT SURFACES

- A. Comply with the recommendations in ACI 302.1R for screeding, re-straightening and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Finish slabs and similar flat surfaces monolithically and apply as indicated in the Plans and as follows:
 1. Rough Finish.
 - a. Tank floors and slabs that receive grout or additional concrete toppings.
 - b. Provide a rough surface by screeding only without further finish.
 2. Trowel Finish
 - a. Slab surfaces exposed to view, liquids or to be covered with a coating system, flooring coverings or membranes.
 - b. After apply float finish, apply trowel finish and consolidate by hand or power driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 3. Broom Finish
 - a. Sidewalks, walkways and platforms.
 - b. Immediately after float finishing, slightly roughen trafficked surface by

brooming with fiber-bristle broom perpendicular to main traffic route.

3.6 CONCRETE CURING

A. All concrete shall be cured in accordance with the specifications. The curing methods shall be wet curing, sheet materials or membrane curing compound. Unless the curing method is specified otherwise, select one of the appropriate curing methods below.

1. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI SPEC-306.1 for cold-weather protection and with ACI SPEC-301 for hot-weather protection during curing.
2. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb./sq. ft. / h (1 kg/sq. m / h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
3. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
4. Length of Curing Period
 - a. A "curing day" shall be any day on which the atmospheric temperature taken in the shade, or the air temperature adjacent to the concrete, remains above 50° F for at least 18 hours.
 - b. Continuously cure concrete for a period until 7 curing days have been reached. In cold weather, curing may be terminated after a period of 14 consecutive days.

B. Wet Curing

1. Immediately after the finishing operations are completed or forms are stripped, the concrete shall be covered with wet cotton mats or with a temporary covering of canvas or burlap, thoroughly saturated with water before placement. A temporary covering shall be used when factors dictate that cotton mats cannot be placed immediately after finishing operations without marring the finishing of the concrete surface.
2. When temporary coverings are used keep them in place only until the surface has sufficiently hardened so that a cotton mat can be substituted without marring or disturbing the concrete finish.
3. The coverings shall remain in contact with the concrete for the duration of the curing period.
4. The coverings shall be kept saturated with water for the entire curing period.
5. Water used for curing shall be potable and free from any injurious materials or deleterious substances.

C. Sheet Curing

1. Immediately after the finishing operations are completed or forms are stripped, install sheet curing materials in accordance with all Manufacturer's recommendations.
2. Sheet curing shall be in contact with the entire concrete surface so as to prevent drying for the duration of the curing period.
3. When pedestrian traffic is unavoidable, provide suitable walkways to protect the sheet material.

D. Membrane Curing

1. Membrane curing compound is not permitted on surfaces to be rubbed or on surfaces to receive additional concrete, grout, plaster or coatings.
 2. Immediately after the finishing operations are completed or forms are stripped, apply membrane curing compound solution under pressure with a spray nozzle so the entire exposed surface is completely covered with a uniform film. The rate of application shall insure complete coverage but shall not exceed 150 square feet per gallon of curing compound.
 3. After application and under normal conditions, the curing compound shall be dry to the touch within 1 hour and shall be dry thoroughly and completely within 4 hours. When thoroughly dry it shall provide a continuous flexible membrane free from cracks and pinholes and shall remain intact during the required curing period.
 4. If the membrane seal is broken during the curing period, immediately repair it with additional curing compound.
- E. After the curing period, the temperature of the exposed surface shall not be permitted to drop faster than 30 degrees F in 24 hours.

3.7 JOINTS

- A. Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Contraction Joints in Slabs-on-Grade: Form weakened-plane sawed contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness.
- C. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

3.8 CONCRETE SURFACE REPAIRS

- A. Repair defective areas immediately after the removal of forms in accordance with this Section 02 42 00 "Removals" and Section 03 10 00 "Form Work". Repair of defective areas shall be at no additional cost to the OWNER.
- B. If the concrete surface is bulged, uneven or exhibits defects which in the ENGINEER'S opinion cannot be satisfactorily repaired, remove and replace the entire concrete section as directed at no additional cost to the OWNER.
- C. Patch tie holes immediately after removal of forms. After cleaning and thoroughly dampening the tie hole, fill solid with non-shrink, non-metallic grout.

3.9 MISCELLANEOUS ON-SITE MIXED BATCH

- A. The concrete shall be mixed in the approximate proportion of 1:2-1/2:4-1/4 and shall contain not less than one and one quarter barrels of cement per cubic yard of finished concrete. With the approval of the ENGINEER, admixtures may be added in order to increase workability.
- B. The onsite mixed batch will be subject to all testing requirements listed in this specification. The concrete shall meet or exceed strength requirements as required in this specification unless otherwise noted in the plans.

3.10 RESPONSIBILITY OF CONTRACTOR FOR STRENGTH

- C. It is the intent of these specifications that the CONTRACTOR shall guarantee that concrete of the specified compressive strength is incorporated in the structures and that the responsibility for producing the required grades of concrete is assumed by the CONTRACTOR.
- D. Should the average strengths shown by test cylinders fall below the strengths required, the ENGINEER will require any or all of the following changes: amount of cement, grading of aggregate, or ratio of the water to the cement used. If the tests disclosed that the strength of the concrete is insufficient for the structure as built, the ENGINEER may condemn the part of any structure in which concrete of insufficient strength has been placed and the CONTRACTOR, at his cost, shall remove and replace such concrete meeting these specifications.

3.11 EXPERIMENTAL CONCRETE MIXES

- A. The CONTRACTOR shall make experimental mixes prior to the placing of the concrete and at any time during the progress of the work when necessary to demonstrate that the concrete will meet these specifications. Materials for making experimental mixes shall be furnished by the CONTRACTOR and these materials shall be identical with those intended for use in the work. The cost of the materials shall be borne by the CONTRACTOR and shall be included in the price bid for concrete.

3.12 PAYMENT

- A. No separate measurement and payment will be made for the work covered under this section unless specified in the Bid Schedule. All costs in connection with this work shall be included in the applicable contract unit price for which the work pertains. Concrete encasement for underground piped utilities shall be paid for separately. Refer to the Standard Drawings for computation of encasement quantities.

END OF SECTION 03 30 00

SECTION 03 31 00 - CONSTRUCTION JOINT SEALING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work under this section shall include furnishing all labor, materials, and equipment necessary to clean and seal existing construction joints in concrete structures.

1.2 DELIVERY, STORAGE, AND HANDLING

- A. All materials shall be delivered to the site in the manufacturer's original unopened containers, with all labels and other markings intact.
- B. All materials shall be stored off the ground and protected from vandalism, the environment, and possible contamination in accordance with the manufacturer's recommendations.
- C. Materials not meeting the above shall be unacceptable and removed from the site.

1.3 SUBMITTALS

- A. All proposed materials and methods shall be submitted in accordance with Division 01.

PART 2 - PRODUCTS

2.1 GENERAL

- A. The joints shall be sealed by a one-part gun grade polyurethane sealant preceded by a primer receptive to urethane sealants. Modified amine epoxy or polyurethane grout with backer rod.

2.2 ACCEPTABLE PRODUCTS

- A. Primer:
 - 1. "Vulkem® Sealant Primer 171" as manufactured by Tremco.'
 - 2. "MasterSeal P 173" as manufactured by Master Builders Solutions.
- B. Sealant:
 - 1. "Vulkem® 116 Polyurethane Sealant" as manufactured by Tremco.
 - 2. "MasterSeal NP 1" as manufactured by Master Builders Solutions.

PART 3 - EXECUTION**3.1 ROUTING**

- A. All construction joints shall be routed or sawed to provide the correct joint shape. That shape shall be 3/4" wide by 2" deep. The joint width shall be made with one pass of the saw or router.

3.2 CLEANING

- A. After routing, the joint shall be sandblast cleaned to remove all latent material and provide a good blast profile for sealant adhesion. After sandblasting, the joint shall be blown clean.
- B. After cleaning, install a bond breaker/backing rod in the bottom of the routed joint. The rod shall be installed by roller to ensure constant depth of the joint to be sealed. Backing rod materials are to be recommended by the sealant manufacturer; however, no low melting point or bituminous products are to be used.
- C. Apply one coat of the primer to the prepared joint, exercising care to avoid excessive coverage of the adjacent surface.
- D. After the primer has cured, in accordance with the manufacturer's recommendations, apply the joint sealer to within 1/4" of the top of the joint. The sealant shall then be tooled to provide a uniform concave finish.

3.3 GENERAL INSTALLATION NOTES

- A. All joints to be sealed shall be dry.
- B. Any leaking joints shall be pressure grouted as described elsewhere.
- C. Prior to sealing, all loose or spalled concrete adjacent to the joints shall be removed and replaced as described elsewhere.
- D. No joints are to be sealed which contain new concrete which has not cured for a minimum of 28 days.

END OF SECTION 03 31 00

DIVISION 31 – EARTHWORK**SECTION 31 00 00 – GENERAL EARTHWORK****PART 1 - GENERAL****1.1 DESCRIPTION**

This section covers the requirements and procedures for excavation and backfill for structures.

1.2 STANDARD SPECIFICATIONS

- A. The following is a list of standard specifications with the accompanying abbreviations used in this specification section:
 - 1. American Association of State Highway and Transportation Officials Standard Specifications - AASHTO.

1.3 QUALITY ASSURANCE

- A. Compaction shall be in accordance with Section 31 23 33 - Trenching, Backfilling and Compaction.
- B. The OWNER shall be the sole and final judge of suitability of all materials.
- C. Materials in question, pending test results, shall not be used in the work. The CONTRACTOR shall remove all materials that fail to meet the requirements of the specifications, whether in stockpiles or in place.
- D. Fills, embankments, backfills or subgrades which do not meet the specification requirements shall be removed or recompacted until the requirements are satisfied.

1.4 PROTECTION

- A. Protection of Existing Improvements
 - 1. Protection shall be provided to prevent damage to existing improvements indicated to remain in place on the OWNER'S property and adjoining properties.
 - 2. Damaged improvements shall be restored to their original condition, as acceptable to parties having jurisdiction.
 - 3. Land areas outside the limits of permanent work performed under this contract shall be preserved in their present condition. The CONTRACTOR shall confine his construction activities to areas defined for work on the Drawings.
- B. Protection of Existing Utilities
 - 1. The CONTRACTOR shall verify all existing utility locations either shown or not shown on the drawings.

2. The CONTRACTOR shall immediately notify the OWNER and applicable utility company of any damages to existing utilities.
 3. Repairs to damaged utilities shall be made in accordance with the requirements of the OWNER and applicable utility company at no extra cost to the OWNER.
 4. The CONTRACTOR shall coordinate with the OWNER and the applicable utility company for shutoff of or connection to active utilities. Existing utility services shall not be interrupted except as authorized in writing by the OWNER.
- C. Protection of Work Site: Barricades or other type protectors shall be provided to prevent unauthorized personnel from entering work sites.

1.5 JOB CONDITIONS

A. Classification of Excavation

1. No classification shall be made to differentiate the various surface and subsurface conditions the CONTRACTOR may encounter during his performance under this contract.
2. It is the CONTRACTOR'S sole responsibility to verify the site surface and subsurface conditions.

B. Dewatering

1. Excavation and embankment shall be performed in such manner that the area of the site and the area immediately surrounding the site will be continually and effectively drained by gravity or temporary pumps.
2. Water shall not be permitted to accumulate in excavations or other areas of the site.
3. The excavation shall be drained by methods which prevent the softening of subgrades and embankments.

C. Blasting shall not be allowed.

1. Shoring, including sheet piling, shall be furnished and installed as necessary to protect workmen, banks, adjacent paving, structures, and utilities.
2. Shoring, bracing, and sheeting shall be removed as excavations are backfilled, in a manner to prevent caving.

PART 2 - PRODUCTS

2.1 SUITABLE MATERIALS

- A. Suitable materials for fill and, backfill include materials that are free of debris, roots, organic or frozen materials, stones having a maximum dimension of four (4) inches in the upper six (6) inches of fill or six (6) inches in the remainder of fill.

- B. Otherwise, suitable material which is unsuitable due to excess moisture content will not be classified as unsuitable material unless it cannot be dried by manipulation, aeration or blending with other materials to the satisfaction of the OWNER.
- C. Unsuitable materials shall include those materials that are determined by the OWNER to be inadequate for providing a stable slope, fill, subgrade, or foundation for structure.
- D. Expansive clay soils shall be classified as unsuitable unless treated or mixed in a manner approved by the OWNER.

2.2 CAPILLARY WATER BARRIER

A. Coarse Aggregate (Gravel) Capillary Water Barrier.

- 1. Coarse aggregate shall meet the requirements of AASHTO M80.
- 2. Coarse aggregate shall consist of gravel, crushed gravel, or crushed stone.
- 3. Gradation of coarse aggregate shall conform to the requirements of AASHTO M 43, Size Number 57:

Sieve	Mass-Percent Passing
1 ½ inches	(38 mm) 100
1 inch	95 – 100
½ inch (13 mm)	25 – 60
No. 4	0 – 10
No. 8	0 - 5

- 4. Maximum allowable percent of deleterious substances shall meet the requirements of AASHTO M 80, Class B.

B. Fine Aggregate (Sand) Capillary Water Barrier:

- 1. Fine aggregate shall meet the requirements of AASHTO M6.
- 2. In general, fine aggregate shall consist of natural sand having hard, strong, durable particles free from deleterious substances and meeting the following gradation requirements:

Sieve	Mass-Percent Passing
3/8 inch (9.5 mm)	100
No. 4	95 – 100
No. 16	45 – 80
No. 50	10 - 30
No. 100	2 - 10

2.3 FINE AGGREGATE (SAND) BACKFILL

- A. Fine aggregate backfill shall meet the requirements of Paragraph 2.2.B.

2.4 SELECTION OF BORROW MATERIAL

- A. Borrow material, if required, shall be selected to meet requirements and conditions of the particular fill for which it is to be used.
- B. For borrow material obtained outside the limits of the project site, the CONTRACTOR shall obtain the right to procure material and shall pay all royalties and other charges involved.

PART 3 - EXECUTION

3.1 EXCAVATION

- A. Excavation, regardless of material encountered, shall conform to the dimensions and elevations indicated on the Drawings for each building and structure, and shall include trenching for utility and foundation drainage systems to a point five (5) feet beyond the building line of each building and structure.
- B. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms, installation of services, and for inspection, except where the concrete for walls and footings is authorized by the OWNER to be deposited directly against excavated surfaces.
- C. Suitable excavated material shall be transported to and placed to fill areas within the limits of the work.
- D. Unsuitable materials encountered within the limits of the work shall be excavated below grade and replaced with suitable materials as directed by the OWNER, except that concrete footings shall be increased in thickness to the bottom of the over-depth excavations and over-break in rock excavation.
- E. No excavated material shall be wasted without the authorization of the OWNER.
 - 1. Surplus excavated material and unsuitable material shall be disposed of by the CONTRACTOR at his own expense and responsibility.
 - 2. Material authorized to be wasted shall be disposed of in such manner as not to obstruct the flow characteristics of any stream or to impair the efficiency or appearance of any structure.
- F. No excavated material shall be deposited in a manner that may endanger a partly finished structure by direct pressure or by overloading banks contiguous to the operations or that may otherwise be detrimental to the completed work.
- G. Blasting shall not be allowed.

3.2 PREPARATION OF GROUND SURFACE FOR FILL

- A. Areas upon which fills are to be placed shall be cleared and grubbed before the fill is started.

- B. Sloped ground surfaces steeper than one (1) vertical to four (4) horizontal on which fill is to be placed shall be plowed, stepped, or benched, or broken up as directed by the OWNER, in such a manner that the fill material will bond with the existing surface.
- C. When surfaces on which fills are to be placed do not meet the specified density requirements, the ground surface shall be broken up, pulverized, and compacted to the specified density.
- D. When surfaces on which fills are to be placed do not meet the specified moisture content requirements, the ground shall be wetted, aerated, or dried to the specified density.
- E. When the subgrade is part fill and part excavation, the excavated portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill.

3.3 FILL AND BACKFILL

- A. Fills and backfills shall conform to the dimensions and elevations indicated on the Drawings for each building and structure.
- B. Placing Fill and Backfill
 - 1. Suitable material shall be placed in successive horizontal uniformly spread layers of loose material not more than six (6) inches thick, except that in areas not accessible or permitted for the use of self-propelled rollers or vibrators, the loose layer shall be four (4) inches thick.
 - 2. Fills and backfills shall not be placed in wet or frozen areas.
- C. Backfill
 - 1. Backfill shall not begin until construction below finish grade has been completed, underground utility systems have been inspected and tested, form removed, and the excavation cleaned of trash and debris.
 - 2. Fine aggregate backfill shall be placed to the dimensions and elevations indicated on the Drawings.
 - 3. Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation or retaining walls than a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted by power-driven hand tampers suitable for the material being compacted.
 - 4. Backfill shall be placed carefully around pipes to avoid damage to coatings.
 - 5. Backfill shall not be placed against foundation walls prior to 7 days after placement of the walls.
 - 6. As far as practical, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall.

7. Where fill or backfill is to be placed and compacted against structure walls, the walls shall be supported laterally as necessary to prevent damaging or displacing the walls. Any wall so damaged as a result of the CONTRACTOR'S operation shall be completely and promptly replaced.

3.4 COMPACTION

- A. For fill and backfill compaction densities and moisture contents, see Section 31 23 33.
- B. Compaction shall be accomplished by those methods listed in Section 31 23 33. Material shall be aerated or moistened to maintain the required moisture content.
- C. Fine aggregate backfill shall be compacted with a minimum of two (2) passes of a power-driven hand tamper.

3.5 CAPILLARY WATER BARRIER

- A. Either coarse aggregate (gravel) or fine aggregate (sand) capillary water barriers shall be installed under slabs-on-grade as indicated on the Drawings.
- B. The capillary water barrier shall be placed directly on the subgrade after the subgrade has been compacted to the required density and placed to the elevation indicated on the Drawings.
- C. The barrier shall be constructed to the thickness shown in layers not exceeding six (6) inches in compacted thickness.
- D. Each layer shall be compacted to the required density, with a minimum of two passes of a plate-type vibratory compactor.

3.6 FINISH GRADING

- A. Excavated and filled sections, and adjacent transition areas, shall be uniformly smoothly graded. The finished surface shall be reasonably smooth, compacted, and free from irregular surface changes.
- B. The degree of finish shall be that ordinarily obtainable from blade-grader operations, except as otherwise specified.
- C. The surface of fills or excavated areas for slabs-on-grade shall not vary more than 0.05 foot from the established grade.
- D. Other finished surfaces shall not vary more than 0.15 foot from the established grade and cross section and shall be free of depressed areas where water would pond.

END OF SECTION 31 00 00

SECTION 31 22 00 – SITE GRADING**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. The work covered under this item includes all supervision, labor, equipment, and materials required for rough and final site grading. Included in this item are any stripping, filling, excavating, backfilling and compaction required to complete the grading as shown on the plans or as specified herein.

1.2 DUST AND BLOWING MATERIAL CONTROL

- A. The CONTRACTOR shall use all means necessary to control dust on and near the site and on and near all off-site borrow areas if such dust is caused by the CONTRACTOR'S operations during performance of the work or if resulting from the condition in which the CONTRACTOR leaves the site.
- B. All surfaces shall be thoroughly moistened as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of other work on the site.
- C. Any landfilled material which is uncovered during any construction operation will immediately be covered with a minimum of 12 inches of soil and compacted to 90% Standard Proctor Density. The CONTRACTOR will be responsible for ensuring that existing landfilled material is not allowed to be blown or carried off the site and will clean up any material uncovered by his operations which is blown from the site.
- D. Protection of Existing Utilities
 - 1. The CONTRACTOR shall verify all existing utility locations either shown or not shown on the Drawings.
 - 2. The CONTRACTOR shall immediately notify the OWNER and applicable utility company of any damages to existing utilities.
 - 3. Repairs to damaged utilities shall be made in accordance with the requirements of the OWNER and applicable utility company at no extra cost to the OWNER.
 - 4. The CONTRACTOR shall coordinate with the OWNER and the applicable utility company for shutoff of or connection to active utilities. Existing utility services shall not be interrupted except as authorized in writing by the OWNER.
- E. Protection of Work Site: Barricades or other type protectors shall be provided to prevent unauthorized personnel from entering work sites.

PART 2 - PRODUCTS**2.1 FILL MATERIAL, GENERAL**

- A. All fill material shall be subject to the approval of the ENGINEER.

2.2 ON-SITE FILL MATERIAL

- A. All on-site fill material used shall be soil or soil-rock mixture which is free from organic matter and other deleterious substance. It shall contain no rocks or lumps over 6 inches in greatest dimension, and not more than 15 percent of the rocks or lumps shall be larger than 2-1/2 inches in greatest dimension.

2.3 IMPORTED FILL MATERIAL (BORROW)

- A. All imported fill material shall meet the requirements stated in Section 31 00 00 and, in addition, shall be predominantly granular with a maximum particle size of 2 inches and a plasticity index of 12 or less.
- B. Any fill material, including topsoil, must be approved by the ENGINEER prior to placement. The CONTRACTOR shall notify the ENGINEER at least four working days in advance of intention to import material, designating the location of proposed borrow material. The CONTRACTOR shall be responsible for obtaining any permits or permission required for ENGINEER to sample, as necessary, from the borrow area for the purpose of making acceptance tests to prove the quality of proposed borrow material.

2.4 OTHER MATERIALS

- A. All other materials, not specifically described but required for a complete and proper installation, shall be as selected by the CONTRACTOR subject to the approval of the ENGINEER.

PART 3 – EXECUTION**3.1 FINISH ELEVATIONS AND LINES**

- A. Grade stakes will be set by the CONTRACTOR and approved by OWNER'S REPRESENTATIVE establishing rough and finish elevations and lines. The CONTRACTOR shall take care to preserve all survey control data and monuments set by the ENGINEER and, if displaced or lost, immediately replace to the approval of the ENGINEER and at no additional cost to the OWNER.

3.2 GRADING**A. General Requirements**

- 1. The CONTRACTOR will perform all rough and finish grading required to obtain the elevations shown in the Drawings.

B. Grading Tolerances

- 1. All rough and finished grading shall be performed with approved equipment to a tolerance of plus or minus 0.1 ft.

C. Compaction

1. Existing cover material will be compacted prior to the placement of any additional fill material. Two passes, at right angles to each other, will be made on existing cover with a sheep's foot roller, to obtain this compaction.
2. New fill material and material disturbed by grading will be compacted to a minimum of 90% Standard Proctor Density using approved compaction equipment.

D. Treatment after Completion of Grading

1. After grading is completed and the ENGINEER has finished his inspection, no further excavating, filling, or grading except with the approval of an inspection of the ENGINEER will be allowed.
2. The CONTRACTOR shall use all means necessary to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

END OF SECTION 31 22 00

SECTION 31 23 33 - TRENCHING, BACKFILLING & COMPACTION**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. The work under this item shall include all earth, shale, gravel, loose rock, solid rock, debris, junk and/or other material excavated or otherwise removed in the preparation of the trench, all work in connection with the excavation, removal and subsequent handling and disposal of such material regardless of its type, character, composition or condition; subgrade preparation, all sheeting, piling, shoring, bracing; and dewatering of trenches; protection of adjacent property; backfilling; sand cushion; grade base stabilization; all specified backfill consolidation; and other work necessary or required. The CONTRACTOR shall fully inform himself of the conditions to be encountered and shall include all payment for same in his bid prices stated in the proposal. No payment will be made for extra work caused by unusual conditions not anticipated by the CONTRACTOR.

PART 2 - PRODUCTS**2.1 STANDARD BEDDING MATERIAL**

- A. Standard Bedding Material (SBM) shall meet the requirements of ASTM D-2321 for the class of materials described in this subsection.
1. Class I shall be an angular, 1/4 in. to 1-1/2 in. graded crushed stone.
 2. Class II shall include coarse sands and gravels with maximum particle size of 1-1/2 inch. These materials may have small percentages of fines but shall be generally granular and non-cohesive, either wet or dry. Class II materials shall include Unified Soil Classification System (USCS) Soil Types GW, GP, SW and SP.
 3. Class III shall include fine sands, sand-clay mixtures and gravel-clay mixtures. USCS Soil Types GM, GC, SM and SC are included in this class.

2.2 BACKFILL

- A. Initial Backfill material used shall be as described below and/or as shown on the standard details.
1. Paved area: SBM material in accordance with section 2.1 of this specification.
 2. Non-Paved area:
 - a. For flexible pipe, SBM material used shall be in accordance with section 2.1 of this specifications at depths greater than 10-feet. Select Fill shall be used from depth 0-10 feet.
 - b. For rigid pipe, Select Fill shall be used.
 - i. Select Fill consists of excavated materials free of rocks larger than 2-1/2 inches, organic material, rubbish, debris, and all other objectionable material.

- B. Final Backfill material used shall be as described below and/or as shown on the standard details.
 - 1. Paved area: SBM material in accordance with section 2.1 of this specification.
 - 2. Non-Paved area: Excavated material shall be used.

PART 3 - EXECUTION

3.1 TRENCH EXCAVATION

- A. The trench shall be excavated so that the pipe can be laid to the alignment and grades shown on the drawings, or as directed by the OWNER'S REPRESENTATIVE. It shall be excavated a maximum of 150 feet in advance of pipe laying, or less, as permitted by the OWNER'S REPRESENTATIVE. Opening of trenches in excess of the maximum requires specific approval of the ENGINEER.
- B. Trenches shall be dry when the trench bottom is prepared. The trench bottom shall be shaped so that even bearing is obtained for the barrel of the pipe, with the bells unsupported. Any required dewatering shall be incidental to the trenching.
- C. From 12-inches above the pipe and below, the standard trench width as shown on the standard drawings shall not be exceeded. If, for any reason this portion of the trench exceeds the permitted width and if the OWNER'S REPRESENTATIVE shall determine that cradling or encasement then is required, said concrete cradle or encasement shall be installed.
- D. Any part of the bottom of the trench excavated more than 4 inches below the specified grade shall be considered incidental and shall be corrected with approved material as directed by the OWNER'S REPRESENTATIVE. In the event suitable material is not available, standard bedding material shall be used. When rock is encountered and concrete cradle is required, it shall be excavated 4 inches below the bottom of the pipe and the trench refilled to grade with standard bedding material.
- E. When quicksand or other unstable earth is encountered, the CONTRACTOR shall excavate to sufficient depth to permit backfilling with crushed stone to provide a stable base for the pipe and shall be considered incidental.

3.2 STANDARD BEDDING MATERIAL

- A. Standard Bedding Material (SBM) shall be used for embedding all pipe as shown on the Standard Details. SBM shall be carefully placed, compacted and tested along the entire length of the pipe to be installed to the limits of trench excavation until the thickness specified in the Standard Details is obtained. This layer of bedding material shall be smoothed by flat bottomed shovel or other appropriate means prior to the placement of pipe.
 - 1. Gravity Pipelines: SBM shall be placed simultaneously on each side of pipe and shall be carefully compacted in accordance with the SPECIFICATIONS for the type of pipe to be installed.

- a. Class I SBM requires little or no compaction due to the nature of the angular particles.
 - b. Class II SBM shall be compacted to a minimum 85% Standard Proctor Density using hand or mechanical tamping methods. Slightly damp material will generally result in maximum compaction with minimum effort. Avoid saturation of Class II SBM.
 - c. Class III SBM shall be compacted to a minimum 90% Standard Proctor Density using hand or mechanical methods. Take care to avoid excessive moisture in using Class III SBM.
2. Pressure Pipelines (except Rural Water): SBM shall be placed simultaneously on each side of pipe and compacted by hand sufficiently to maintain proper grade and alignment.

3.3 BACKFILL

- A. When the type of backfill material to be placed above the standard bedding material is not indicated on the drawings or specified, the backfill may be made with the excavated material, provided that such material, in the opinion of the OWNER'S REPRESENTATIVE, is suitable for backfilling. In the event the excavated material is not suitable, standard bedding material or other approved material shall be used.
- B. The trench shall be backfilled 12" above the pipe by hand or by other methods approved by the OWNER'S REPRESENTATIVE. Special care shall be used in placing this portion of the backfill to avoid damaging or moving the pipe. The remainder of the trench may be backfilled by mechanical methods. Backfilling operation shall be completed within 100 feet or less of the finished line at all times as directed by the OWNER'S REPRESENTATIVE.
- C. ALL clearing requiring proposed underground sewer line trench backfill materials and its placement must meet referenced ASTM D 2321, in accordance with OAC 252:656-5-3(b).

3.4 COMPACTION

- A. All trenching and backfill shall be tested every on every 8-inch lift, every 400 lineal feet for sanitary sewer, every 800 lineal feet for waterlines and all other applications. The trenching and backfill shall meet the specification listed in section 3.2 of this specification or otherwise the required standards below:
 - 1. Paved area: 95% Standard Proctor Density (SPD)
 - 2. Non-Paved area: 90% SPD if cover is less than 10-feet and 95% SPD if cover is greater than 10-feet
- B. If the backfilling has been completed and the backfill material does not meet the requirements for compaction, all the material shall be removed and hauled from the job site and the trenches refilled with material as specified above. Boring will be required at all paved street crossings unless otherwise specified or approved by the ENGINEER.

END OF SECTION 31 23 33

SECTION 31 25 00 - EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary and permanent erosion control systems.
2. Slope protection systems.

1.2 REFERENCES

A. United States Environmental Protection Agency (EPA):

1. NPDES - National Pollutant Discharge Elimination System.

B. Oklahoma Department of Environmental Quality (ODEQ):

1. DEQ General Storm Water Permit (OKR10 and OKR05)

C. Oklahoma Department of Transportation (ODOT):

1. ODOT - State of Oklahoma Department of Transportation Standard Specifications for Highway Construction, Section 735 - Material for Roadside Development and Erosion Control.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the following ODOT standards:

1. Section 220 – Management of Erosion Sedimentation, and Storm Water Pollution Prevention and Control
2. Section 221 - Temporary Sediment
3. Section 230 - Sodding and Sprigging.

B. Regulatory Requirements: Conform to requirements of local Authority Having Jurisdiction for prevention of erosion and sediment control.

1. Conform to NPDES and ODEQ requirements, where required.

1.4 PROJECT CONDITIONS

A. Environmental Requirements: Protect adjacent properties and water resources from erosion and sediment damage throughout work. Take all necessary measures to prevent sedimentation from construction operations to enter adjacent property. Offsite discharge of sedimentation is not permitted.

B. Storm Water Pollution Prevention Plan: Maintain plan at project site at all times available for inspection during contract duration.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Quick Growing Grasses: Wheat, rye, or oats.
- B. Straw Bales: Free of weed seed.
- C. Fencing for Siltation Control: UV resistant geotextile fabric.
- D. Slab Sod: Rectangular slabs of Bermuda grass.
- E. Temporary Mulches: Loose straw, netting, wood cellulose, or agricultural silage free of seed.
- F. Bale Stakes:
 - 1. Minimum 3 feet length.
 - 2. 2 No. 4 steel reinforcing bars or,
 - 3. 2 steel pickets or,
 - 4. 2 - 2x2 inch hardwood stakes driven 18 inches to 24 inches into ground.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive work.
- B. Report in writing to ENGINEER prevailing conditions that will adversely affect satisfactory execution of the work of this section. Do not proceed with work until unsatisfactory conditions have been corrected.
- C. By beginning work, CONTRACTOR accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the OWNER.

3.2 EROSION CONTROL AND SLOPE PROTECTION

- A. Provide erosion control and slope protection measures to prevent sediment from site entering adjacent property or public right-of-way to include but not be limited to:
 - 1. Temporary silt fences.
 - 2. Straw bales placed around culvert openings or inlets.
 - 3. Diked area with earth berm and silt trap for draining dredged material.
- B. Install erosion control and slope protection in accordance with ODOT standards.
- C. Place all erosion and siltation control measures before start of earthwork and grading construction operations.

- D. Mulch and seed all storm and sanitary sewer trenches not in streets no later than 10 days after backfill. Do not permit more than 500 feet of trench to be open at any one time.
- E. Place all excavated material on uphill side of trenches where possible. Do not place materials in stream beds. Seed any stockpiled material which remains in place longer than 30 days with temporary vegetation and mulch.
- F. Mulch and seed all temporary earth berms, diversions, erosion barriers and temporary stockpiles with temporary vegetative cover with 10 days after grading.
- G. Do not stockpile or otherwise place dredged, excavated or other material, at any time, in or near stream bed which may increase turbidity of water. If turbidity producing materials are present, hold surface drainage from cuts and fills within construction area and from borrow and waste disposal areas in suitable sedimentation ponds or grade surface drainage to control erosion within acceptable limits. Provide and maintain temporary erosion and sediment control measures such as berms, dikes, drains, or sedimentation basins, if required, until permanent damage and erosion control facilities are completed and operative. Hold to minimum area of bare soil exposed at any one time by construction operations.
- H. Drain dredged material minimum 7 days. Store material for drainage to a maximum height of 4 feet.
- I. OWNER'S REPRESENTATIVE may direct CONTRACTOR to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and may direct CONTRACTOR to provide immediate permanent or temporary erosion control measures.
- J. Maintain temporary erosion control systems as directed by OWNER'S Representative to control siltation during construction. Provide maintenance or additional work directed by OWNER'S REPRESENTATIVE immediately upon notification by OWNER'S REPRESENTATIVE.

END OF SECTION 31 25 00

SECTION 32 12 13.13 – TACK COAT**PART 1 – GENERAL****1.1 DESCRIPTION**

- A. This work consists of preparing and treating an existing bituminous or concrete surface with bituminous material.
1. Original Emulsion. A mixture of asphalt, water, and a small amount of emulsifying agent to maintain a uniform blend.
 2. Diluted Emulsion. An original emulsion diluted with additional water to reduce the viscosity and to allow easier spraying, typically used for fog seals.
 3. Residual Asphalt Content. The amount of asphalt remaining on the pavement surface after all of the water, both in the original emulsion and any additional water, has evaporated.

1.2 MATERIALS

- A. Provide materials in accordance with Section 32 12 16.39 Part 2, "Asphalt Materials."

1.3 EQUIPMENT

- A. Distributors and Supply Tanks
1. Provide distributors and supply tanks capable of uniformly applying bituminous material in accordance with the following:
 - a. At the temperatures specified in the relevant specification sections;
 - b. On variable widths of surface not to exceed 26 ft [7.8 m];
 - c. At rates from 0.010 gal/yd² to 1.000 gal/yd² [0.045 L/m² to 4.525 L/m²]; and
 - d. With constant pressure and uniform temperature.
 2. Ensure the distributor can apply material to vertical faces of asphalt pavement at the joints between paving operations.
 3. Prevent variation that exceeds the specified application rate by more than 0.01 gal/yd² [0.045 L/m²].
 4. Provide a distributor equipped with the following:
 - a. A tachometer,
 - b. Pressure gauges,
 - c. Volume-metering devices or a calibrated tank,
 - d. A thermometer for measuring temperatures of tank contents,
 - e. A power unit for the pump,
 - f. Full circulation spray bars adjustable vertically and laterally,

- g. A positive shut-off valve, and
 - h. Fittings that prevent bituminous material from dripping.
5. Frequently check and adjust the angle of the spray nozzles and the height of the spray bar to ensure uniform distribution of the bituminous material. The ENGINEER will not allow drilling, clogging, or streaking the bituminous material. If any of these conditions occur, stop the operation and correct the problems creating these conditions before resuming distribution.
 6. Check the rate and uniformity of distribution if directed by the ENGINEER. Provide supply tanks in accordance with AASHTO M 156, Section 3.

B. Compactors

1. Provide rollers of the following types:
 - a. Vibratory steel-wheel,
 - b. Non-vibratory steel-wheel,
 - c. Pneumatic tire, or
 - d. A combination of the three types.
2. Provide rollers in good condition, capable of reversing without backlash, and operating at speeds that do not displace the bituminous mixture.
3. Equip vibratory rollers with working amplitude controls or frequency controls designed specifically for the compaction of the specified bituminous material.
4. Use rollers of a type, number, and weight to complete the compaction of the bituminous material before its temperature drops below the specified minimum.
5. Do not use equipment that crushes the aggregate in the bituminous material.

1.4 CONSTRUCTION METHODS

A. Preparation

1. Clean the existing roadbed surface before placing tack coat. Paint a thin, uniform tack coat on all surfaces of curbs and gutters, manholes, and other structures that will come in contact with hot mix asphalt. Ensure the tack coat applications minimize damage and inconvenience to traffic and allow one-way traffic without pickup or tracking the bituminous material.
2. Do not apply tack coat during wet or cold weather or in windy conditions that would cause the tack coat emulsion to drift. Do not apply tack coat to wet surfaces with free standing water. The ENGINEER will allow tack coat application to damp surfaces.
3. The ENGINEER must approve of the following before application:
 - a. Quantity,
 - b. Rate of application,
 - c. Temperature, and

d. Areas to be treated.

B. Fog Seal

1. Apply the fog seal at a rate of 0.100 gal/yd² [0.455 L/m²] of diluted emulsion diluted at 5:1 water to original emulsion. Alter the application rate or dilution ratio as directed by the ENGINEER (based on weather, type of emulsion, and surface type or layer).

C. Tack Coat

1. Apply the tack coat or NT tack material as shown in Table 1 on the following page, unless otherwise required by the Contract. Alter the application rate as directed by the ENGINEER (based on weather and surface type or layer). Use the highest rate in the table for the surface type or layer (top or bottom).

Table 1		
Tack Application Rates		
Surface Type/Layer	Original Emulsion gal/yd² [L/m²]	Residual gal/yd² [L/m²]
New Asphalt (bottom)	0.060 [0.270]	0.035 [0.160]
Old Asphalt (bottom)	0.085 [0.385]	0.050 [0.225]
Milled (bottom)	0.085 [0.385]	0.050 [0.225]
New Fabric (bottom)	----	0.200 [0.905]
PFC, OGFSC (top)	0.100 [0.455]	0.060 [0.270]
UTBWC (top)	0.200 [0.905]	0.120 [0.545]
PCC (bottom)	0.075 [0.340]	0.45 .205]

2. Ensure that the tack breaks before the application of the next surfacing layer.
3. Re-apply tack at a rate that ensures proper bonding if the tack loses its adhesive properties or is damaged by traffic before being covered by the next surfacing layer, as directed by the ENGINEER, at no additional cost to the OWNER.

1.5 METHOD OF MEASUREMENT

- A. The ENGINEER will measure the volume of Emulsion for Fog Seal, Tack Coat, and NT Tack Material as delivered, before dilution.
- B. The ENGINEER will measure bituminous material by the gallon [liter] or ton [metric ton].

1.6 BASIS OF PAYMENT

- A. The OWNER will pay for each pay item at the contract unit price per the specified pay unit as follows:

Pay Item:	Pay Unit:
(A) FOG SEAL	Gallon [Liter]
(B) TACK COAT	Gallon [Liter]
(C) NT TACK MATERIAL	Gallon [Liter]

- B. The OWNER considers the cost of water for dilution to be included in the contract unit price for *Fog Seal* and *Tack Coat*.

END OF SECTION 32 12 13.13

SECTION 32 12 16.39 – PLANT MIX BITUMINOUS BASES AND SURFACES**PART 1 – MATERIALS****1.1 MATERIAL APPROVAL**

- A. ENGINEER must approve aggregate sources and blend percentages on a project basis before use.
- B. Stockpile the aggregate in accordance with Section 1.2. The ENGINEER may accept aggregates in stockpiles and plant mixed materials after blending and mixing at the plant. Obtain asphalt from an approved source in accordance with Subsection 4.1B.

1.2 STORAGE AND HANDLING OF MATERIAL

- A. General
 - 1. Store and handle materials to preserve their quality and fitness for the work. Transport bulk materials in vehicles constructed to prevent loss or segregation after loading and measuring. Store materials to facilitate prompt inspection. Materials will be subject to inspection and retesting before incorporation in the work in accordance with Subsection 1.3, "Samples, Tests, and Cited Specifications."
 - 2. At the CONTRACTOR'S request, the ENGINEER may allow the use of approved portions of the right- of-way for storing materials and the CONTRACTOR'S plant and equipment. As part of the request for use of the site, provide the ENGINEER with written documentation of the location of the proposed site, access and egress points, a proposed erosion control plan, a proposed traffic control plan, and any other information required by the ENGINEER relevant to use of the site for materials and equipment storage and plant set up. Provide additional storage space as necessary at no additional cost to the OWNER.
 - 3. For controlled access facilities, the CONTRACTOR must obtain approval from the ENGINEER, subject to the approval of FHWA, prior to altering, severing or removing any right-of-way fences. Do not use private property for storage without prior written permission of the OWNER or lessee. If requested, provide copies of such written permission to the ENGINEER.
 - 4. When allowed use of approved portions of the right-of-way for establishing asphalt or concrete plants, such plants must be established for the sole purpose of providing material for the respective project. Material production for other projects will not be allowed.
 - 5. Restore storage and plant sites on the right-of-way to their original condition at no additional cost to the OWNER.

1.3 SAMPLES, TESTS, AND CITED SPECIFICATIONS

- A. The ENGINEER will inspect, test, and approve material before its incorporation in the work. Unless otherwise specified, tests will be performed using the most recent cited standard methods or specifications, AASHTO, ASTM, or other referenced authority.

For differing test procedures, the ENGINEER will use the following order of precedence:

1. AASHTO, and
 2. ASTM.
- B. For acceptance testing, samples will be taken and tested by certified technicians.
- C. The ENGINEER may inspect, test, or reject material before or during its incorporation into the work. The ENGINEER will address unacceptable material in accordance with Section 01 45 00, "Quality Control." The ENGINEER may retest material and reject material that does not meet the requirements of the contract documents, even if the material was previously tested and conditionally approved at the source of supply. The ENGINEER will provide copies of test results to the CONTRACTOR upon request.

1.4 MINERAL AGGREGATE

- A. Provide mineral aggregate composed of coarse aggregate, fine aggregate, and mineral filler in accordance with these specifications. If crushing natural gravel for mixes, the ENGINEER may require a washing operation to separate fines from the gravel. Different materials are not allowed to be blended in the same storage or feeder. Provide aggregates in accordance with Table 1 below.

Table 1 Physical Properties of Aggregates								
Test	Aggregates to be used in:							
	Superpave, Rich Intermediate Layer ⁱ			Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Surface Course	Open Graded Bituminous Base
	PG 64	PG 70	PG 76	PG76	PG76	PG64	PG76	PG64
L.A. Abrasion ^a , % wear	≤ 40	≤ 40	≤ 40	≤ 30	≤ 30	≤ 40	≤ 30	≤ 40
Micro-Deval ^a , % wear	—	—	≤2 5	≤25	≤25	—	≤ 25	—
Sand equivalent ^b	≥ 40	≥ 45	≥ 50	—	—	≥ 40	—	—
Mechani cally Fracture d Faces ^{b, c, h} , %	≥ 85/ 80	≥ 95/ 90	≥ 98/ 95	≥ 98/95	≥ 98/95	≥ 85/80	≥ 98/95	≥ 85/80
Aggregate Durability Index ^a	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40
Insoluble Residue ^d , ^e , %	≥ 30	≥ 40	≥ 40	≥ 40	≥ 40	—	≥ 40	—
Flat and Elongated ^{b, c, f} , %	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
Natural Sand and Gravel ^b , %	≤ 15	≤ 15	≤ 15	0	0	≤ 15	0	0
Clay Balls and Friable Particles ^g , %	≤ 1.0	≤ 1.0	≤ 1.0	0	0	≤ 1.0	0	0

Table 1 Continued Physical Properties of Aggregates								
Test	Aggregates to be used in:							
	Superpave, Rich Intermediate Layer ⁱ			Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Surface Course	Open Graded Bituminous Base
	PG 64	PG 70	PG 76	PG76	PG76	PG64	PG76	PG64
Soft Particles ^a , %	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Sticks or Roots ^a , %	≤ 0.5	≤ 0.5	≤ 0.5	0	0	≤ 0.5	0	0
Note: For this table: PG64, PG70, and PG76 refer to the high temperature grade of the binder. Unless otherwise noted, specifications for PG binder grades higher than PG76 will use PG76 specifications. ^a Applies to each source. ^b Applies to the combined aggregate. Assume 10% natural sand in coarse RAP and 20% in fine RAP for mix design purposes. ^c Applies to the aggregate retained on the No. 4 [4.75 mm] sieve. ^d Applies to the combined coarse aggregate. ^e Applies to the coarse aggregate in the surface course. Does not apply to shoulders, driveways, and temporary detours. ^f A flat and elongated piece has a length greater than five times the thickness. ^g Applies to combined aggregate. If the maximum for the combined aggregate is not exceeded, the ENGINEER will allow 1.5% for one source. ^h In the mechanically fractured faces requirement format "xx/yy," "xx" is the minimum percentage of coarse aggregate requiring one fractured face, and "yy" is the percentage requiring two fractured faces. ⁱ Only applies to PG 76E-28.								

- B. Ensure a crusher run or similarly graded aggregate is not the only source of crushed coarse aggregate in asphalt concrete.

1.5 COARSE AGGREGATE

- A. Coarse aggregate is defined as that part of the aggregate retained on the No. 8 [2.36 mm] sieve. Provide coarse aggregate consisting of clean, tough and durable particles that are free of soft and disintegrated pieces, shale, clay, organic, or other deleterious material.
- B. Natural gravel is not allowed as a source of insoluble material unless it is crushed so that at least 75 percent of the material retained on the No. 4 (4.75 mm) sieve has at least two mechanically fractured faces.

1.6 FINE AGGREGATE

- A. Fine aggregate is defined as that part of the aggregate that passes the No. 8 (2.36 mm) sieve and consists of hard, durable natural sand grains, crushed stone, stone dust, crushed gravel, mine chat, jig sand or any combination of these. Produce crushed materials from a source that meets the requirements for coarse aggregate in Table 1.

1.7 MINERAL FILLER

- A. If required by the contract documents, provide mineral filler in accordance with AASHTO M 17.

PART 2 – ASPHALT MATERIALS

2.1 ASPHALT REQUIREMENTS

- A. Provide asphalt cement in accordance with AASHTO M 320 and Table 2.

Table 2 Additional Requirements to AASHTO M 320 for Asphalt Cement			
Test	PG 64-22 OK	PG 70-28 OK	PG 76-28 OK
Elastic recovery at 77°F (25°C), %	-----	≥65	≥75
Separation ^a , %	-----	≤10	≤10
Original DSR $G^*/\sin(\delta)$, kPa	≤2.50	≤2.50	≤2.50
RTFO DSR $G^*/\sin(\delta)$, kPa	≤5.50	≤5.50	≤5.50
PAV DSR change in testing temperature, °F (°C)	-----	77 [25]	77 [25]
Spot test ^b	Negative	-----	-----
Flash point, °F (°C)	≥500 [260]	≥500 [260]	≥500 [260]
Solubility in trichloroethylene, %	≥99	≥99	≥99
Note: Asphalt binder suppliers will provide handling requirements and recommended field mixing and compaction temperatures for their product to the hot-mix producer. ^a Separation test samples are prepared in accordance with ASTM D 5976 but are reported as the difference in G^* between the top and bottom samples. ^b Spot test using solvent blend of 65 percent heptane and 35 percent xylene by volume.			

- B. Provide medium-curing cutback asphalt in accordance with AASHTO M 82 for the asphalt type and grade required by the contract documents. The spot test is required

using a solvent blend of 65 percent heptane and 35 percent xylene by volume. Residue may also be obtained by evaporation.

C. Provide emulsified asphalt in accordance with AASHTO M 140 for the asphalt type and grade required by the contract documents with the following exception:

1. The minimum Saybolt Furol Viscosity for RS-2 at 122°F (50°C) is 150.
2. Residue may also be obtained by evaporation.

D. Provide cationic emulsified asphalt in accordance with AASHTO M 208 for the asphalt type and grade required by the contract documents with the following exception:

1. The minimum Saybolt Furol Viscosity for CRS-2 at 122°F (50°C) is 150.
2. Perform the demulsibility test within 30 days of shipment. If the particle charge test is inconclusive, the ENGINEER will approve material with a maximum pH of 6.7. Residue may also be obtained by evaporation.
3. Provide polymer modified cationic emulsified asphalt in accordance with Table 3 for the asphalt type and grade required by the contract documents.

Table 3 Requirements for Polymer Modified Cationic Emulsified Asphalt			
Test	Rapid-Setting	Rapid-Setting	Slow-Setting
	PMCRS-1s	PMCRS-2s ^a	PMCSS-1h
Viscosity, Saybolt Furol, 122°F [50°C], s	25 – 125	125 – 400	—
Storage stability test 24 hr, %	≤1	—	≤1
Settlement test ^b , 5 day, %	—	≤5%	—
Particle charge test	—	positive	positive
Sieve test, %	≤0.05	≤0.10	≤0.10
Demulsibility, %	≥60	≥60	—
Distillation ^e			
Oil distillate, by volume of emulsion, %	≤2	≤2	≤0.5
Residue, %	≥63	≥65	≥62
Tests on residue from distillation test ^{c,d, e}			
Penetration, 77°F, [25°C], 100 g, 5 s	90 – 150	100 – 200	40 – 90
Ductility, 77°F, [25°C], 5cm/min, cm	—	—	≥70
Ductility, 40°F, [4°C], 5 cm/min, cm	—	≥30	—
Softening point, ring, and ball, °F[°C]	—	≥112 [44]	≥135 [57]
Elastic recovery, 50°F [10°C], %	≥60	≥58	—

Table 3, Continued Requirements for Polymer Modified Cationic Emulsified Asphalt			
Test	Rapid-Setting	Rapid-Setting	Slow-Setting
	PMCRS-1s	PMCRS-2s ^a	PMCSS-1h
Tensile stress at 800% elongation, 40°F [4°C], 50 cm/min, kPa	—	≥196	—
Solubility in trichloroethylene ^f , %	≥97.5	—	≥97
Ash content, %	—	≤1.0	—
^a Provide a Type B certification for each polymer modified asphalt lot. Type B defined as manufacturer prepared certification showing the limits of test values as determined by manufacturer's laboratory, a qualified commercial laboratory, or another approved laboratory. ^b After the test cylinder stands undisturbed for 5 days, ensure that there is no milky colored substance and there is a homogenous brown color throughout the cylinder. ^c Modify the distillation procedure as follows: Maintain a temperature from 345°F [174°C] to 355°F [180°C] on the lower thermometer for the last 20 min of the test. Maintain a test duration from 50 min to 70 min from the first application of heat. ^d Ensure the distillation residue of the modified emulsion contains at least 3 percent polymer solids by asphalt mass as determined by an analytical method approved by the ENGINEER. ^e Residue may also be obtained by evaporation. ^f An organic solvent may be used.			

Table 4 Requirements for NT Tack Material			
Test	Emulsion		
	CBC-1H	NTSS-1HM	NTQS-1HH
Saybolt Furol Viscosity, SFS @ 77°F [25°C]	10 – 100	15 – 100	15 – 100
Storage stability test, 24 hours, %	≤ 1	≤ 1	≤ 1
Particle Charge	Positive	–	–
Sieve test, %	≤ 0.1	≤ 0.3	≤ 0.3
Tests on residue from distillation ^a			
Residue, %	≥ 50	≥ 50	≥ 50
Penetration, 77°F [25°C], 100 g, 5 s	40 - 90	≤ 20	≤ 15
Softening point, ring, and ball, °F [°C]	–	≥ 149 [65]	≥ 149 [65]
Flash point, °F [°C]	–	–	–
Original DSR $G^*/\sin(\delta)$ @ 180°F [82°C], kPa	–	≥ 1.00	≥ 1.00
Solubility in trichloroethylene, %	≥ 97.5	≥ 97.5	≥ 97.5
^a Modify the distillation procedure as follows: Maintain a temperature from 345°F [174°C] to 355°F [180°C] on the lower thermometer for the last 20 minutes of the test. Residue may also be obtained by evaporation.			

Table 5 Requirements for 1 NT Tack Material	
Test	Asphalt Cement
	NTHAP
Rotational viscosity ^a @ 300°F [149°C], PaAs	≤ 3
Penetration, 77°F [25°C], 100 g, 5 s	≤ 25
Softening point, ring, and ball, °F [°C]	≥ 158 [70]
Flash point, °F [°C]	≥ 500 [260]
Original DSR $G^*/\sin(\delta)$ @ 180°F [82°C], kPa	≥ 1.00
Solubility in trichloroethylene, %	–
^a Limit may be waived if no application problems are present in the field and material can be pumped.	

E. Handling

1. Handle, load, haul, and transfer bituminous materials in accordance with the following:
 - a. Each transport shall be equipped with a sampling device with a gate valve or petcock located in the discharge line in such a way as to allow a sample to be drawn during the unloading of transport. The device shall be maintained in an operating condition at all times.
 - b. Each hauler shall maintain a "log" or record with each transport showing the type, grade, source, destination and date of the last previous delivery made using the hauling tank as identified therein.
 - c. Each transport to be equipped with an observation hatch so located as to be suitable for inspection and direct measurement of the depth of the material at the lowest point in the tank. (An approximate six inch diameter opening with cover located at the top and near the discharge end of the transport is considered suitable.)
 - d. Before loading, the producer's representative shall inspect the transport to assure that it is empty and check the hauler's "log" to assure that no contamination will result from the previous load.
 - e. When bituminous materials are received for storage at the mixing plant or project site, separate tanks shall be provided for each type and grade material. Storage tanks shall be cleaned before being used for a different material except that cleaning is not required when the material to be stored is compatible with the material last contained in the tank and the tank has been completely emptied.
2. The ENGINEER will reject further shipments if materials fail to produce the results required by the contract documents. The ENGINEER will not accept further work until satisfied that the material has been corrected so that it produces the results required by the contract documents.

F. Application Temperature

1. Heat asphalt materials in accordance with Table 6 below unless otherwise required by the contract documents.

Table 6 Temperature Ranges for Use of Asphalt Materials			
Type or Grade	Mixture, °F [°C]	For Mixing, °F [°C]	For Spraying, °F [°C]
NTHAP	—	350 – 400 [177 -204]	350 – 400 [177 -204]
All PGs	≤350 [177]	275 – 350 [135 – 177]	285 – 350 [141 – 177]
MC-30	—	50 – 120 [10 – 49]	50 – 120 [10 – 49]
MC-70	—	80 – 150 [27 – 66]	80 – 150 [27 – 66]
MC-250	≤200 [93]	100 – 200 [38 – 93]	100 – 200 [38 – 93]
MC-800	≤210 [99]	160 – 210 [71 – 99]	185 – 260 [85 – 127]
MC-3000	≤250 [121]	200 – 250 [93 – 121]	225 – 275 [107 – 135]
All emulsions	—	70 – 185 [21 – 85]	70 – 185 [21 – 85]

PART 3 – COMPOSITION OF MIXTURES

3.1 ASPHALT MIX DESIGN AND INITIAL JOB MIX FORMULA

- A. Prepare superpave mix designs in general accordance with AASHTO R 35 except where modified by these specifications. Prepare PFC mix designs in general accordance with AASHTO PP 77 except where modified by these specifications. Prepare SMA mix designs in general accordance with AASHTO R 46 except where modified by these specifications. The mix design and initial job-mix formula (JMF) are the responsibility of the CONTRACTOR. Submit the mix design and initial JMF to the ENGINEER for review.
- B. The ENGINEER will determine if the mix design meets the design criteria. Provide one mix design for each asphalt concrete mixture required by the contract documents.
- C. Ensure that the initial JMF is in accordance with Tables 8, 10, and 11, or Tables 9, 10, and 11 for the type of mix required by the contract documents. Prepare a trial mixture in accordance with Section 32 12 16.13 Plant Mix Asphalt Paving, Subsection 1.4C. Propose changes to the JMF if the trial, prepared at the initial JMF proportions, fails to meet the requirements of Tables 8, 12, 13, and 14, or Tables 9, 12, 13, and 14. If the changes do not produce a mix design in accordance with these tables, the ENGINEER will require a new mix design. If the changes do produce a mix design in accordance with these tables, the ENGINEER will approve the changes for adjustment of the JMF.
- D. Ensure the JMF establishes a percentage of aggregate passing each required sieve, a percentage of asphalt contained in the mixture, and a mixture temperature at the point of discharge from the plant.
- E. The JMF with the allowable tolerances shown in Table 15, establish the specification limits for each mixture. These limits may be outside the range in Table 8 or Table 9 except for the following conditions:

1. The absolute maximum sieve size,
2. PFC and Open Graded Friction Surface Course, where the JMF with allowable tolerances must be within the broad range in accordance with Table 9.
3. When no tolerances are shown in Table 15, the broad ranges given in Table 9 are the specification limits.

3.2 PLANT PRODUCED MIXTURES

- A. Provide a uniform, plant produced mixture of the combined aggregate and asphalt in accordance with Tables 8, 12, and 13, or Tables 9, 12, and 13 within the specification limits established by the JMF with allowable tolerances.
- B. After the plant is in operation, propose any necessary adjustments to the JMF in accordance with Table 8 or Table 9. If test results indicate the adjustments are in accordance with Tables 12 and 13, adjust the JMF accordingly.
- C. Provide a new mix design to the ENGINEER if the source of materials changes before the use of the new materials. If unsatisfactory results or other conditions make it necessary, the ENGINEER will require a new mix design.
- D. The ENGINEER defines the asphalt JMF as the target value. Attempt to incorporate that asphalt amount regardless of the allowable tolerances.

3.3 RECLAIMED ASPHALT PAVEMENT

- A. Superpave mixtures containing reclaimed asphalt pavement (RAP) will be accepted in accordance with Table 7 if the mixture is not used in the surface layer and meets the contract document requirements for the type or grade.

Table 7	
Reclaimed Asphalt Pavements	
Superpave with Binder Type	Maximum RAP, %
PG 58-28	25
PG 64-22 OK	25
PG 70-28 OK	15
PG 76-28 OK	15
PG 76E-28	0

- B. Regardless of the layer or binder type, the ENGINEER will accept superpave mixtures with no more than 25 percent RAP for shoulders, driveways, and layers serving as a bond breaker under PCC pavements if the mixture meets the contract document requirements for the type or grade. Superpave mixtures containing up to 35 percent RAP will be accepted in temporary detours if the mixture meets the contract document requirements for the type or grade, and if the mixture can be produced meeting air quality standards set forth by the Oklahoma Department of Environmental Quality. Temporary is defined as any material that will not become part of any permanent pavement. Temporary material must be removed before the end of the project.

- C. Process RAP by fractionating it into at least two stockpiles: a coarse stockpile and a fine stockpile. Crush, screen, or size the coarse stockpile so that 100 percent passes through a 1.5 in (37.5 mm) sieve. Crush, screen, or size the fine stockpile so that 100 percent passes through a $\frac{3}{8}$ in (16.5 mm), $\frac{1}{2}$ in (12.5 mm), or $\frac{3}{4}$ in (9.5 mm) sieve. If RAP comes from an unknown source and documentation is unavailable, the ENGINEER will consider the insoluble residue content to be zero. The ENGINEER will reduce the amount of natural sand and gravel allowed in the combined aggregate by the amount of natural sand and gravel contained in the RAP. Do not use RAP in Stone Matrix Asphalt (SMA), Permeable Friction Course (PFC), Rich Bottom Layer (RBL), Open-Graded Friction Surface Course (OGFSC), or Open-Graded Bituminous Base (OGBB) mixes.

Table 8					
Mixtures for Superpave					
Sieve Size ^a	Percent Passing per Superpave Mixture Type				
	S2	S3	S4	S5 / RIL	S6
1½ in [37.5 mm]	100	—	—	—	—
1 in [25.0 mm]	90 – 100	100	—	—	—
¾ in [19.0 mm]	≤ 90	90 – 100	100	—	—
½ in [12.5 mm]	—	≤ 90	90 – 100	100	—
⅜ in [9.5 mm]	—	—	≤ 90	90 – 100	100
No. 4 [4.75 mm]	≥ 40	—	—	≤ 90	80 – 100
No. 8 [2.36 mm]	29 – 45	31 – 49	34 – 58	37 – 67	54 – 90
No. 16 [1.18 mm]	—	—	—	—	—
No. 30 [0.600 mm]	—	—	—	—	—
No. 50 [0.300 mm]	—	—	—	—	—
No. 100 [0.150 mm]	—	—	—	—	—
No. 200 [0.075 mm]	1.0 – 7.0 ^b	2.0 – 8.0 ^b	2.0 – 10.0 ^b	2.0 – 10.0 ^b	5.0 – 15.0
Other Mixture Requirements					
NMS ^c	1 in [25 mm]	$\frac{3}{4}$ in [19 mm]	$\frac{1}{2}$ in [12.5 mm]	$\frac{3}{8}$ in [9.5 mm]	No. 4 [4.75 mm]
Asphalt Cement ^d , % of mix mass	≥ 3.9	≥ 4.3	≥ 4.8	≥ 5.3 / ≥ 5.5	≥ 5.8
Performance grade asphalt cement	e	e	e	e	e
^a Table 8 reflects the sieve size boundaries for design and JMF purposes. After the design is established, the JMF will designate combined aggregate sieve requirements with tolerances in Table 14.					

- ^b Ensure the ratio of the percent passing the No. 200 (75 µm) sieve to the percent effective asphalt cement is from 0.6 to 1.6.
- ^c Nominal Maximum Size (NMS) is defined as one size larger than the first sieve to retain more than 10 percent.
- ^d The ENGINEER may adjust the lower limit if the effective specific gravity of the combined aggregates is greater than 2.65. The ENGINEER may allow adjustments if a theoretical lab molded specimen at the JMF asphalt content meets the VMA requirement at 4% air voids.
- ^e The CONTRACTOR may substitute a higher grade of asphalt than that shown on the Plans at no additional cost to the OWNER.

Table 9 Asphalt Mixture, Non-Superpave					
Sieve Size ^a	Percent Passing per Asphalt Concrete Mixture Type				
	SMA	PFC ^b	RBL	OGFSC ^{b, c}	OGBB
1 ½ in [37.5 mm]	—	—	—	—	100
1 in [25.0 mm]	—	—	—	—	95 – 100
¾ in [19.0 mm]	100	100	100	—	—
½ in [12.5 mm]	90 – 100	80 – 100	90 – 100	100	25 – 60
⅜ in [9.5 mm]	65 – 80	35 – 60	72 – 90	90 – 100	—
No. 4 [4.75 mm]	22 – 30	1 – 20	53 – 70	25 – 45	≤10
No. 8 [2.36 mm]	16 – 24	1 – 10	34 – 58	≤10	≤5
No. 16 [1.18 mm]	—	—	—	—	—
No. 30 [0.600 mm]	—	—	—	—	—
No. 50 [0.300 mm]	—	—	—	—	—
No. 100 [0.150 mm]	—	—	—	—	—
No. 200 [0.075 mm]	9.0 – 12.0	1.0 – 4.0	2.0 – 10.0	≤5.0	≤3.0
Other Mixture Requirements					
NMS ^d	½ in [12.5 mm]	½ in [12.5 mm]	½ in [12.5 mm]	¾ in [9.5 mm]	1 in [25 mm]
Cellulose Fiber, % of mix mass	0.3 – 0.4	0.2 – 0.5	—	—	—
Asphalt Cement ^e , % of mix mass	≥6.0	6.0 – 7.0	≥5.2	≥5.1 ^f	2.5 ^g

Table 9, Continued Asphalt Mixture, Non-Superpave					
Performance grade asphalt cement	PG 76-28 OK	PG 76-28 OK	h	h	h
^a Table 9 reflects the sieve size boundaries for design and JMF purposes. After the design is established, the JMF will designate the combined aggregate sieve requirements with tolerances set in Table 15. ^b Use an approved anti-stripping agent at the rate of 5 gal/1,000 gal [5 L/1,000L] of asphalt cement. ^c Retain at least 55 percent of the aggregate between the $\frac{3}{8}$ in [9.5 mm] and the No. 4 [4.75 mm]. ^d Nominal Maximum Size (NMS) is defined as one size larger than the first sieve to retain more than 10 percent. ^e The ENGINEER may allow the lower limit to be adjusted if the effective specific gravity of the combined aggregates is greater than 2.65. The ENGINEER may allow adjustments if a theoretical lab molded specimen at the JMF asphalt content meets the VMA requirement at 4 percent air voids. ^f Calculate the JMF for percent AC in the open graded friction course with the following equation: $\% \text{ AC} = (16.5) / (\text{Effective Specific Gravity (Gse)} + 0.165).$ ^g The ENGINEER may allow the amount of asphalt binder to be adjusted if the effective specific gravity of the combined aggregate is greater than 2.833 or less than 2.495. ^h The CONTRACTOR may substitute a higher grade of asphalt than that shown on the Plans, at no additional cost to the OWNER.					

Table 10 Mix Design Properties of Laboratory Molded Specimens							
Property	Superpave			RIL	SMA	PFC	RBL
	PG64	PG70	PG76	PG76E-28	PG76	PG76	PG64
	Number of SGC Gyration						
Nini	6	7	8	—	—	—	—
Ndes	50	65	80	50	50	50	50
	Required Density, % of Gmm						
Nini	85.5 – 91.5	85.5 – 90.5	85.5 – 89.0	—	—	—	—

Table 10, Continued Mix Design Properties of Laboratory Molded Specimens							
Ndes	96	96	96	97	96	≤ 82.0	98
VMA, %	See Table 3.3:5						
VFA, %	See Table 3.3:5						
Lab Permeability, $\text{cm/s} \times 10^{-5}$	≤ 12.5	≤ 12.5	≤ 12.5	≤ 12.5	≤ 12.5	—	≤ 12.5
TSR, Min.	0.8	0.8	0.8	0.8	0.8	—	0.8
ITS ^a , psi	—	—	≥ 75	—	—	—	—
Draindown, %	—	—	—	—	≤ 0.20	≤ 0.20	—
Hamburg Rut Test, Min. No. of Cycles to 12.50 mm, 122 °F	10,000	15,000	20,000	20,000	20,000	—	5,000
Note: For this table: PG64, PG70, and PG76 refer to the high temperature grade of the binder. Unless otherwise noted, specifications for PG binder grades higher than PG76 will use PG76 specifications. ^a Indirect Tensile Strength from AASHTO T 283, preconditioned specimen average, in psi.							

Table 11 Mix Design Properties of laboratory Molded Specimens									
Property	Superpave					RIL	SMA	PFC	RBL
	S2	S3	S4	S5	S6				
VMA ^a , %	≥ 12.5	≥ 13.5	≥ 14.5	≥ 15.5	≥ 16.5	≥ 15.5	≥ 17.0	—	≥ 14.0
VFA, ^b , %	67 - 73	70 - 75	72 - 77	73 - 78	75 - 79	73 - 79	—	—	—
^a VMA is based on the bulk specific gravity of the aggregates. ^b VFA is defined as the percentage of VMA containing asphalt binder.									

Table 12 Field Properties of Laboratory Molded Specimens							
Property	Superpave			RIL	SMA	PFC	RBL
	PG64	PG70	PG76	PG76E-28	PG76	PG76	PG64
Number of SGC Gyration							
Nini	6	7	8	—	—	—	—
Ndes	50	65	80	50	50	50	50
Required Density, % of Gmm							
Nini	85.5 – 91.5	85.5 – 90.5	85.5 – 89.0	—	—	—	—

Table 12, Continued Field Properties of Laboratory Molded Specimens							
Ndes	94.5 - 97.4	94.5 - 97.4	94.5 - 97.4	95.5 - 98.4	94.5 - 97.4	≤ 82.0	96.5 - 99.4
VMA, %	See Table 13						
VFA, %	See Table 13						
Lab Permeability, cm/s × 10 ⁻⁵	—	—	—	—	—	—	—
TSR, Min.	0.75	0.75	0.75	0.75	0.75	—	0.75
ITS ^a , psi	—	—	—	—	—	—	—
Draindown, %	—	—	—	—	—	—	—
Hamburg Rut Test, Min. No. of Cycles to 12.50 mm, 122 °F	—	—	—	—	—	—	—
Note: For this table: PG64, PG70, and PG76 refer to the high temperature grade of the binder. Unless otherwise noted, specifications for PG binder grades higher than PG76 will use PG76 specifications.							
^a Indirect Tensile Strength from AASHTO T 283, preconditioned specimen average, in psi.							

Table 13 Field Properties of Laboratory Molded Specimens									
Property	Superpave					RIL	SMA	PFC	RBL
	S2	S3	S4	S5	S6				
VMA ^a , %	≥ 12.0	≥ 13.0	≥ 14.0	≥ 15.0	≥ 16.0	≥ 15.0	≥ 16.5	—	≥ 13.5
VFA ^b , %	—	—	—	—	—	—	—	—	—
^a VMA is based on the bulk specific gravity of the aggregates. Compute a new bulk specific gravity from each AASHTO T 209 test. Calculate the value by multiplying the aggregate Effective Specific Gravity (Gse) calculated from the latest AASHTO T 209 test by the aggregate Bulk Specific Gravity (Gsb) from the design. Afterwards, divide the product by the aggregate Gse from the design.									
^b VFA is defined as the percentage of VMA containing asphalt binder.									

Table 14 Hamburg Test Requirements^a	
Binder Grade	Minimum Number of Passes to 12.50 mm Rut Depth, Tested at 122°F
PG 58	10,000
PG 64	10,000
PG 70	15,000
PG 76	20,000

Table 14, Continued
Hamburg Test Requirements

Note: For the purposes of this table PG64, PG70, and PG76 refer to the high temperature grade of the binder.

^a Rut test requirements apply to Superpave, SMA, and RIL mixes only.

3.4 ACCEPTANCE OF COMBINED COLD FEED AGGREGATE GRADATION

- A. The ENGINEER may use combined aggregate samples taken before asphalt coating for mixture gradation acceptance. Obtain the sample by an approved sampling device and perform a sieve analysis in accordance with Subsection 32 12 16.39 Part 4, AASHTO T 27, and AASHTO T 11. This method may be allowed if the asphalt mixture does not contain reclaimed bituminous materials and the aggregate does not appreciably degrade during the drying and mixing process.
- B. The ENGINEER may accept bituminous plant mix gradation results based on specified cold feed combined aggregate samples under the following condition:
 - 1. If the aggregate gradation test on extracted aggregates in accordance with AASHTO T 30 compares favorably with the results of cold feed aggregate gradation results.
- C. If test results do not compare favorably, the ENGINEER will base acceptance gradation tests performed in accordance with AASHTO T 30, on aggregate from extraction or ignition oven testing.

3.5 ACCEPTANCE OF BITUMEN CONTENT

- A. Determine the bitumen content of plant produced mixtures in accordance with OHD L-26 method of test. Determine the bitumen content of open-graded plant produced mixtures (PFC, OGFSC, OGGB) using the tank strap method or a digital printout from the asphalt plant of the quantity used.

3.6 WARM MIX ASPHALT

- A. Unless otherwise shown on the plans, mixtures produced as Warm Mix Asphalt (WMA) will be accepted at the CONTRACTOR'S option. For WMA, mixing temperatures may be reduced. Unless otherwise directed, use only WMA additives or processes preapproved by the ENGINEER. The ENGINEER may accept new additives or processes with sufficient evidence of performance.
- B. Prepare WMA mix designs in general accordance with AASHTO R 35 except where modified by these specifications. Additive manufacturer recommendations will be evaluated and considered for approval by the ENGINEER. WMA requirements are the same as for HMA except where noted. When using the technology during a mix design, increase the oven aging period to four hours before preparing samples for moisture susceptibility and rut testing. Report R 35's, the Materials Division recommended temperatures, or the supplier's recommended temperatures for plant mixing and roadway compaction on the mix design. Report R 35's, the Materials Division

recommended temperatures, or the supplier's recommended temperatures, for laboratory mixing and compaction on the mix design.

- C. For WMA using an additive technology, perform the mix design using the additive. For WMA designs that use a plant process, perform the mix design as an HMA mix design. If the laboratory has a foamer, the design may be performed using that process.
- D. Alternatively, use an existing approved HMA mix design when converting to a WMA, except when the percent binder absorbed exceeds 1.00 percent. The percent binder absorbed formula is shown at the end of this paragraph. When the percent binder absorbed exceeds 1.00 percent, use the plant-produced WMA material for moisture susceptibility and rut testing. Report the additive or process used by name, supplier source, and application rate (if applicable) on the mix design.

$$P_{ba} = \frac{100 G_b (G_{se} - G_{sb})}{G_{se} G_{sb}}$$

Where:

Pba = Percent binder absorbed by total mass of aggregate

Gb = Specific gravity of the binder

Gse = Effective specific gravity of the combined aggregates

Gsb = Bulk specific gravity of the combined aggregates

3.7 TOLERANCES

- A. Apply the tolerances shown in Table 15 to the JMF in accordance with Subsection 3.6.

Table 15 JMF Tolerances Per Mixture						
Sieve Size	Superpave	Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Course	Open Graded Bitum. Base
	Percent Passing					
≥No. 4 [4.75 mm]	±7	±7	±7	±7	±7	—
No. 8 [2.36 mm]	±5	±5	±5	±5	±5	—
No. 16 [1.18 mm]	±4	±4	—	±4	—	—
No. 30 [0.600 mm]	±4	±4	—	±4	—	—
No. 50 [0.300 mm]	±4	±4	—	±4	—	—
No. 100 [0.150 mm]	±3	±3	—	±3	—	—
No. 200 [0.075 mm]	±2	±2	±2	±2	±2	—

Table 15, Continued						
JMF Tolerances Per Mixture						
Sieve Size	Superpave	Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Course	Open Graded Bitum. Base
	Percent Passing					
Other Mixture Tolerances:						
Asphalt cement, % of mix mass	±0.4	±0.4	±0.3	±0.4	±0.3	±0.3
Mix temperature as discharged from mixer, °F [°C]	±20 [±10]	±20 [±10]	±20 [±10]	±20 [±10]	±20 [±10]	±20 [±10]

PART 4 – SAMPLING AND TESTING

4.1 TESTING METHODS

- A. Sample and test in accordance with Table 16 on following page.
- B. Method and Procedure for Sampling Asphalt Materials
 1. Sample asphalt materials in accordance with AASHTO R 66. Sample asphalt materials at the project site or mixing plant in accordance with the following:
 - a. Truck Transports: Sample to be taken by means of a sampling valve (3/8 inch = to 1/2 inch) located in the discharge or unloading line during the unloading of the approximate middle one-third of the load. The first flow through the sampling valve of one or two gallons shall be wasted after which the sample shall be drawn directly into the sample containers.
 - b. Mixing Plant: Sample to be taken from a sampling tap, complying with the requirements of ASTM D 140, located in the bituminous feed lines connecting the storage tanks to be bituminous control unit. The first flow from the sampling valve of one or two gallons shall be wasted after which the sample shall be drawn directly into the sample containers.
 - c. Storage Tank: Sample taken during the circulation of tank contents. Sampling procedure is the same as section 4.1B.1.b.
 - d. Storage Tank: If circulation is not in operation at the time of sampling, obtain sample by means of weighted bottle or other suitable sample thief. Quickly lower sample thief to near bottom of tank and withdraw at a rate of speed so that the sample thief is not completely filled when removed. Sample thief should be cleaned each time is it used and dipped two or three times in the

material being sampled before taking the sample. Immediately after taking pour sample from sample thief directly into sampling containers.

2. The ENGINEER may modify the sampling methods, testing, and acceptance for the asphalt materials. Obtain copies of the procedure from the ENGINEER.
3. Sample at the point of manufacture if the quantity shipped warrants testing. Alternatively, take samples at the point of destination. Use asphalt materials only after the ENGINEER approves them at the source.

Table 16	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
Aggregates	
Sampling	AASHTO T 2
Sieve analysis	AASHTO T 27
Material passing No. 200 [75 µm] sieve	AASHTO T 11
Specific gravity and absorption of fine aggregate	AASHTO T 84
Specific gravity and absorption of coarse aggregate	AASHTO T 85
Los Angeles abrasion	AASHTO T 96
Sand equivalent	AASHTO T 176
Aggregate durability index	AASHTO T 210
Total evaporable moisture content	AASHTO T 255
Aggregate degradation by Micro-Deval apparatus	AASHTO T 327
Lime for asphalt mixtures	AASHTO M 303
Flat and elongated particles in coarse aggregate	ASTM D4791
Mud, clay balls, sand clusters, sticks and roots retained on No. 4 [4.75 mm] sieve	OHD L-9
Fractured faces	OHD L-18
Insoluble residue	OHD L-25
Soft particles	OHD L-38
Asphalt Mixtures	
Mechanical analysis of extracted aggregate	AASHTO T 30
Sampling asphalt mixtures	AASHTO T 168
Bulk specific gravity (Gmb) of compacted asphalt mixtures using saturated surface-dry specimens	OHD L-14
Maximum specific gravity of asphalt mixtures	AASHTO T 209
Resistance to moisture damage ^{a, g}	AASHTO T 283
Draindown characteristics of uncompacted asphalt samples	AASHTO T 305
Preparing specimens by superpave gyratory compactor ^b	AASHTO T 312
Bulk specific gravity (Gmb) and density of compacted asphalt mixtures using automatic vacuum sealing method CoreLok™	OHD L-45

Table 16, Continued	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
Hamburg wheel-track testing of compacted hot mix asphalt (HMA)	AASHTO T 324
Superpave volumetric mix design	AASHTO M 323
Reclaimed asphalt shingles for use in asphalt mixtures	AASHTO MP 23
Design considerations when using reclaimed asphalt shingles (RAS) in asphalt mixtures	AASHTO PP78
Mixture conditioning of hot-mix asphalt	AASHTO R 30
Superpave volumetric design for HMA ^C	AASHTO R 35
Sampling Asphalt Mixtures after compaction (obtaining cores)	AASHTO R 67
Bulk impregnated specific gravity of aggregates ^d	OHD L-7
Specific gravity, unit weight, and percent density of compacted asphalt mixtures	OHD L-14
Bitumen content	OHD L-26
Rutting susceptibility using the hamburg rut tester	OHD L-55
Water permeability of compacted paving mixtures	OHD L-44
Asphalt Materials	
Sampling asphalt materials	AASHTO R 66
Solubility of bituminous materials	AASHTO T 44
Flash and fire points by Cleveland Open Cup	AASHTO T 48
Penetration of bituminous materials	AASHTO T 49
Ductility of bituminous materials	AASHTO T 51
Softening point of bitumen (ring-and-ball apparatus)	AASHTO T 53
Water in bituminous materials by distillation	AASHTO T 55
Standard test methods for emulsified asphalts	AASHTO T 59
Saybolt viscosity	AASHTO T 72
Distillation of cutback asphaltic (bituminous) products	AASHTO T 78
Flash points with tag open-cup apparatus	AASHTO T 79
Inorganic matter or ash in bituminous material	AASHTO T 111
pH of aqueous solutions with the glass electrode	AASHTO T 200
Kinematic viscosity of asphalts (bitumens)	AASHTO T 201
Viscosity of asphalts by vacuum capillary viscometer	AASHTO T 202
Specific gravity of semi-solid bituminous materials	AASHTO T 228

Table 16, Continued	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
Rolling thin film oven test	AASHTO T 240
Polymer content of polymer-modified emulsified asphalt residue and asphalt binders	AASHTO T 302
Flexural creep stiffness using the bending beam rheometer	AASHTO T 313
Rheological properties using a dynamic shear rheometer	AASHTO T 315
Viscosity determination using rotational viscometer	AASHTO T 316
Multiple stress creep recovery (MSCR) test of asphalt binder using a dynamic shear rheometer (DSR)	AASHTO T 350
Emulsified asphalt	AASHTO M 140
Cationic emulsified asphalt	AASHTO M 208
Polymer-modified cationic emulsified asphalt	AASHTO M 316
Performance-graded asphalt binder	AASHTO M 320
Performance-graded asphalt binder using multiple stress creep recovery (MSCR) test	AASHTO M 332
Recovering residue from emulsified asphalt using low-temperature evaporative techniques	AASHTO R 78
Classifying hot mix recycling agents	AASHTO R 14
Accelerated aging using a pressurized aging vessel	AASHTO R 28
Grading or verifying the performance guide	AASHTO R 29
Recovery of asphalt binder from solution by abson method	AASHTO R 59
Estimating application rate and residual application rate of bituminous distributors	ASTM D 2995
Specific gravity by hydrometer	ASTM D 3142
Elastic recovery test by means of ductilometer ^e	ASTM D 6084
Elastic recovery test by means of ductilometer ^f	OHD L-42
Compatibility of an asphalt emulsion and a job aggregate	OHD L-59
Emulsified asphalt residue by evaporation (pan)	OHD L-61
^a Run AASHTO T 283 on 6 in [150 mm] diameter specimens compacted by the Superpave Gyratory Compactor to an approximate height of 3.75 in [95 mm].	
^b Mix design mixtures at 325°F [163°C] and age at 300°F [149°C] from 2 hr to 4 hr. Compact design mixtures at 300°F [149°C]. No minimum aging period is required for field samples. Heat field samples uniformly to 300°F [149°C] for no greater than 4 hr.	

Table 16, Continued	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
^c Compact lab-molded specimens to N _{des} gyrations to determine the density at N _{des} , percent of G _{mm} . Back-calculate the density at N _{ini} , percent of G _{mm} , from these specimens. Compact lab-molded specimens to N _{max} gyrations to determine the density at N _{max} , percent of G _{mm} for mix designs and JMF changes only. Ensure reported values are the average of two specimens.	
^d Use OHD L-7 for OGFSC only.	
^e Use ASTM D 6084 for PG binders only.	
^f Use OHD L-42 for polymer modified emulsions only.	
^g Use AASHTO R 30 for aging instead of the procedure outlined in AASHTO T 283.	

END OF SECTION 32 12 16.39

SECTION 32 16 13 - CONCRETE CURBS AND GUTTERS**PART 1 – GENERAL****1.1 SCOPE**

- A. This work shall consist of the construction of integral curb, combined curb and gutter, header curbing, in accordance with these specifications and in reasonably close conformity with the lines, grades and dimensions shown on the plans or established by the ENGINEER.

PART 2 – PRODUCTS**2.1 MATERIALS**

- A. Concrete for integral curb, combined curb and gutter or header curbing shall be Class A concrete meeting the requirement of Section 03 30 00 Cast-In Place Concrete.
- B. Sealing materials for concrete curbs shall conform to Section 03 31 00 Construction Joint Sealing.

2.2 EQUIPMENT

- A. A self-propelled or towed curb machine may be used when approved by the ENGINEER. The curb machine shall be capable of extruding a uniformly textured material to the shape and density specified and placing it in reasonably close conformity to the established line and grade.

PART 3 – EXECUTION**3.1 EXCAVATION**

- A. Excavation shall be made to the required depth, and the base upon which the curb is to be set shall be compacted to a firm, even surface. All soft and unsuitable material shall be removed and replaced with suitable material which shall be thoroughly compacted.

3.2 FORMS

- A. Forms shall be of wood, metal or other suitable material, straight, free from warp and of such construction that there will be no interference to the inspection of grade or alignment. All forms shall extend for the entire depth of the curb or curb and gutter and shall be braced and secured sufficiently so that no deflection from alignment or grade will occur during the placing of the concrete or asphalt.
- B. Fastening hardwood strips to the bottom of the forms not to exceed 2 inches in built-up thickness for special curb sections to provide the specified thickness may be permitted. The material and method of fastening the built-up section to the form shall be approved by the ENGINEER prior to use.
- C. Forms shall be sufficiently tight as to prevent leakage. Forms shall be clean and oiled or wetted before placing concrete.
- D. Placing Concrete. Checking forms and placing and vibrating concrete shall be in accordance with Section 03 10 00 - Form Work.

3.3 SURFACE FINISH

- A. As soon as the curb concrete has set sufficiently to retain its shape without support, the final surface finish shall be obtained by uniformly brushing the surface in a manner approved by the ENGINEER.
- B. The edges of all formed concrete joints, including edges at expansion and contraction joints or planes of weakness joints, shall be neatly edged to the required radius.

3.4 JOINTS

- A. All joints in curbs shall be perpendicular to the sub-grade at right angles to the longitudinal axis of the curb. Expansion and contraction joints shall be constructed at the same location as similar joints in the paving slab.
- B. Expansion joints shall be pre-molded expansion joint filler and shall be of the thickness and placed at the locations shown on the Plans or as approved by the ENGINEER. Joints shall be placed in the curb, gutter, or combined curb and gutter opposite the joints in the pavement.
- C. Contraction joints in curb and gutter, when used in conjunction with asphalt surfacing, shall be sawed as specified in Section 03 30 53 Miscellaneous Cast-In Place Concrete and sealed with the same material specified for sealing expansion joints.

3.5 CURB OPENINGS

- A. Where curb is to be omitted for driveways, or other cause, either all or only the top portion of the separate curb may be omitted as shown on the plans or approved by the ENGINEER. In general, only the curb will be left off combined curb and gutter. Where the bottom portion of separate curb or the gutter of combined curb and gutter is left in place, the concrete shall be constructed slightly higher at the back of the curb line than at the front as shown on the plans or as approved by the ENGINEER. Such curb shall be considered as regular curb.
- B. Curing: Concrete curbs or combined curb and gutter shall be cured in accordance with Section 32 13 13 Portland Cement Concrete Pavement, Subsection 3.10 Curing.
- C. Extruded Method
 - 1. When the extruded method is used to construct combined curb and gutter, the extrusion machine shall be operated on a string or wire line, rails or forms set at uniform depth below the predetermined finished top of curb grade.
 - 2. Concrete shall be uniformly fed to the machine and shall be of such consistency that after extrusion the concrete will maintain the shape of the section without support. The finished curb or curb and gutter shall present a well-compacted mass with a surface free from voids and honeycomb and reasonably true to established shape, line, and grade. Any additional surface finishing required shall be performed immediately after extrusion.
 - 3. Joints shall be constructed at the same locations as required when form construction is being used. Weakened joints, spaced at 20-foot intervals, shall be made by sawing unless other methods are approved by the ENGINEER.

- E. Backfill. The back side of the curbs shall be backfilled with approved earth and thoroughly compacted in layers not exceeding 6 inches in depth and neatly graded as shown on the Plans or as approved by the ENGINEER. Care shall be taken not to damage the concrete in placing or compacting the backfill; any damage will be repaired at the CONTRACTOR'S expense.

END OF SECTION 32 16 13

SECTION 32 92 23 - SODDING**PART 1 - GENERAL****1.1 SCOPE**

- A. This work shall consist of furnishing and planting viable Bermuda grass sod in accordance with these specifications. All areas which are not covered by pavement or structures shall be sodded, and/or areas utilized for construction staging.

PART 2 - PRODUCTS**2.1 SOD**

- A. Bermuda grass sod to be used as source material shall be a thick stand of common Bermuda grass growing on fertile topsoil. Types of Bermuda grass other than "Common" may not be used unless approved by the ENGINEER. The vegetative parts (rhizomes, stolons, and roots) of Bermuda grass shall be viable as indicated by a dense, deep rooted stand.
- B. The source for sod shall be free of reproducing parts of weeds classified as "Prohibited Noxious" and shall be as free of other legally "Restricted Noxious" plant materials as required by the Oklahoma Department of Agriculture Seed Law. The proposed source of sod will be approved by the ENGINEER before the beginning of sodding operations. Prior to approval, the area shall not be tilled or mowed. However, all vegetative growth exceeding 3 inches in height shall be mowed and the residue removed prior to harvesting the sod or sprigs.
- C. The sod shall be moist when excavated from the source and shall be kept moist until planted. Sod in storage which becomes dry, shall not be re-moistened and used, but shall be discarded.
- D. Sod material shall consist of vegetative parts (rhizomes, stolons and roots) of Bermuda grass with an appreciable quantity of adhering soil.
- E. Solid slab sod shall be rectangular slabs of Bermuda grass. Bermuda grass vegetative parts shall exist throughout the slab and shall be obtained from soils with a minimum P.I. of 3. The slab must have a dense vegetative growth and be capable of being transported in a condition closely resembling its original state.

2.2 FERTILIZER

- A. Fertilizer of 10 20 10 grade and ammonium nitrate (33.5% N), uniform in composition, free flowing and suitable for application with approved equipment shall be provided. The fertilizer shall be delivered to the site in bags or other convenient containers, each fully labeled, conforming to the applicable State fertilizer laws, and bearing the name, trade name or trademark and warranty of the producer.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Preparation of areas to be sodded shall include filling, reshaping of eroded areas, cleaning ditches and refinishing slopes to the established grading section. The area shall be cleared of all litter and debris.

3.2 APPLICATION

- A. The slabs of sod shall be placed soil side down. They shall be placed in rows, which on slopes shall run perpendicular to flow of water. Each slab shall fit tightly against the edge of adjoining slabs and shall be placed so that the vertical joints are not continuous across adjoining horizontal rows. Voids shall be filled with additional sod. All slabs shall be thoroughly pressed into firm contact with the soil underneath.
- B. After the slabs have been placed, the sodded area shall be thoroughly watered. When sufficiently dry, additional voids shall be filled with good soil and watered again. The area shall then be thoroughly watered daily for a period of at least seven days after placement.
- C. Soil moisture shall exist throughout the zone from 1 inch below the surface to at least 5 inches below the surface at the time of planting. The required moisture content of the soil may be estimated and judged closely by the hand squeeze test. The soil should readily form a tight cast when squeezed in the hand. The cast should break into two pieces without crumbling and without leaving excess water on the hand after casting.
- D. Fertilizer shall not be placed on hard or glazed surfaces. Fertilizer shall be applied at the rates shown on the plans or specifications.
- E. When satisfactory results can be obtained, disking for soil preparation, weed removal and incorporation of fertilizer may be accomplished in one operation.
- F. If a fertilizer containing phosphorous is specified, one half of the fertilizer shall be applied before placement of solid slab sod and shall then be incorporated into the soil by disking. After placement and compaction of the sod, the remaining one half of the fertilizer shall be applied and immediately incorporated into the soil with water.
- G. Fertilizer containing nitrogen only shall be applied after the sodding and sprigging operations have been completed.

3.3 SEASON

- A. If the construction work is not completed during the normal planting season (beginning April 15 through September 1), the CONTRACTOR shall seed the entire area with an approved temporary vegetative cover, such as wheat, oats or rye grass to prevent erosion until the following spring at which time the CONTRACTOR will be required to return and prepare the area to be sodded as specified above and sod the entire area with Bermuda grass as specified above at no additional cost to the OWNER. All areas

which have eroded will at this time be brought back to original line and grade as directed by the ENGINEER.

3.4 WATER SUPPLY

- A. The CONTRACTOR must make provisions to obtain water for this operation at his own expense. It will be the CONTRACTOR'S responsibility to transport the water to the area where it is needed.

END OF SECTION 32 92 23

SECTION 33 05 07.13 – DIRECTIONAL BORE**PART 1 – GENERAL****1.1 WORK INCLUDED**

- A. The work specified in this section consists of furnishing and installing underground utilities using the directional boring (horizontal directional drilling, HDD) method of installation also commonly referred to as guided horizontal boring. This work includes all services, equipment, materials, and environmental protection and restoration.

1.2 QUALITY ASSURANCE

- A. The requirement set forth in this document specifies a wide range of procedural precautions necessary to ensure that the very basic, essential aspects of a proper directional bore installation are adequately controlled. Strict adherence shall be required under specifically covered conditions outlined in this specification. Adherence to the specifications contained herein, or the ENGINEER'S approval of any aspect of any directional bore operation covered by this specification, shall in no way relieve the CONTRACTOR or their ultimate responsibility for the satisfactory completion of the work authorized under the contract.

1.3 SUBMITTALS

- A. Work Plan: Prior to beginning work, the CONTRACTOR must submit to the ENGINEER a general work plan outlining the procedure and schedule to be used to execute the project. Plan should document the thoughtful planning required to successfully complete the project.
- B. Equipment: CONTRACTOR will submit specifications on directional boring equipment to be used to ensure that the equipment will be adequate to complete the project. Spare inventory shall be included.
- C. Material: Specifications on material to be used shall be submitted to the ENGINEER. Material shall include the pipe, fittings and any other item which is to be an installed component of the project.
- D. Personnel: Documentation of training and relevant experience of personnel shall be submitted.

PART 2 – EQUIPMENT REQUIREMENTS**2.1 GENERAL**

- A. The directional boring equipment shall consist of a directional boring rig of sufficient capacity to perform the bore and pullback the pipe, a boring fluid mixing and delivery system of sufficient capacity to successfully complete the crossing, a guidance system to accurately guide boring operations along with trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials, and spare parts on hand to maintain the system in good working order for the duration of this project.

2.2 BORING SYSTEM

- A. Boring Rig: The directional boring machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power boring operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations. The rig shall be grounded during boring and pull-back operations. Sufficient spares shall be kept on hand for any break downs which can be reasonably anticipated.
- B. Bore Head: The bore head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and boring fluid jets.
- C. Mud Motors (if required): Mud motors shall be adequate power to turn the required boring tools.
- D. Drill Pipe: Shall be constructed of high-quality, 4130 seamless tubing, grade D or better, with threaded box and pins. Tool joints should be hardened to 32-36RC.

2.3 GUIDANCE SYSTEM

- A. The Guidance System shall be of a proven type and shall be set up and operated by personnel trained and experienced with this system. The operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system in using a magnetic system.

2.4 BORING FLUID (MUD) SYSTEM

- A. Mixing System: A self-contained, closed boring fluid mixing system shall be of sufficient size to mix and deliver boring fluid composed of bentonite clay, potable water, and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. The boring fluid reservoir tank shall be of a sufficient capacity for that project. Mixing systems shall continually agitate the boring fluid during boring operations.
- B. Boring Fluids: Drilling fluid shall be composed of clean water and an appropriate additive. Water shall be from a clean source with a pH of 8.5 – 10. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No hazardous additives may be used. Boring fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of the bore wall.
- C. Delivery System: The mud pumping shall be capable of delivering the boring fluid at a constant pressure. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used boring fluid and boring fluid spilled during operations

shall be contained and properly disposed of. A berm, minimum of 12 inches high, shall be maintained around boring equipment, boring fluid mixing system, entry and exit pits and boring fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess boring fluid from containment areas to storage facilities.

2.5 OTHER EQUIPMENT

- A. Pipe Rollers: Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe while being hydro-tested and during pull back operations. Sufficient number of rollers shall be used to prevent excess sagging of pipe.
- B. Pipe Reamers / Pullers: Hydraulic or pneumatic pipe rammers or pullers may only be used if necessary and with the authorization of the ENGINEER.

Other devices or utility placement systems for providing horizontal thrust other than those previously defined in the preceding sections shall not be used unless approved by the ENGINEER prior to commencement of the work. Consideration for approval will be made on an individual basis for each specified location. The proposed device or system will be evaluated prior to approval or rejection on its potential ability to complete the utility placement satisfactorily without undue stoppage and to maintain line and grade within tolerances prescribed by the particular conditions of the project.

PART 3 – OPERATIONS

3.1 GENERAL

- A. The ENGINEER must be notified 48 hours in advance of starting work. The directional bore shall not begin until the ENGINEER is present at the job site and agrees that proper preparations for the operation have been made. The ENGINEER approval for beginning the installation shall in no way relieve the CONTRACTOR of the ultimate responsibility for the satisfactory completion of the work as authorized under the contract. It shall be the responsibility of the OWNER to provide inspection personnel at such time as appropriate without causing undue hardship by reason of delay to the CONTRACTOR.

3.2 PERSONNEL REQUIREMENTS

- A. All personnel shall be fully trained in their respective duties as part of the directional boring crew and in safety. Training shall be provided specific to the project if any potential hazards may be encountered which have not already been included in the personnel's training.

3.3 BORING PROCEDURE

- A. Site Preparation: Prior to any alterations to the work site, CONTRACTOR shall photograph or videotape the entire work area, including entry and exit points. One copy shall be given to the ENGINEER and one copy shall remain with the CONTRACTOR for a period of one year following completion of the project.

The work site, as indicated on the drawings, within right-of-way, shall be graded or filled to provide a level working area. No alterations beyond what is required for

operations are to be made. The CONTRACTOR shall confine all activities to the designated work areas.

- B. Bore Path Survey: Entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on the drawings. If CONTRACTOR is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.
- C. Environmental Protection: CONTRACTOR shall place silt fence between all boring operations and any drainage, wetland, waterway, or other area designated for such protection by contract documents, state, federal and local regulations. Additional environmental protection necessary to contain any hydraulic or boring fluids spills shall be put in place, including berms, liners, turbidity curtains and other measures. CONTRACTOR shall adhere to all applicable environmental regulations. Fuel or oil may not be stored in bulk containers within 200 feet of any water body or wet land.
- D. Utility Locates: CONTRACTOR shall notify all companies with underground utilities in the work area via the state or local "one call" to obtain utility locates. Once the utilities have been located, CONTRACTOR shall physically identify the exact location of the utilities by vacuum or hand excavation, when possible, in order to determine the actual location and path of any underground utilities which might be within 20 feet of the bore path. CONTRACTOR shall not commence boring operations until the location of all underground utilities within the work area have been verified.
- E. Safety: CONTRACTOR shall adhere to all applicable State, Federal and local safety regulations and all operations shall be conducted in a safe manner. Safety meetings shall be conducted at least weekly with a written record of attendance and topic submitted to the ENGINEER.
- F. Pipe: Pipe shall be connected together in one length prior to pull-back operations. If space permits, pipe will be placed on pipe rollers before pulling into bore hole with rollers spaced close enough to prevent excessive sagging of pipe.
- G. Pilot Hole: Pilot hole shall be drilled on bore path with no deviations greater than 5% of depth over a length of 100 feet. In the event that pilot dies deviate from the bore path more than 5% of depth in 100 feet, CONTRACTOR will notify ENGINEER and the ENGINEER may require CONTRACTOR to pull back and re-drill from the location along bore path before the deviation.

In the event that a boring fluid fracture, inadvertent returns or return loss occurs during pilot hole boring operations, CONTRACTOR shall cease boring, wait at least 30 minutes, inject a quantity of boring fluid with a viscosity exceeding 120 seconds as measured by a Marsh funnel and then wait another 30 minutes. If mud fractured or return loss continues, CONTRACTOR will cease operations and notify ENGINEER. ENGINEER and CONTRACTOR will discuss additional options and work will then proceed accordingly.

- H. Reaming: Upon successful completion of pilot hole, CONTRACTOR will ream bore hole to a minimum of 25% greater than outside diameter of pipe using the appropriate tool. CONTRACTOR will not attempt to ream at one time more than the boring equipment and mid-system are designed to safely handle.

- I. Pull Back: After successfully reaming bore hole to the required diameter, CONTRACTOR will pull the pipe through the bore hole. In front of the pipe will be a swivel. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations, CONTRACTOR will not apply more than the maximum safe pipe pull pressure at any time.

In the event that pipe become stuck, CONTRACTOR will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If pipe remains stuck, CONTRACTOR will notify ENGINEER. ENGINEER and CONTRACTOR will discuss options and then work will proceed accordingly.

- J. Pipe Testing: Following successful pull back of pipe, CONTRACTOR will hydro test using potable water in accordance with ODEQ permits test requirements. A calibrated pressure recorder will be used to record the pressure during the test period. This record will be presented to the ENGINEER.

3.5 SITE RESTORATION

- A. Following boring operations, CONTRACTOR will de-mobilize equipment and restore the work site to original condition. All excavations will be backfilled and compacted to 95% of original density. Landscaping will be restored to original.

3.6 RECORD KEEPING, AS BUILT

- A. CONTRACTOR shall maintain a daily project log of boring operations and a guidance system log with a copy given to the ENGINEER at completion of the project. As-built drawings shall be certified as to accuracy by the CONTRACTOR.

END OF SECTION 33 05 07.13

SECTION 33 11 00 - WATERLINE AND SANITARY SEWER SPECIFICATIONS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This division shall consist of the material and construction specification of water distribution lines, sanitary sewer lines, appurtenances, and related work, at the locations and grades as set out on the plans or established by the ENGINEER.

1.2 SUBMITTALS

- A. Submittals shall be in accordance with Section 01 33 00 "Submittal Procedures" and shall include:
 - 1. Shop Drawings:
 - a. Drawings shall show complete physical description and performance capabilities of the equipment, including, but not necessarily limited to dimensions, flange ratings, weights, materials of construction, assemblies, sectional views.
 - b. Hydraulic calculations and CV characteristics certifying the valve can meet all the design conditions attached to this specification.
 - 2. Operation and Maintenance Manuals: Manuals shall be prepared by the equipment manufacturer and shall also incorporate appropriate final certified shop drawings. Manuals may be the manufacturer's standard instructions but shall be supplemented as necessary to cover any special feature not included in standard material. O&M manuals shall include storage instructions, valve installation and adjustment procedures and troubleshooting procedures. Manuals shall be provided in hard copy and digital format fully indexed.

PART 2 - APPLICABLE SPECIFICATIONS

2.1 DESCRIPTION

- A. The specifications, standards, and publications, including the latest amendments thereto, listed in these specifications by basic designation only, form a part of this specification to the extent indicated by the references thereto.
- B. Specification 03 30 00 – Cast-In Place Concrete
- C. Specification 31 23 33 – Trenching, Backfilling, & Compaction
- D. Specification 32 12 16.39 – Plant Mix Bituminous Bases and Surfaces
- E. Specification 33 05 07.13 – Directional Bore
- F. Specification 33 31 30 – Pipe Busting

PART 3 - CAST IRON AND DUCTILE IRON PIPE, FITTINGS AND VALVES**3.1 DESCRIPTION**

- A. The work under this item shall include furnishing, hauling, placing, and jointing of Cast Iron and Ductile Iron Pipe in the trench in specific conformity with the lines and levels given. For all pipe, the AWWA Standard for Installation of Cast Iron Water Mains, AWWA Designation C-600 shall govern the installation as applicable. The method of bedding shall be in accordance with Specification 31 23 33 and as shown on the plan Standard Details. If the paint is damaged, the valve shall be cleaned by wire-brushing and given two coats of black asphalt paint.

3.2 PIPE AND FITTINGS

- A. Where Ductile Iron Pipe (DIP) three (3) inches in diameter and larger is specified or required, it shall conform to, and be tested in accordance with, the current American Standard Specification for Ductile Iron Pipe, Centrifugally Cast in metal molds or sand-lined molds, for water or other liquids, AWWA Designation C 151 (ANSI A21.51). Ductile iron pipe less than three (3) inches in diameter shall conform to the manufacturer's standards, either centrifugally or statically cast with a minimum thickness of 0.25 inches. The ductile iron (nodular cast iron) shall conform to ASTM Specification A536 with physical properties of Grade 60-40-18. Length of joints shall be either eighteen or twenty feet. The minimum standard thickness of each size pipe shall be as follows:

<u>Pipe Size</u>	<u>Thickness Class</u>
3" thru 4"	51
6" thru 24"	50
30" thru 54"	51

For larger diameter or deep cover, special design will be provided.

- B. Where Cast Iron Pipe (CIP) is specified or required, it shall conform to, and be tested in accordance with, the American Standard for Gray Iron Pipe Centrifugally Cast in Metal Molds for water or other liquids, AWWA Designation C106. Lengths shall be either eighteen feet or twenty feet. Strength of iron shall be 18/40 and the minimum standard thickness of each size pipe shall be as follows:

<u>Pipe Size</u>	<u>Thickness Class</u>
3" thru 10"	22
12"	23
14" thru 24"	24
30" thru 48"	25

- C. Where Cast Iron Pipe (CIP) and Ductile Iron Fittings are specified or required, they shall conform to, and be tested in accordance with the American Standard for Gray Iron and Ductile Iron Fittings, 3-inch through 48-inch for water and other liquids, AWWA Designation C110. Pressure rating shall be 250 psi. All sleeves shall be the longest of the lengths allowed.

- D. The work under this item shall include all of the requirements specified under the item

of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.

3.3 JOINTS

- A. Cast Iron and Ductile Iron Pipe and Fittings shall be jointed with any of the end types as specified below unless a particular end type is specified. Flange ends shall be used only where specifically noted on the drawings except that the valve connection end of all tapping sleeves shall be flanged.
- B. Push-on joints shall conform to, and be tested in accordance with, the American Standard for Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings, AWWA Designation C111.
- C. Mechanical joints shall conform to, and be tested in accordance with, the American Standard for Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings, AWWA Designation C111.
- D. Bell and spigot joints shall consist of square, braided, sterilized hemp and 99.73 percent pure lead caulking.
- E. Flange joints shall conform to the American Standard for Cast Iron Pipe Flanges and Flanged Fittings, A.S.A. Designation B.16.1.

3.4 LINING AND COATING

- A. All Cast Iron and Ductile Iron Pipe and Fittings shall be bituminous coated outside and cement-mortar lined inside with seal coat in accordance with American Standards for Cement Mortar Lining for Ductile Iron and Gray Iron Pipe and Fittings for Water, AWWA Designation C104.

3.5 VALVES

- A. All valves shall be rated for 250 psi working pressure.
- B. Valve boxes shall consist of a cast iron valve box, encased with a concrete collar over a section of 6-inch PVC pipe, SDR-35 typically, which is of adequate length enabling the valve box to be set at ground level as shown on the standard drawings.

3.6 GATE VALVES

- A. Where gate valves are specified or required, they shall conform to, and be tested in accordance with, the AWWA Standard for Gate Valves, 3-inch through 48-inch NPS for Water and Sewage Systems, AWWA Designation C500. Valves shall have double disc parallel seats, non-rising stem, vertical mounting "O" ring stem seal, counterclockwise opening, and ends to fit the pipe or fitting to which attached.

3.7 BUTTERFLY VALVES

- A. Where butterfly valves are specified or required, they shall conform to, and be tested in accordance with the AWWA Standard for Rubber-Seated Butterfly Valves, AWWA Designation C504. Valves shall have operators which are side mounted with plumb, non-rising stems, counterclockwise opening, and have mechanical joint connections of the size shown on the plans. The operator shall be mounted so that the square operating nut on the valve can be operated from the top.

3.8 AIR RELIEF VALVES

- A. Where air relief valves are specified or required, the valve shall be heavy-duty combination air release and vacuum type for 300 psi water working pressure, tested to 300 psi unless otherwise specified, two-inch size. Body, cover, and baffle shall be cast iron. All internal parts to be either highest quality stainless steel or bronze, and the inside of valve coated with rust inhibitor. Air relief valves shall be set so that the square operating nut on the valve can be operated from the top. Construction standards for air relief valve vaults shall be the same as for manholes.

3.9 CHECK VALVES

- A. Where check valves are specified or required, they shall conform to, and be tested in accordance with the AWWA Standard for Swing Check Valves for Ordinary Water Works Service, AWWA Designation C508. They shall be horizontally mounted, single disc, swing type with a full diameter passage providing minimum pressure loss. Valves shall be of the non-slamming type designed for the future installation of outside lever and weight. Disc faces and seat rings shall be bronze. Ends shall fit the pipe or fitting to which attached (push-on, mechanical, bell and spigot, or flanged). Construction standards for check valve vaults shall be the same as for manholes.

3.10 TAPPING VALVES

- A. Tapping valves shall have the same features as above double disc gate valves and shall have piloted flange or centering lip on the valve flange to fit the tapping sleeve flange.

3.11 FIRE HYDRANTS

- B. Fire hydrants shall conform to the AWWA Standard for Dry-Barrel Fire Hydrants, AWWA Designation C502 as to design, composition, quality of materials, workmanship and shall be manufactured by Mueller, American, M & H, or approved equal by ENGINEER.
- C. All fire hydrants shall be 6" mechanical joint connection, 5-1/4" valve openings

furnished with two 2-1/2" nozzles, and one 4-1/2" pumper connection, with National Standard threads. Two 2-1/2" nozzles shall be spaced 180 degrees apart, with the 4-1/2" pumper nozzle centered between them.

- D. Hydrants shall be of the compression type and shall have incorporated in their design a special section or bolts which intentionally have a lower breaking point than the balance of the unit (traffic flange).
- E. Hydrants shall have a 1-1/2" pentagon shaped operating nut, open left and shall be sized for 3-1/2 feet depth of bury.
- F. All nozzles shall be equipped with chained caps provided with gaskets made of suitable plastic or neoprene.
- G. All fire hydrants shall be painted with two coats of Pittsburg, first line, or approved equal paint. Colors are to be designated by the OWNER'S Fire Department to conform with color-coding system.
- H. Where fire hydrant extensions are specified or required, they shall be of the proper design to accommodate the make of fire hydrant installed.

3.12 CONSTRUCTION

- A. Proper implements, tools and facilities satisfactory to the ENGINEER shall be provided and used by the CONTRACTOR for the safe and convenient performance of the work. All pipe, valves and hydrants shall be carefully lowered into the trench piece by piece by means of a derrick, ropes, or other suitable tools or equipment, in such a manner as to prevent damage to water main materials and protective coatings and linings. Under no circumstances shall water main materials be dropped or dumped into the trench. If damage occurs to any pipe or water main accessories in handling, the damage shall be immediately brought to the ENGINEER'S attention. The ENGINEER shall prescribe corrective repairs or rejection of the damaged items. All pipe and fittings shall be carefully examined for cracks and other defects while suspended above the trench immediately before installation in final position. Defective pipe or fittings shall be laid aside for inspection by the ENGINEER, who will prescribe corrective repairs or rejection. All lumps, blisters, and excess coating shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell shall be wire brushed and wiped clean and dry and free from oil and grease before the pipe is laid.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. During laying operations, no debris, tools, clothing, or other materials shall be placed in the pipe. As each length of pipe is placed in the trench, the spigot end shall be centered in the bell and pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material tamped under it except at the bells. Precautions shall be taken to prevent dirt from entering the joint space.

1. Joining of Push-On Joint Pipe: The inside of the bell and the outside of the spigot

end shall be thoroughly cleaned to remove oil, grit, excess coating and other foreign matter. The circular rubber gasket shall be flexed inward and inserted in the gasket recess of the bell socket.

A thin film of gasket lubricant shall be applied to either the inside surface of the gasket or the spigot end of the pipe or both. Gaskets lubricant shall be as supplied by the pipe manufacturer and approved by the ENGINEER.

The spigot end of the pipe shall be entered into the socket with care used to keep the joint from contacting the ground. The joint shall then be completed by forcing the plain end to the bottom of the socket with a forked tool, jack-type tool or other device approved by the ENGINEER.

Pipe that is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint. Field-cut pipe lengths shall be filed or ground to resemble the spigot end of such pipe as manufactured.

2. Joining of Mechanical-Joint Pipe: The outside of the spigot and inside of the bell of mechanical-joint pipe shall be thoroughly cleaned to remove oil, grit, excess coating and other foreign matter from the joint, and then a thin film of gasket lubricant shall be applied to either the inside surface of the gasket or the spigot end of the pipe or both. Gasket lubricant shall be as supplied by the pipe manufacturer and approved by the ENGINEER.

The cast-iron gland shall be coated with the lubricant and placed on the spigot end with the thick edge toward the gland. The entire section of the pipe shall be pushed forward to seat the spigot end in the bell. The gasket shall then be pressed into place within the bell; care shall be taken to locate the gasket evenly around the entire joint.

When tightening bolts, the gland shall be brought up toward the pipe flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. This shall be done by partially tightening the bottom bolt first then the top bolt, next the bolts at either side, and last, the remaining bolts. This cycle should be repeated until all bolts are within the range of torques as shown below:

Bolt Size (Inches)	Range of Torque (Ft. – Lb.)	Length of Wrench (Inches)
5/8	40 – 60	8
3/4	60 – 90	10
1	70 – 100	12
1 1/4	90 – 120	14

The torque loads may be applied with torque-measuring or torque-indicating wrenches, which may also be used to check the application of approximate torque loads applied by men trained to give an average pull on a definite length or regular socket wrench. If effective sealing is not attained at the maximum torque indicated, the joint should be disassembled, thoroughly cleaned, and reassembled. Overstressing of bolts to compensate for poor installation practice shall not be allowed.

3. For waterlines, all fittings or specials included as pipe shall be blocked in accordance with the attached Standard Details.
 4. For sanitary sewers, a joint between cast iron pipe and vitrified clay pipe or reinforced concrete pipe shall be made with special adapters as approved by the ENGINEER. If adapters are not available, the joint shall be made as instructed by the ENGINEER and encased with concrete one foot (1 ft.) each side of the joints and six inches (6) in thickness.
- I. Fire hydrants shall be located as shown or as directed to provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians.
1. When placed behind the curb, the hydrant barrel shall be set so that no portion of the pumper or hose nozzle cap will be closer than three (3) feet nor more than six (6) feet from the face of the curb.
 2. When set in the lawn space between the curb and the sidewalk, no portion of the hydrant or nozzle cap shall be within six (6) inches of the sidewalk.
 3. All hydrants shall stand plumb and shall have their nozzles parallel with, or at right angles to the curb, with the pumper nozzle facing the curb, and centerline nozzles at least eighteen (18) inches above the ground.
 4. Each hydrant shall be connected to the main with a six (6) inch ductile iron branch controlled by an independent six (6) inch gate valve, unless otherwise specified.
 5. Each hydrant shall be placed upon a slab of stone or concrete not less than six (6) inches thick and fifteen (15) inches square. The rear side of the hydrant, opposite the pipe, shall be blocked with concrete or stone, firmly wedged between the hydrant and the vertical face of the end of the trench of undisturbed earth or it shall be tied to the pipe with suitable straps or metal tension rods as shown on the standard drawings or as directed by the ENGINEER.
 6. Dry walls shall be constructed of crushed stone or coarse gravel having a volume of approximately one-half cubic yard and shall be placed beneath and around the drain ports of the hydrant so the hydrant will properly drain when closed.
 7. Fire hydrant extensions shall be required to bring the fire hydrant up to the existing or proposed grade of the surrounding areas, whereby an 18-inch minimum distance from the ground level to the center of the pumper nozzle may be obtained as shown on the standard drawings.

3.13 METHOD OF PAYMENT

- A. Cast Iron and Ductile Iron Pipe (CIP and DIP) shall be measured for payment by the linear foot of pipe of the size specified in the proposal and shown on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the center line of the pipe. No additional payment shall be made for vertical bends in the pipe, fittings used with drop manholes, fittings or specials not included in this specification, or for concrete blocking.
- B. Deductions will not be made for bends or specials.

3.14 BASIS OF PAYMENT

- A. Accepted quantities of Cast Iron and Ductile Iron Pipe (CIP and DIP) measured as provided above, will be paid for at the contract unit price for:

Cast Iron Pipe Lineal Feet

Ductile Iron Pipe. Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 4 - STEEL PIPE AND FITTINGS**4.1 DESCRIPTION**

- A. The work under this item shall include furnishing, hauling, placing, and jointing of steel pipe in the trench in specific conformity with the lines and levels given. For all lines, the AWWA Standard for Installation of Cast Iron Water Mains, AWWA Designation C-600 shall govern the installation, as applicable. The method bedding shall be in accordance with Specification 31 23 33 and as shown on the attached Standard Details. The drawings show the plan and grade for the pipeline. The CONTRACTOR shall submit detail drawings to the ENGINEER for approval, showing his proposed method of laying the pipe to these grades. All pipelines to be crossed shall be located before these drawings are prepared. Fittings or specials included as pipe shall be blocked in accordance with the attached Standard Details

4.2 PIPE AND FITTINGS

- A. Where steel pipe is specified or required, it shall conform to the AWWA Standard for Steel Water Pipe 6-inches and larger, AWWA Designation C200. Only the following mill pipes specified under AWWA C200 shall be acceptable: ASTM A139, Grades B and C; ASTM A53, Grade B; ASTM A135, Grade B. Only the following steel plate fabricated under ASTM A134 shall be acceptable: ASTM A36, ASTM A572.
- B. All pipe shall be hydrostatically tested to 80% of the minimum yield point with the hydrostatic test pressure indicated on shop fabrication drawings. AWWA Designation C200 shall govern the testing. Pipe length shall be not less than 35 feet per joint, except for specials unless otherwise noted. There shall be no more than one longitudinal or girth seam per section. Nominal pipe diameter and steel thickness shall be as specified on the drawings. The diameter shown is the required inside diameter of steel pipe if coal tar lining is used or inside diameter of lining if mortar lining is used.
- C. All pipe shall be manufactured by an established manufacturer who has had at least three (3) years' experience in successfully building this type of pipe. Openings for air valves, main connections, and blow-off connections must be provided with suitable reinforcements around the opening, welded to the body of the pipe. Openings of the sizes shown on the drawings shall be furnished with steel blind flanges of proper strength to withstand the working pressure of the line where no other provision is made for closing the openings. The pipe shall have ends for slip joints for field welding,

beveled ends for field welding, beveled ends for field butt welding, or plain ends for mechanically coupled field joints.

- D. Twenty-four inch (24") or smaller pipe shall be manufactured with ends of true circular shape, free from indentations, projections, or roll marks for a distance of eight inches (8") from the end of the pipe. This shall be done by hydraulic expansion or some other method satisfactory to the ENGINEER. The outside diameter of the pipe shall be true enough in dimension to permit the passage for a distance of eight inches (8") from the end of the pipe a ring gauge with a bore three-thirty seconds (3/32") of an inch larger than the outside diameter of the pipe.
- E. Where steel fittings or special fittings are specified or required, they shall conform to all of the steel pipe specification requirements and to the AWWA Standard for Dimensions for Steel Water Pipe Fittings, AWWA Designation C208. Where fittings and specials are fabricated from mill pipe, they shall be fabricated from pipe hydrostatically tested to 80% of the pipe steel yield point with mitered joints dye checked for welding flaws. Where fittings and specials are fabricated from plate, they shall be hydrostatically tested to 80% of the minimum plate steel yield point. Changes in line and grade shall be made by steel specials or in the joints. Steel specials shall be used wherever the angle exceeds ten degrees (10°).
- F. Where field cutting of steel pipe is permitted, pipe shall be cut by sawing. The inside lining shall be removed for a minimum of eight inches each side of the cut and the pipe surface shall be cleaned and brushed to bright metal. After welding, the inside lining shall be replaced in accordance with AWWA C203.
- G. All steel blind flanges supplied in accordance with Section 405 shall be ASTM A36 Steel, 5/8-inch thick with approved gaskets and bolts. All bolts shall be carbon steel ASTM A307 Grade A only, in accordance with AWWA C207.
- H. The work under this item shall include all of the requirements specified under the item of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.

4.3 JOINTS

- A. Steel Pipe and fittings shall be jointed with any of the end types as specified below unless a particular end type is specified. Flange ends shall be used only where specifically noted on the drawings.
- B. Welded joints shall conform to, and be tested in accordance with, the AWWA Standard

for Field Welding of Steel Water Pipe, AWWA Designation C206.

- C. Mechanically coupled joints shall consist of Dresser Couplings, Style 38, or equal, or as specified on the drawings.
- D. Flanged joints shall conform to the AWWA Standard for Steel Pipe Flanges for Waterworks Service Size 4-inch through 144-inch, AWWA Des. C207, Class E.

4.4 LINING AND COATING

- A. Steel pipe and fittings shall be lined in accordance with the AWWA Standard for Cement Mortar Protective Lining and Coat for Steel Water Pipe, AWWA Designation C205, or the AWWA Standard for Coal-Tar Enamel Protective Coatings for Steel Water Pipe, AWWA Designation C203. The exterior of all underground pipe shall be cleaned, primed, and coated with coal-tar enamel, fibrous glass mat, and a bonded asbestos felt wrapper, and with either a whitewash coating or a final wrap of kraft paper, and the exterior of all above ground pipe shall be cleaned, primed, and painted, all in accordance with the AWWA Standard for Coal-Tar Enamel Protective Coatings and Linings for Steel Water Pipe, AWWA Designation C203, or in accordance with the AWWA Standard for Chlorinated Rubber-Alkyd Paint System for the Exterior of Above Ground Steel Water Piping.
- B. If mechanical couplings are used for field joints, the ends of the pipe shall be primed and enameled before the pipe is laid. If field welding is used, the pipe joints shall be furnished with the inside lining and outside coating held back twelve inches on each end for field welding. All of the lining and coating, including any field touch-up work, shall be done under the direction of the manufacturer of the lining and coating to the satisfaction of the ENGINEER. The lining at the joints on welded pipe may be patched with a minimum of two (2) coats of a coal tar or epoxy-based paint which shall be compatible with the interior lining and which shall impart no taste or odor to the water in the lines.

4.5 CONSTRUCTION

- A. If joints are field-welded, they shall develop the full strength of the pipe. The CONTRACTOR shall file with the ENGINEER a description of the method of welding which he proposes to use, the name of the individual or company who will do the welding, and a statement regarding the previous experience of such individual or company in this particular line of work. If requested, coupons shall be cut across the field welds and tested by an approved testing laboratory. The line may be welded continuously with provisions for slack in the line, or in sections to be lowered in the trench and connected by a position weld.
- B. If joints are to be mechanically coupled, sections up to 240 feet may be coupled and lowered carefully into the ditch. Electrical continuity shall be provided at all joints. Preparation for, protection of, and repair of pipe coating and lining, and coating of mechanical couplings shall conform to the applicable section of these specifications.

4.6 METHOD OF PAYMENT

- A. Steel pipe shall be measured for payment by the linear foot of pipe specified in the proposal and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe, fittings used with drop manholes, fittings or specials included as pipe, or for concrete blocking.

4.7 BASIS OF PAYMENT

- A. Accepted quantities of steel pipe measured as provided above, will be paid for at the contract unit price for:

STEEL PIPE Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 5 - REINFORCED CONCRETE PIPE AND FITTINGS

5.1 DESCRIPTION

- A. The work under this item shall include furnishing, hauling, placing and jointing of reinforced concrete pipe (RCP) in the trench in specific conformity with the lines and levels given.

5.2 PIPE AND FITTINGS

- A. Where reinforced concrete pipe (RCP) and fittings are specified or required for waterlines, they shall conform to and be tested in accordance with the AWWA Standard for Prestressed Concrete Pressure Pipe, Steel Cylinder Type, for Water and Other Liquids, AWWA Designation C301. All pipe shall be manufactured by an established manufacturer who has had at least three years' experience in successfully building this type of pipe. All specials and fittings shall be either of Type A or Type B and must be built to the details furnished by the manufacturer and approved by the ENGINEER. Each special and each length of straight pipe shall be plainly marked to indicate the head for which the pipe is designed and to indicate where the pipe will be used by reference to the layout drawings.
- B. Where reinforced concrete pipe (RCP) and fittings are specified or required for sanitary sewers, they shall conform to and be tested in accordance with the specifications for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe, ASTM Designation C76, Class as shown on the drawings. No lengths of pipe shall be less than eight feet. All concrete pipe shall be coated inside with two (2) coats of a coal-tar base paint (Standard Inertol®, or approved equal), with a twenty-four hour drying period between coats.

5.3 JOINTS

- A. Reinforced concrete pipe and fittings for waterlines shall be jointed according to AWWA Standard for Prestressed Concrete Pressure Pipe Steel Cylinder Type, for Water and Other Liquids, AWWA Designation C301.
- B. Reinforced concrete pipe and fittings for sanitary sewer shall be jointed with a single natural rubber or neoprene gasket and cement mortar formed by a diaper. It shall be formed in a continuous ring of suitable cross sections and of such size as to assure a watertight joint. Each length of pipe shall be provided with bell-and-spigot ends formed in the concrete wall. The spigot end shall contain a groove so that the gasket will be enclosed and compressed on four surfaces when the joint is in final position. All jointing materials shall be used in accordance with the manufacturer's instructions and subject to approval of the ENGINEER.

5.4 CONSTRUCTION

- A. For waterlines, the AWWA Standard for Installation of Cast Iron Water Mains, AWWA designation C-600, shall govern the installation as applicable. The method of bedding shall be in accordance with Specification 31 23 33 and as shown on the attached Standard Details. The drawings show the plan and grade for the pipeline. The CONTRACTOR shall submit detailed drawings to the ENGINEER for approval, showing the proposed method of laying the pipe to these grades. All pipelines to be crossed shall be located before these drawings are prepared. The ends of the pipes to be jointed shall be cleaned immediately prior to joining and the rubber gasket thoroughly lubricated with a thin film of gasket lubricant before it is placed in position on the spigot end.
- B. Gasket lubricant shall be as supplied by the pipe manufacturer and approved by the ENGINEER. Extreme care shall be taken in moving the spigot end of the pipe into the bell end of previously laid pipe. If the gasket is damaged or moved out of place, the new pipe shall be removed, and a new gasket applied before rejoining. Any lubricant remaining on the exposed concrete surfaces inside or outside the pipe shall be completely removed. Fittings or specials included as pipe shall be blocked in accordance with the attached Standard Details.
- C. For sanitary sewers, the methods of laying pipe, foundation, and grade specified under Pipe, Vitrified Clay, shall apply. All pipe shall be installed with the mark "C-76" visible on the top of the pipe. The ends of the pipes to be jointed shall be cleaned immediately prior to joining and the rubber gasket thoroughly lubricated with gasket lubricant before it is placed in position on the spigot end. Extreme care shall be taken in moving the spigot end of the pipe into the bell end of the previously laid pipe. If the gasket is damaged or moved out of place, the new pipe shall be removed, and a new gasket applied before rejoining.
- D. For all lines, after the pipe has been jointed, a band at least 5-1/2 inches wide shall be placed around the outside of the pipe at the joint. This band shall serve as a form for placing 1:1 cement mortar grout in the external recess formed by the face of the groove and the shoulder of the tongue. If a reinforced paper joint bank is used, it shall be drawn up tight around the pipe and the backfill tamped against it up to the spring line before pouring the grout. If a cloth band is used, it shall be wired around the outside

of the pipe, and the grout poured before backfilling. On all pipes, the joint space remaining on the inside of the pipe shall be filled with a stiff mixture of 1:1 cement mortar which shall be troweled in place to produce a continuous, smooth, flush surface across the joint.

5.5 METHOD OF PAYMENT

- A. Reinforced Concrete Pipe (RCP) shall be measured for payment by the linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe, fittings used with drop manholes, fittings or specials included as pipe, or for concrete blocking.

5.6 BASIS OF PAYMENT

- A. Accepted quantities of Reinforced Concrete Pipe (RCP), measured as provided above, will be paid for at the contract unit price for:

REINFORCED CONCRETE PIPE (RCP) Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 6 - THERMOPLASTIC POLYVINYL CHLORIDE (PVC) WATER PIPE AND FITTINGS

6.1 DESCRIPTION

- A. Thermoplastic Polyvinyl Chloride (PVC) water pipe 6 to 12-inches in size shall be allowed in the distribution system of the OWNER. The AWWA Standard for the installation of PVC water mains, AWWA Designation C-605 shall govern the installation, as applicable.

6.2 PIPE AND FITTINGS

- A. Where thermoplastic polyvinyl chloride (PVC) water pipe is specified or required, it shall conform to the AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch through 12-inch, for water, AWWA Designation C900. PVC pipe shall conform to the dimensions shown in Table 2 of AWWA C900, Dimensions and Pressure Classes for Dimension Ratio (DR) for PVC 1120 Pipe with Cast Iron Pipe Equivalent ODS. The minimum DR shall be in accordance with the plans and the minimum working pressure rating shall be 150 psi.
- B. Fittings for PVC pipe 8-inches in diameter and smaller shall be Cast Iron Short Body Fittings in accordance with AWWA C110 specification for Cast Iron Fittings, 2-inch through 48-inch, for Water and Other Liquids. All fittings shall be designed and rated for 250 psi water working pressure.

- C. The work under this item shall include all of the requirements specified under the item of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.

6.3 JOINTS

- A. Jointing of plastic pipe shall be accomplished by push-on type joints. Push-on joints consisting of a rubber "O" ring shall be used. The CONTRACTOR shall furnish to the ENGINEER details of the proposed joint in triplicate for approval before any such jointing material is delivered to the job site.

6.4 CONSTRUCTION

- A. Pipe shall be laid to the lines and grades established by the ENGINEER. The bottom of the trench shall be relatively uniform and in no case shall pipe be laid on rock. Where rock is encountered, Class "A" bedding shall be required.
- B. Long plastic pipelines, over three hundred feet (300 ft.) in length without an abrupt change in direction, shall be "snaked" in the trench to provide for expansion and contraction. Snaking shall be equivalent to the pipe touching opposite sides of a twenty-four inch (24) wide trench within a distance of eighty feet (80 ft.). It is recommended that, during warm weather, whenever practical, pipelines be filled with cold water or allowed to cool overnight before backfilling trench. Push-on joints shall be made with extreme care and by following the manufacturer's recommendation as to installation procedures. If the design of the joint permits for linear expansion of the pipe, the trench width may be reduced. Adequate thrust blocks as approved by the ENGINEER will be required at all bends, tees, and crosses.

6.5 METHOD OF PAYMENT

- A. Thermoplastic Polyvinyl Chloride (PVC) water pipe shall be measured for payment by the linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe.

6.6 BASIS OF PAYMENT

- A. Accepted quantities of Thermoplastic Polyvinyl Chloride (PVC) water pipe, measured as provided above, will be paid for at the contract unit price for:

THERMOPLASTIC POLYVINYL CHLORIDE (PVC) PIPE Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 7 - TYPE PSM POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS**7.1 DESCRIPTION**

- A. Type PSM Polyvinyl Chloride (PVC) sewer pipe ranging in size from 4 inches to 15 inches, may be installed within the OWNER'S collection system, as approved by the ENGINEER. The work under this item shall include furnishing, hauling, placing, and joining of PVC sewer pipe within the trench in specific conformity with lines and levels given. For all pipe, the ASTM Standard 2321-89 "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications" shall govern with respect to installation of the pipe. The method of bedding shall be in accordance with PART 5 of this specification and any exceptions listed below, and as shown on the attached standard details.

7.2 PIPE AND FITTINGS

- A. Where Type PSM polyvinyl chloride (PVC) sewer pipe is specified or required, it shall conform to ASTM Standard D3034-94 "Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings". Nominal pipe diameter may be from 4 inches to 15 inches in size. All PVC sewer pipe shall have a minimum pipe stiffness of 115 psi and shall have a Standard Thermoplastic Pipe Dimension Ratio (SDR) in accordance to the plans. The pipe shall be made of PVC plastic having a cell classification of 12454-B or 12454-C or 12364-C or 13364-B (with minimum tensile modulus of 3450 MPa (500,000 psi) as defined in ASTM Standard D1784. The pipe shall be clearly marked at intervals of 1.5 meters (5 ft.) or less, and the markings shall indicate manufacturer's name or trademark and code, nominal pipe size, the cell classification, the designation "Type PSM SDR-XX PVC Sewer Pipe", and the designation "Specification D3034". The fittings shall be marked with manufacturer's name or trademark, nominal size, the material designation "PVC", PSM, and the designation "Specification D3034".

7.3 JOINTS

- A. Jointing of plastic pipe shall be accomplished by push-on type joint, with an elastomeric seal conforming to ASTM Standard D3212-92 "Standard Specification for Joint for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals". The CONTRACTOR shall furnish to the ENGINEER details of proposed joint in triplicate for approval before any such jointing material is delivered to the job site.

7.4 CONSTRUCTION

- A. The pipe shall be laid on a firm foundation as required in over-excavated areas, and a bedding with a minimum thickness of 4 inches (6 inches in rock cuts). Haunching material shall be placed to the springline of the pipe and be installed in layers with a maximum thickness of 6 inches. The haunching material shall be worked around the pipe by hand, and the shovel slicing method to provide uniform support of the pipe. The initial backfill shall be placed in layers to a minimum depth of 6 inches to the top of the pipe and be placed in layers with a maximum thickness of 6 inches. All material for foundation, bedding, haunching and initial backfill shall be compacted to 85% or 95% of Standard Proctor as required according to the USCS soil classification system, and in conjunction with ASTM Standard D2321-89. Maximum particle size for all backfill material shall be 3/4 inch. All backfill shall be free from clods, lumps, boulders and frozen matter.
- B. Place pipe and fittings in the trench with the invert conforming to the required elevations, slopes and alignment. Provide bell holes in the pipe bedding, no larger than necessary, in order to ensure uniform pipe support. Fill all voids under the bell by working in bedding material. In special cases where the pipe is to be installed to a curved alignment, maintain angular "joint deflection" (axial alignment) or pipe bending radius, or both, within acceptable design limits.
- C. Comply with manufacturers recommendation for assembly of joint components, lubrication, and making of joints. When pipe laying is interrupted, secure piping against movement and seal open ends to prevent the entrance of water, mud, or foreign material.
- D. For elastomeric seal joints conforming to ASTM D3212-92 "Standard Specification for Joints for Drain and Sewer Plastic Pipe Using Flexible Elastomeric Seal", the pipe ends shall be marked to indicate insertion stop position and ensure that the pipe is inserted into pipe or fitting bells to this mark. Push spigot into bell using methods recommended by the manufacturer, keeping pipe true to line and grade. Protect end of the pipe during homing and do not use excessive force that may result in over-assembled joints or dislodged gaskets. If full entry is not achieved, disassemble and clean the joint and reassemble. Use only lubricant supplied or recommended for use by the pipe manufacturer. Do not exceed manufacturer's recommendation for angular "joint deflection" (axial alignment).
- E. Where coarse and open-graded material is placed adjacent to finer material and within anticipated ground water elevations, a geotextile filter fabric shall be placed around the bedding and initial backfill material to prevent the migration of the surrounding fines into the open voided area.
- F. After installation of the pipe has been completed and air tested, the CONTRACTOR shall pull a mandrel that has been machined to 5% of the inside diameter of the pipe from manhole to manhole. The pulling of the mandrel shall be performed no earlier than 30 days from the date of the air testing.

7.5 METHOD OF PAYMENT

- A. Type PSM Polyvinyl Chloride (PVC) sewer pipe shall be measured for payment by linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe or fittings used with drop manholes.

7.6 BASIS OF PAYMENT

- A. Accepted quantities of Polyvinyl Chloride (PVC) sewer pipe, measured as provided above, will be paid for at the contract price for:

Polyvinyl Chloride (PVC) Sewer Pipe Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 8 – HDPE PIPE AND FITTINGS**8.1 DESCRIPTION**

- A. This specification covers the material, joining methods, and general installation practice for high density polyethylene pipe (HDPE) piping systems for use as indicated on the drawings. For all pipe, it must be installed in accordance with AWWA C901 and C906.

8.2 PIPE AND FITTINGS

- A. All materials shall be manufactured from a PE 4710 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material shall meet the specifications of ASTM D3350 with a minimum cell classification of 445474C or 445574C. HDPE pipe and fittings shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. HDPE products shall be homogenous throughout and free of visible cracks, holes, foreign inclusions, voids, or other injurious defects.
- B. Pipe shall be made of HDPE material with a minimum material designation code of PE 4710 and with a minimum Cell classification as noted in Section A. The polyethylene compound shall be suitably protected against degradation by ultraviolet light by means of carbon black of not less than 2 percent. The manufacturer of the HDPE resin shall certify the cell classification indicated.
- C. Pipe sizes 3" DIPS/4" IPS and larger shall have a manufacturing standards of ASTM F714, while IPS pipe 3" and smaller shall be manufactured to the dimensional requirements listed in ASTM D3035. Dimension Ratio (DR) and Outside Diameter (IPS/DIPS) shall be as specified on plans.

- D. Pipe shall be manufactured by an ISO 9001 certified manufacturer. The pipe manufacturer shall have an ongoing Quality Control program for incoming and outgoing materials and shall assure that the pipe will meet the material requirements of this specification. HDPE resins for manufacturing of pipe shall be checked for density, melt flow rate, and decontamination. For potable water systems the facility shall have the necessary testing equipment to verify that pipe meets the AWWA and NSF standards. Pipe shall be checked for outside diameter, wall thickness, length, and surface finish on the inside and outside. The manufacturer's production facilities shall be open for inspection by the Owner or Engineer.
- E. All pipe may be color coded for the intended service. When required, the color coding shall be permanently co-extruded stripes on the pipe outside surface as part of the pipe's manufacturing process. Painting HDPE pipe to accomplish color coding is not permitted.
- F. All fabricated elbows, tees, reducing tees and end caps shall be produced and meet the requirements of ASTM F2206, as manufactured by ISCO Industries, Inc or other approved manufacturer holding an ISO 9001 quality system certificate. Each fitting will be marked per ASTM F2206 section 10 including the nominal size and fitting EDR, which will meet or exceed the pipe DR identified for the project. Fabricated fittings shall be manufactured using a data recording device to record fusion pressure and temperature and shall be stamped with unique joint number that corresponds to the joint report. A graphic representation of the temperature and pressure data for all fusion joints made producing fittings shall be maintained for a minimum of 5 years as part of the quality control and will be available upon request of owner. Test results to validate ASTM F2206 section 7.3 and 9 shall be provided to owner or owner's representative upon request.
- G. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans or accepted by ENGINEER.
- H. The work under this item shall include all of the requirements specified under the item of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.
- I. Bolted Connections
 - 1. Flanged and Mechanical Joint Adapters can be made to ASTM D3261. Flange adapters, if machined, may also meet the requirements of ASTM F2880. Flanges and MJ Adapters shall be fused onto the pipe and have a minimum pressure rating equal to or greater than the pipe unless otherwise specified on the plans.

2. Metallic back-up rings (Van-Stone style lap joint flanges), shall have a radius on the inside diameter of the bore so as to be compatible with AWWA C207 Class D (or B or E), ASME/ANSI B 16.5 Class 150, ASME/ANSI B 16.1 Class 125, or ASME/ANSI B16.47 Series A.
3. Flange assemblies shall be assembled and torqued according to PPI TN-38, "Bolt Torque for Polyethylene Flanged Joints."

J. Mechanical Fittings

1. The use of mechanical coupling and saddles shall be approved by the ENGINEER prior to installation. Mechanical fittings shall be designed for use an compatible with HDPE pipe.
2. Coupling without self-restraining capabilities (integrated serrated teeth or grippers) shall include a plan for external restraint or isolation from pipeline generated forces.
3. Mechanical saddles shall have wide straps for distribution of clamping loads. No U-Bolts shall be allowed.
4. When required by mechanical coupling manufacturer, pipe stiffeners shall be employed to support the interior wall of the HDPE. The stiffeners shall support the pipe's end and control the "necking down" reaction to the pressure applied during normal installation. The pipe stiffeners shall be formed of 304 or 316 stainless steel, with a wedged style design to fit the HDPE manufacturers published average inside diameter of the specific size and DR of the HDPE.

8.3 EQUIPMENT

- A. All fusion equipment, whether new or used, rented or owned, shall comply with the requirements of ISO 12176-1 "Equipment for Fusion Jointing Polyethylene Systems".
- B. Butt Fusion
 1. Butt fusion equipment must be in satisfactory working order and the hydraulic system must be leak free. Heater plates shall be free from scrapes, gouges, and have a consistent clean coated surface. The pressure gauge and thermometer should be properly calibrated. When requested by the ENGINEER, records showing a maintenance service or inspection within 3 months prior to use for this project shall be provided.
 2. For 16" and larger pipe sizes, the butt fusion machine shall be capable of autonomously calculating the drag pressure and perform the shift sequence autonomously.

3. For 6" and larger pipe sizes, the pipe butt fusion machine shall be a self-contained hydraulic fusion machine capable of butt fusing HDPE pipe. The carriage must be removable from the chassis for in-ditch use. The machine must be compatible with an electronic data recording device. Accessories will include all butt fusion inserts for the specified range of pipe sizes, a pyrometer kit for checking the surface temperature of the heater, extension cord of appropriate gauge (25' minimum), and hydraulic extension hoses (minimum of four). The butt fusion machine will be McElroy, or approved equivalent.
 4. In areas where there may be insufficient space for layout of the entire length of fused pipe to be pulled-back, the Contractor shall utilize a continuous HDPE pipe fusion equipment such as a PolyHorse by McElroy or other means in order to fuse the length of pipe necessary for the installation.
- C. Electrofusion processors shall be maintained and calibrated per manufacturer's requirements and recommendations.

8.4 JOINTS

- A. All HDPE pipe shall be joined to by the heat fusion process which produces homogeneous, sealed, leak-tight joints. Tie-ins between sections of HDPE pipe shall be made by butt fusion whenever possible.
- B. Butt Fusion
1. The pipe shall be joined by the butt fusion procedure outlined in ASTM F2620 or PPI TR-33. All fusion joints shall be made in compliance with the pipe or fitting manufacturer's recommendations. Fusion joints shall be made by qualified fusion technicians per ASTM F3190. A record or certificate of training for the fusion operator must be provided that documents training to the fundamentals of ASTM F2620. Considerations should be given to and provisions made for adverse weather conditions, such as temperatures below freezing, precipitation, or wind, which is accepted by the owner/engineer. The use of a controlled cooling cycle procedure to reduce cooling time is acceptable only as part of a controlled cooling cycle procedure where testing demonstrates that acceptable joints are produced using the controlled cooling cycle procedure.
- C. Electrofusion
1. Electrofusion joining shall be done in accordance with the manufacturers recommended procedure. Other sources of electrofusion joining information are PPI TN 34 and PPI Municipal Advisory Board (MAB) Generic Electrofusion Procedure for Field Joining of 12 Inch and Smaller Polyethylene (PE) Pipe. The process of electrofusion requires an electric source, commonly called an electrofusion processor that has wire leads and a method to read electronically (by laser) or otherwise input the barcode of the fitting. The electrofusion processor must be capable of reading and storing the input parameters and the fusion results for later download to a record file. Qualification of the fusion technician shall be demonstrated by evidence electrofusion training within the past year on the equipment to be utilized for this project.

D. Data Recording

1. For 6" and larger pipe sizes, McElroy DataLogger or equivalent fusion data recorder shall be used to record all fusion welds on hydraulically operated fusion machines. The device shall be capable of meeting the requirements of ASTM F3124, "Standard Practice for Data Recording the Procedure used to Produce Heat Butt Fusion Joints in Plastic Piping Systems or Fittings". The device, or combination of devices, shall record the following variables of each fused joint:
 - i. Heater surface temperature- immediately before inserting the heater plate, measure with a pyrometer and manually enter into the weld record.
 - ii. Gauge pressure during the initial heat cycle
 - iii. Gauge pressure and elapsed time during the heat-soak cycle
 - iv. Heater removal (dwell) time
 - v. Gauge pressure and elapsed time during the fusing/cool cycle
 - vi. Drag pressure
 - vii. Pipe diameter and wall thickness
 - viii. Type of HDPE material (Specification and Classification) and manufacturer
 - ix. Fusion Machine Identification
2. The device shall record the operator name and a unique operator ID number, along with the date and time of each weld.
3. Records showing the device is up to date on all required calibration should be available for presentation when requested.
4. All fusion welds should be traceable to the report (via operator and weld ID) with an indentation weld stamp or by permanent paint marker/pen next to fusion weld.
5. A weld location map may be requested, prior to commencement of work, by the owner or owner's representative.

8.5 CONSTRUCTION

A. For direct burial, refer to Specification 31 23 33.

B. Pull-In Installation

1. Per ASTM F1804 and/or www.HDPEapp.com, the contractor shall determine and document the maximum proposed pull-in length and pull-in force for the pressure class and pipe diameter to be pulled into an open trench. Pull-in lengths will not exceed the maximum lengths for the class and diameter pipe. A commercially available load limiter (weak link) approved by the Engineer shall be used between the puller and the pipe.
2. Prior to pulling the pipeline, contractor shall place rollers or other approved devices beneath the pipe to avoid unnecessary damage and to reduce pipe drag.

3. Trenchless installations:

- i. For Horizontal Directional Drilling (HDD), refer to Specification 33 05 07.13 and ASTM F1962, PPI TR-46, PPI PE Handbook (Chapter 12).
- ii. For sliplining, refer to ASTM F585, PPI PE Handbook (Chapter 11).
- iii. For pipe bursting, refer to Specification 33 31 30 and PPI PE Handbook (Chapter 16)

C. Appurtenances

- 1. All appurtenances (tees, elbows, services, valves, air relief valves, fire hydrants, etc.), must be independently supported and shall not rely on the pipeline and its connections for this support. Excessive stresses may be encountered when appurtenances are inadequately supported.
- 2. Hydrant Assemblies shall be installed and field tested according to the requirements of AWWA M17.
- 3. Installation of Tracer Wire. When tracer wire is required, the Contractor shall install along the entire section of pipeline and along all service connections as listed below. The tracer wire shall be installed simultaneously with the polyethylene piping system. Tracer wire shall be installed by the Contractor once backfill has been placed and compacted to at least 12 inches above the top of the pipe and not more than 18 inches above the top of the pipe. Tracer wire shall be properly spliced at each end connection and each service connection. Care should be taken to adequately wrap and protect wire at all splice locations. No bare tracer wire shall be accepted. Provide Magnesium alloy anode for cathodic protection that conforms to the requirements of ASTM B843. Install tracer wire per local and manufacturer's requirements.

8.6 METHOD OF PAYMENT

- A. HDPE pipe shall be measured for payment by the linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe.

PART 9 – SEWER CONNECTION

9.1 DESCRIPTION

- A. The work under this item shall include all excavation, furnishing all materials required, construction, finishing, and backfilling of connections to existing mains, manholes, drop connections to manholes, special connections, service line connections, or plugs, as indicated on the drawings or as directed by the ENGINEER.

9.2 CONSTRUCTION

- A. Connections to existing manholes shall be made by cutting into the manhole at the specified grade, inserting the pipe, and encasing the joint with concrete. CONTRACTOR shall not break into any existing sewer unless the OWNER'S REPRESENTATIVE is present and the work done shall be under the direction of the OWNER'S REPRESENTATIVE. The manhole base shall be cut and reconstructed in such a manner that a proper invert section is maintained. All waste mortar, debris, and sharp edges shall be removed from the joints, bottom, and invert. CONTRACTOR shall remove and replace the manhole steps in the proper location and in accordance with the attached standard details if they are not properly located after the connection is made. Any and all diversion or pumping of water or sewage in a wet connection is included in this item.
- B. Methods of construction shall be the same for sewer service line reconnections as for main sewers. All reconnections shall be constructed in conformance with the Plumbing Code of the OWNER unless modified herein. New pipe used shall be of the same diameter as the existing line.
- C. Plugs shall be constructed of manhole brick and mortar, extending at least one foot into the line plugged from the manhole. The plug shall be watertight and troweled to a smooth finish on the interior of the manhole.
- D. At points indicated on the plans or by the ENGINEER, risers of the size indicated on the plans, or as required by the ENGINEER, shall be constructed. A 45-degree bell and spigot bend shall be jointed to the wye to a point level with lower side of bell of 45-degree bend. Pipe for risers shall be regular length joints of sewer pipe. Risers using full joints of pipe shall be set so that the top of riser is near to but not less than ten (10) feet below finished ground grade at rear of building location. If the OWNER desires, the CONTRACTOR may, at the OWNER's expense, extend risers to a point not less than six (6) feet below finished grade at rear of the building locations, but, in no case, shall there be less than four (4) feet of cover over riser.

When contained wholly on the public right-of-way, or within the boundaries of utility easements, risers may be laid on a slope of 45 degrees.

9.3 METHOD OF MEASUREMENT

- A. Connections will be measured for payment per each classification of connection as shown on the proposal. No additional payment will be made for excavation, backfilling, furnishing and placing concrete, removing and replacing manhole steps, or for diversion or pumping of water or sewage necessary to make the connection. Connections shown on the plans but not classified on the proposal shall be considered incidental to the work and will not be measured for payment but the cost shall be included in other items.

9.4 BASIS OF PAYMENT

- A. Accepted quantities measured as provided above will be paid for at the contract unit price as shown on the proposal for each connection which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 10 – WATER CONNECTION

10.1 DESCRIPTION

- A. The work under this item shall include all excavation, furnishing all materials required, construction, finishing, and backfilling of connections to existing mains, valves, special connections, service line connections, as indicated on the drawings or as directed by the ENGINEER.

10.2 CONSTRUCTION

- A. The drawing shows details of the various connections and they shall be made in accordance with the details or as directed by the ENGINEER. On water mains, the CONTRACTOR will make the pressure and wet connections to existing mains as shown on the drawing unless specifically noted otherwise. In making these connections all material, equipment, and personal necessary for the job shall be assembled at the site and all work possible shall be done before the service is interrupted. The order and time of the work will be under the jurisdiction of the ENGINEER. If deemed necessary, the ENGINEER may order the CONTRACTOR to make the connection at night so as to inconvenience the public as little as possible.

- B. Where called for on the plans, or by the specifications, tapping valves and sleeves shall be used to make connections with existing water mains. The CONTRACTOR, when ready to make any of these connections, will notify the ENGINEER 48 hours in advance. The CONTRACTOR shall furnish all material, labor and equipment to make the taps.

The tapping valves furnished shall be Mueller, American Flow, or approved equal and tapping sleeves furnished shall be Ford, Smith Blair, or approved equal satisfactory to the ENGINEER. The tapping sleeves shall be the bolted type, heavy duty, using iron bolts, cast iron or equal satisfactory to the ENGINEER.

- C. Service line connections for water services shall be constructed as shown on the standard drawings and materials shall be copper, brass, municipex, or approved equal by ENGINEER.
- D. The material and workmanship for brass goods shall be of the highest quality and shall interchange with brass goods presently in use by the owner. Brass goods shall conform to the same precise standards as described in AWWA Specifications Number C800 Standard Specifications for underground service line fittings.
- E. Brass goods shall contain 85 percent copper and 5 percent each of tin, lead, and zinc and shall be tested by hydrostatic pressure of 200 pounds per square inch. The bidder shall furnish a complete description of brass goods with his bid.

- F. Copper tubing shall be Type "K" soft annealed seamless tubing and shall conform to ASTM-B88 Standard Specification for Seamless Copper Water Tube.
- G. The coils of copper tubing shall be in individual packages. The CONTRACTOR shall furnish an affidavit that the copper tubing furnished complies with all specifications.
- H. Municipex pipe shall be in accordance with AWWA 904 and ASTM F876.

PART 11 – CASTINGS

11.1 GENERAL

- A. Castings for valve boxes, valve vaults, manholes, lamp holes, and other appurtenances shall conform to, and be tested in accordance with the specifications for Gray Cast Iron, ASTM Designation A48, Class 30. Design shall be according to the attached Standard Details. Frames and covers that are to be located within dedicated public right-of-way, or any other location subject to vehicular traffic, shall have all bearing surfaces machined so that fittings parts will not rattle or rock under traffic. All castings shall be subject to a hammer test before installation.

PART 12 - RIGHT-OF-WAY CLEARING AND RESTORING

12.1 DESCRIPTION

- A. Work under this item shall include the removal and reconstruction or replacement of all obstructions affected, other than those covered in this specification, by the construction of the project including, but not limited to fences, retaining walls, patios, barbecues, signs, mailboxes, outbuildings, landscaping, sidewalks, driveways, parking lot surfacing, curbs, and the like. Any such obstructions which are not to be reconstructed are so designed on the drawings. Such shall be removed and disposed of by the CONTRACTOR. All obstructions to be replaced or reconstructed shall be restored to substantially the same condition as existed prior to the construction, except as otherwise noted. All sidewalk, driveway, and parking lot replacement shall be of at least equal quality, thickness, compacted subgrade and base course, and surface course as that removed or damaged. The CONTRACTOR shall remove and dispose of all debris, restore the grade of the surface of the earth as reasonably as may be done to the grade existing prior to construction, and upon completion of the work shall leave the site in as neat, clean, and orderly condition as nearly as it was prior to construction as may be reasonably done.

12.2 MATERIALS AND TESTS

- A. Backfill materials under parking lots and driveways shall be in accordance with Specification 31 23 33 or as approved by the ENGINEER.
- B. Portland Cement Concrete shall be in accordance with Specification 03 30 00. All concrete placed in parking lots, driveways, sidewalks, and all other concrete structures within the right-of-way shall use high-early strength cement.
- C. Asphaltic Concrete - Bituminous pavement shall meet the requirements shown in Section 32 12 16.39.

- D. Sampling and Testing - Sampling of materials will be made in accordance with the appropriate methods specified in the corresponding section listed above. Tests will be conducted in accordance with the schedule of tests provided in the special provisions or as shown on the plans.

12.3 CONSTRUCTION

- A. Passable surfaces across or along the construction vicinity shall be maintained at all times with gravel, steel mat or plate, or temporary bituminous surfacing material where a sidewalk, driveway, or parking lot previously existed.
- B. Sidewalks, driveways, parking lots, and other paved areas, all or partially composed of concrete, asphaltic concrete, or bituminous material shall be saw cut, removed, and replaced to at least the standard trench width if the project crossing is at right angles to the obstruction. If a construction joint is within two (2) feet of any proposed sawed line, the cut shall be extended to the joint, or as directed by the ENGINEER. Curbs shall be tunneled under in all cases, unless otherwise approved in writing by the ENGINEER.
- C. Backfill under sidewalks, driveways, parking lots, and other paved areas shall be in accordance with Specification 31 23 33. All backfill shall be thoroughly compacted with sufficient moisture and by mechanical means to prevent settlement. Settlement or other failure of backfill or restored right-of-way shall be corrected immediately. The method of correction shall be as directed by the ENGINEER.
- D. Existing water and sewer lines: Wherever existing water or sewer lines are encountered, the CONTRACTOR shall protect the same from damage. In case damage does result, the CONTRACTOR shall, as directed by the ENGINEER, repair the same at his own expense.
- E. Vertical and horizontal separation of water and sewer lines: Where a sanitary sewer crosses any existing or proposed water main and is closer than 10-feet horizontally or 2-feet vertically the sanitary sewer shall be ductile iron pipe for a distance of 20-feet horizontally. If the sanitary sewer crosses above the water main, the sanitary sewer shall be ductile iron pipe and concrete encased. Where a sanitary sewer is constructed closer than 50 feet to a water well (existing or proposal) the sanitary sewer shall be ductile iron pipe.

Where a water main crosses any existing or proposed sanitary sewer and is closer than 10-feet horizontally or 2-feet vertically, the sanitary sewer shall be replaced for a distance of 20-feet horizontally with ductile iron pipe. If the water main crosses below the sanitary sewer, the sanitary sewer shall be replaced with ductile iron pipe and concrete encased.

- F. Existing structures which are to be abandoned shall be broken off or removed to a depth of not less than six (6) inches below the foundation grade of new structures. Any blasting or other operation which might endanger the new work shall be completed prior to the construction of any part of the new structure. After the removal of any existing structures, all excavations not to be occupied by new structures and all holes created shall be cleaned up and the site left in a neat and orderly condition.

- G. If an obstruction is of public ownership, the CONTRACTOR shall notify the appropriate agency, and obtain any necessary permit or license forty-eight (48) hours before beginning any operations affecting the obstruction. All work shall conform to the current standards and specifications of that agency and shall be approved by the agency before completion of the project. At the CONTRACTOR'S request, the ENGINEER will furnish information as to what licenses or permits are required.
- H. The CONTRACTOR shall notify all utility companies prior to beginning construction and shall provide an electrical or mechanical device or use such other means he may select, to locate any hidden utility line, oil or gas pipe line, water pipe line, sewer pipe line, telegraph and telephone line or other structures provided for in these specifications and locate such line or structures shown on the plans and any uncharted line or structure whether shown on the plans or not and protect, adjust to grade, disconnect and replace, relocate and replace, remove, provide supports during the construction and settlement of backfill and protect against freezing or unnecessary damage by the elements of existing utility lines, oil or gas pipe lines, water pipe lines, sewer pipe lines, telegraph and telephone lines, railroad right-of-way lines and other structures and shall pay all fees to County, City, State or Federal agencies which may be required in the performance of this work. In the event injury does result to any gas lines, power lines or poles, telephone lines or poles, etc., the CONTRACTOR shall, holding the OWNER entirely blameless, make proper restitution.

12.4 METHOD OF MEASUREMENT

- A. Remove and replace paved driveways, paved parking lots and other paved areas, except sidewalks, shall be measured by the square yard. This area will be derived by multiplying the length along the centerline of the pipe by the standard trench width and converting to square yards, unless otherwise approved by the ENGINEER.
- B. Remove and replace sidewalks shall be measured by the square foot, whereby the area was measured in the same manner as paved driveways in 12.3(B) above.
- C. Gravel and rock driveways, parking lots, and other areas will not be measured for payment, but rather shall be considered incidental to the work.
- D. Temporary materials required for maintenance of traffic through pavement cut locations will not be measured for payment.
- E. Compaction of backfill to 90% Standard Density in driveways, parking lots, etc. will not be measured for payment, and the cost of this work shall be included in other bid items.
- F. Other structures and obstructions shall not be measured for payment, unless shown on the proposal, and the cost of this work shall be included in other bid items.

12.5 BASIS OF PAYMENT

- A. Accepted quantities, measured as provided above will be paid at the contract unit price for:

Pavement repair, HES concrete Sq. Yd.

Pavement repair, asphaltic Sq. Yd.

Sidewalk repair, concrete Sq. Yd.

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 13 - STREET AND ALLEY, RIGHT-OF-WAY CROSSINGS**13.1 DESCRIPTION**

- A. Work under this item shall consist of backfilling, compacting, and pavement repair, where applicable, of all trenches crossing streets and alleys, dedicated or proposed to be dedicated to the public in accordance with the lines, grades and dimensions shown on the plans or as directed by the ENGINEER.

13.2 MATERIALS AND TESTS

- A. Backfill materials and streets and alleys shall be in accordance with Specification 31 23 33.
- B. Portland Cement Concrete shall be in accordance with 03 30 00. All concrete placed within the right-of-way shall be high-early-strength (HES) cement.
- C. Asphaltic Concrete - Bituminous Pavement shall meet the requirements of Specification 32 12 16.39.
- D. Sampling and Testing - Sampling of materials will be made in accordance with the appropriate methods specified in the corresponding section listed above. Tests will be conducted in accordance with the schedule of tests provided in the special provisions or as shown on the plans.

13.3 CONSTRUCTION

- A. Compaction: The CONTRACTOR shall place the select soil in accordance with Specification 31 23 33.
- B. Pavement Removal: Removal of paved surfaces shall be in accordance with the standard drawings.
- C. Pavement Repair: Concrete and Bituminous Pavement shall be repaired in accordance with the standard drawings and the Standard Specifications for Streets and Alley Construction of the OWNER.

13.4 METHOD OF MEASUREMENT

- A. Compacted backfill in unpaved streets and alleys will be measured by the cubic yard. This volume will be derived by multiplying the length along the centerline of the pipe by the standard trench width and by the average depth of the trench and converting to cubic yards, unless otherwise approved by the ENGINEER.
- B. Compaction of backfill to 95% Standard Density in paved streets and alleys will not be measured for payment, and the cost of this work shall be included in removal and replacement of pavement.
- C. Remove and replace concrete and bituminous pavement will be measured by the square yard. This area will be derived by multiplying the length along the centerline of the pipe by the standard trench width plus 12-inches on each side of the trench and converting to square yards.
- D. Over-breakage (the removal of more paving than is specified in 4.4(C) above) will not be measured for payment but shall be repaired in accordance with these specifications at the expense of the CONTRACTOR.

13.5 BASIS OF PAYMENT

- A. Accepted quantities of the type specified on the proposal, measured as provided above, will be paid for at the contract unit price for:

Remove and replace pavement Sq. Yd.

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 14 - PIERS, REINFORCED CONCRETE**14.1 DESCRIPTION**

- A. The work under this item shall include all materials, forming, pipe anchorage, construction and finishing of above ground standard reinforced concrete piers and below ground, restraining collar, reinforced concrete piers. Piers shall be located and constructed as shown on the drawings and the attached standard drawings.

14.2 MATERIALS AND TESTS

- A. Materials and testing shall be in accordance with Section 03 30 00.

14.3 CONSTRUCTION

- A. Forms shall be made to conform to the shape of the pier and securely braced. Reinforcing steel shall be bent as detailed and securely tied in place. Bearing area for the pipe shall be made to fit the outside diameter of the pipe and shall support the pipe at the proper grade. Any honeycomb or other unevenness in the concrete shall be patched with cement mortar immediately after form removal. Construction of piers shall be in accordance with Specification 03 30 00.

14.4 METHOD OF PAYMENT

- A. Reinforced concrete piers and restraining collars shall be measured by the number of units constructed. No additional payment will be made for excavation, forming, bracing, dewatering, backfilling, reinforcing steel, or pipe anchorage.

14.5 BASIS OF PAYMENT

- A. Accepted quantities of reinforced concrete piers, measured as provided above, will be paid at the contract unit price for:

Reinforced Concrete Pier, Standard EA.

Reinforced Concrete Pier, Restraining Collar EA.

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 15 - FIELD TESTS AND REVISIONS:**15.1 DESCRIPTION**

- A. Field tests and revisions of water and sewer mains shall be successfully completed prior to final acceptance. All discrepancies shall be corrected by the CONTRACTOR to make a complete and workable system.

15.2 MATERIALS AND TESTS

A. Sewer:

1. Alignment: After joints have been inspected and approved and trench backfilled as specified, the ENGINEER shall check alignment between manholes or manhole locations. Any misplaced pipes detected shall be corrected to line and grade at the CONTRACTOR'S expense.
2. Deflection: In accordance with OAC 252:656-5-5(a), CONTRACTOR shall perform deflection tests on all flexible pipe after the final backfill has been in place at least 30 days. Deflection must not exceed 5%. Tests must be run using a rigid ball or mandrel with a diameter equal to 95% of the inside diameter of the pipe, taking into account manufacturing tolerances. Tests must be performed without mechanical pulling devices. Tests must be in accordance with applicable ASTM standards.
3. Line Leakage Test: Leakage tests shall be required for all new construction in accordance with OAC 252:656-5-5(b). The leakage test shall be an exfiltration test, whereby a minimum positive head of two (2) feet shall be exerted on a section of line by plugging the lower end and filling the manhole upstream with water. The leakage outward shall not exceed 10 gallons per inch of pipe diameter per mile per day (10 gallons/inches/miles/day) for any section of the system. If infiltration is observed due to hydrostatic ground water leakage the infiltration shall be reduced so as not to exceed 10 gallons/inches/miles/day. The procedures listed in the Handbook of PVC Pipe, Uni-Bell PVC Pipe Association, 2001 may be used for PVC pipe. Pipe testing must meet the provisions for the applicable ASTM standard

for the test to be used.

4. Manhole Leakage Test: Leakage tests shall be required for all new construction in accordance with OAC 252:656-5-4(g)(7) and shall be performed per ASTM C1244.
5. Where test results, in the opinion of the ENGINEER, indicated construction deficiencies, the CONTRACTOR shall make all effort to locate same and make satisfactory corrections. Infiltration through manhole walls shall be corrected regardless of the results of these tests.

B. Water:

1. Hydrostatic and Leakage Test:
 - a. PVC: Shall be in accordance with AWWA C605 procedures. After the pipe has been laid and backfilled, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic gauge pressure of 200 psi, for a duration of two hours, said pressure not to vary more than five pounds, except that PVC pipe shall be tested a design working pressure.
 - b. HDPE: Shall be in accordance with AWWA C906 procedures. After the pipe has been laid and backfilled, subject the pipe to a pressure of 1.5 times the design working pressure at the lowest point in the test section is used as the test pressure. Acceptance is found by reducing the test pressure by 10 psi and monitoring the pressure for one hour. If the pressure remains steady – within five percent of the target value – for one hour, leakage is not indicated.
2. Each valved section of pipe shall be slowly filled with water and the specified test pressure, based on the elevation of the lowest point of the line of lowest point of the section under test, and corrected to the elevation of the test gauge shall be applied by means of a test pump connected to the pipe in a manner satisfactory to the ENGINEER. The CONTRACTOR shall make arrangements for metering the amount of water used during the test.
3. The CONTRACTOR shall backfill all pipe and provide all reaction blocking before hydrostatic testing. It shall be the CONTRACTOR'S responsibility to locate and repair any and all leaks that may develop. The ENGINEER may direct the CONTRACTOR to leave certain joints and connections uncovered until testing has been completed.
 - a. Before applying the specified test pressure, all air shall be expelled from the pipe. If hydrants or blow-offs are not available at high places taps at points of highest elevation shall be made before test is made and plugs inserted after the test has been completed. Any cracked or defective pipe, fittings, valves or hydrants discovered in consequence of this pressure test shall be removed and replaced with sound material and the test shall be repeated until satisfactory to the ENGINEER.
 - b. In conjunction with the hydrostatic test, a leakage test shall be conducted as detailed in Section 4 of ANSI/AWWA Specification C-600/605, a portion of which is stated below.
 - c. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within

5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{ND P^{1/2}}{7400}$$

in which "L" is the allowable leakage in gallons per hour; "N" is the number of joints in the length of pipe test; "D" is the nominal diameter of the pipe, in inches; and "P" is the average test pressure during the leakage test, in pounds per square inch gage. Allowable leakage per 1000 ft. of pipeline in gallons per hour at 200 psi for selected pipe diameters is listed below for 18-foot nominal lengths. Leakage tests for PVC pipe shall be at the design working pressure.

Nominal Pipe Diameter (Inches)	Allowable Leakage Per 1000 Feet of Pipeline (GPH)
2	0.22
3	0.33
4	0.44
6	0.65
8	0.87
10	1.09
12	1.31
Nominal Pipe Diameter (Inches)	Allowable Leakage Per 1000 Feet of Pipeline (GPH)
16	1.74
18	1.96
20	2.18
24	2.61
30	3.27
36	3.92
42	4.58
48	5.23
54	5.88

- d. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons/hours/inches of nominal valve size shall be allowed. When hydrants are in the test section, the test shall be made against the closed hydrant. Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than that specified, the CONTRACTOR shall, at his own expense, locate and repair the defect until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.
- e. In accordance with OAC 252:626-19-2 (e), leakage must not exceed 10 gal/inch diameter per mile of pipe per 24 hours at 150 psi testing pressure.
4. Disinfection of Waterlines: All waterlines shall be flushed and disinfected, after testing and before being placed in service, by the methods detailed in AWWA C-601 except as modified herein.
 - a. Chlorine shall be introduced into the main in a liquid solution or as dry gas in a

continuous feed unless otherwise approved by the ENGINEER.

- b. The results of the disinfection procedure shall produce a residual of a minimum of ten parts per million (10 ppm) of chlorine in the portion of the main farthest from the point of application, after a period of twenty-four (24) hours has elapsed, as well as any other portion of the main. Samples shall be taken at location determined by the ENGINEER for tests of residual chlorine.
-
5. Water and sewer lines shall be constructed at the locations shown on the plans or as directed by the ENGINEER. Planned locations, grades or depths shall be adhered to unless, in the opinion of the ENGINEER, actual field conditions dictate revisions thereof. When the ENGINEER considers it necessary to deviate from planned locations, the CONTRACTOR shall construct said water or sewer lines to new alignment and/or grades established by the ENGINEER or as directed by the ENGINEER, such directions, construction stakes showing alignment and depth of cut, or revised construction plans issued by the ENGINEER.

15.3 BASIS OF PAYMENT

- A. No extra payment will be made for construction to revised locations other than increased or decreased quantities of pipe, fittings, manholes, or other items tabulated on the proposal. No extra payment will be made for additional excavation required by deviations from planned alignment or grades. Leakage tests will not be measured for payment, but the cost shall be included in other bid items. The CONTRACTOR'S bid price for waterlines to include all costs of hydrostatic and leakage test and sterilization as no separate payment will be made for these items.

END OF SECTION 33 11 00

SECTION 33 12 17 – WATER METER BOX AND LID

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish, install all labor, materials, equipment, and services as required to complete all residential meter boxes and lids as specified herein.

1.2 DELIVERY, STORAGE, HANDLING

- A. Individual equipment components shall be crated in structurally adequate packing containers to prevent damage during shipping, facilitate ease of handling and to provide suitable protection from weather for extended storage at the jobsite prior to installation. Packing containers shall be permanently labeled with appropriate equipment identification, shipping address and return address. Packing list shall be provided with equipment at the time of delivery.
- B. Electrical equipment shall be kept thoroughly dry at all times and shall be stored indoors. Equipment storage shall be protected and maintained in accordance with the manufacturer's recommendations. Equipment shall not be stored directly on the ground. Equipment to be installed inside shall be stored inside.
- C. The CONTRACTOR shall utilize equipment and tools of adequate size suitable for unloading, transporting, storing and supporting the equipment during installation. Caution shall be employed to prevent equipment damage resulting from abrupt contact with other materials or equipment.

PART 2 - PRODUCTS

2.1 ACCEPTABLE SUPPLIERS

- A. Carson Industries, LLC
- B. DFW Plastics, Inc.
- C. ENGINEER approved equal

2.2 DIMENSIONS

- A. Box Requirements
 - 1. Box shall be round.
 - 2. Material shall be plastic.
 - 3. DFW 800 A.B. Body.
- B. Lid Requirements
 - 1. Lid shall be round (anti-float).
 - 2. Material shall be plastic.

3. DFW 18 AMR-AF1EQAF (anti-float) .

PART 3 - EXECUTION

3.1 GENERAL

- A. The GENERAL CONTRACTOR shall assume full responsibility for coordination of the entire project, including verification all structures, piping, coating systems and equipment components are compatible. The GENERAL CONTRACTOR shall initially operate each equipment system and shall make all necessary adjustments so that each system is placed in proper operating condition.
- B. Equipment and materials utilized for this project must be approved by the ENGINEER prior to installation. Approval for installation or incorporation in this project will be made only after submittal or manufacturer's shop and installation drawings, test results or other data as specified herein.
- C. Installation of equipment shall be in full conformance with the manufacturer's shop drawings and requirements as approved by the ENGINEER. Wherever a conflict arises between manufacturer's instructions and the contract documents, the contractor shall follow the ENGINEER'S decision at no additional cost to the OWNER.

END OF SECTION 33 12 17

SECTION 33 12 18 – METER RISER

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish, install all labor, materials, equipment, and services as required to complete all residential meter settings as specified herein.

1.2 DELIVERY, STORAGE, HANDLING

- A. Individual equipment components shall be crated in structurally adequate packing containers to prevent damage during shipping, facilitate ease of handling and to provide suitable protection from weather for extended storage at the jobsite prior to installation. Packing containers shall be permanently labeled with appropriate equipment identification, shipping address and return address. Packing list shall be provided with equipment at the time of delivery.
- B. Electrical equipment shall be kept thoroughly dry at all times and shall be stored indoors. Equipment storage shall be protected and maintained in accordance with the manufacturer's recommendations. Equipment shall not be stored directly on the ground. Equipment to be installed inside shall be stored inside.
- C. The CONTRACTOR shall utilize equipment and tools of adequate size suitable for unloading, transporting, storing and supporting the equipment during installation. Caution shall be employed to prevent equipment damage resulting from abrupt contact with other materials or equipment.

PART 2 – PRODUCTS

2.1 ACCEPTABLE SUPPLIERS

- A. Uponor North America
- B. SharkBite®
- C. ENGINEER approved equal

PART 3 - EXECUTION

3.1 GENERAL

- A. The GENERAL CONTRACTOR shall assume full responsibility for coordination of the entire project, including verification all structures, piping, coating systems and equipment components are compatible. The GENERAL CONTRACTOR shall initially operate each equipment system and shall make all necessary adjustments so that each system is placed in proper operating condition.

- B. Equipment and materials utilized for this project must be approved by the ENGINEER prior to installation. Approval for installation or incorporation in this project will be made only after submittal or manufacturer's shop and installation drawings, test results or other data as specified herein.
- C. Installation of equipment shall be in full conformance with the manufacturer's shop drawings and requirements as approved by the ENGINEER. Wherever a conflict arises between manufacturer's instructions and the contract documents, the CONTRACTOR shall follow the ENGINEER'S decision at no additional cost to the OWNER.
- D. Meters shall be brought and set to grade with PEX pipe utilizing metal ring compression crimping.

END OF SECTION 33 12 18

SECTION 33 13 00 - DISINFECTION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section covers the requirements for disinfecting waterlines or structures that will hold or carry potable water. Before the use of water is permitted from any portion of newly constructed waterline or structure that will hold or carry potable water, it shall be disinfected and flushed or cleaned.

1.2 SUBMITTAL

- A. The CONTRACTOR shall submit the following: Chlorine residuals immediately after the chlorine application.
 - 1. Chlorine residuals after the 24-hour retention period, but before the chlorinated water is flushed.
 - 2. Chlorine residuals after the chlorinated water is flushed.
 - 3. Results of the bacteriologic quality tests conducted after the waterline or structure is disinfected and flushed.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. The waterline or structure shall be disinfected by the use of liquid chlorine gas water mixture.

PART 3 - EXECUTION

3.1 FLUSHING AND CLEANING

- A. Prior to disinfection, all dirt and foreign matter shall be removed by a thorough flushing or cleaning of the newly laid pipeline or newly constructed structure.

3.2 CHLORINE APPLICATION

- A. A chlorine gas water mixture shall be applied by means of a solution feed chlorinating device. The rate of the chlorine gas water mixture flow shall be in such proportion to the rate of water entering the pipe or structure that the chlorine dose applied to the water entering the pipe or structure shall be 50 to 100 parts per million.
- B. The treated water shall be retained in the pipe or structure at least 24 hours, and then flushed to waste.
- C. The chlorine residual shall not be less than 10 ppm at any point in the pipe or structure at the end of the retention period.

- D. During the application of the chlorine and during the retention period, all necessary precautions, such as closing valves, shall be taken to prevent the chlorinated water from flowing back into the line supplying the water.
- E. As an alternate and supplement to the above, the CONTRACTOR shall use any of the methods described in the latest revisions of AWWA C-601 and AWWA B-100.

3.3 BACTERIOLOGIC TESTS

- A. After final flushing and before the waterline or structure is placed in service, samples shall be collected from the end of the line or as directed and tested for bacteriologic quality and shall show the absence of coliform organisms on two (2) consecutive days as per ODEQ 252:626-19-2(f).

END OF SECTION 33 13 00

Thompson Heights Waterline

Quest eBidDoc™ Number: 8558234

Closing Date: Mon, 09/18/2023 04:00 PM CDT **Posting Type:** Construction Project **Owner Name:** City of Shawnee **Solicitor Name:** Cowan Group Engineering, LLC **Contact:** Michael Taylor **Phone:** 4054633369 **Email:** michael@cowangroup.co

Company Name & Address	Contact Name/Email Address	Phone/Fax	Bus. Cert	Bus. Desig	Entry Date	Doc Type	Comments
Cowan Group Engineering, LLC 7100 N. Classen, Suite 500, Oklahoma City, OK-73116	Michael Taylor michael@cowangroup.co	4054633369 4054633381		A/E Consultant	08/27/2023	eBidDoc	
Orr Construction, Inc. 510 North Broadway, Davenport, OK-74026	Orr Staff projects@orrconstructionok.com	918-377-4362		Prime Bidder	08/28/2023	eBidDoc	
Dodge Data & Analytics 2860 S State Hwy 161, Grand Prairie, TX-75052	Daedri Cavuoto daedri.cavuoto@construction.com	513.666.3354 800-768-5594		Prime Bidder	08/29/2023	eBidDoc	
ConstructConnect 3825 Edwards Rd, Cincinnati, OH-45209	Eric Mills content@constructconnect.com	800-364-2059 866-570-8187		Plan Room	08/29/2023	eBidDoc	
Tri-Star Utilities, Inc. P.O Box 903, Independence, KS-67301	Ben Chism indyunderground@outlook.com	620-331-7159 620-331-7455		Prime Bidder	08/30/2023	eBidDoc	
Marsau Enterprises 1209 N. 30th St., Enid, OK-73701	Terry Alexander terry.alexander@marsauenterprises.com	580-233-3910 580-233-5063		Prime Bidder	08/30/2023	eBidDoc	
Southern Excavation and Utilities, LLC 4601 N William Ct, Stillwater, OK-74075	Ty Wick ty.wick@gmail.com	405-747-6904		Prime Bidder	09/05/2023	eBidDoc	
AX&T Dirtworks LLC P.O. Box 4573, Bozeman, MT-59772	James Armstrong axtdirtworks@gmail.com	406-581-4491	DBE	Prime Bidder	09/05/2023	eBidDoc	
Circle B Underground LLC PO Box 868, Bristow, OK-74010	Darin Dean ddean@cbruok.com	918-367-8881 918-367-8882		Prime Bidder	09/06/2023	eBidDoc	
UTILITY TECHNOLOGY SERVICES 9636 west reno, oklahoma city, OK-73127	DAVID MOORE domoore0562@gmail.com	4058854131		Supplier	09/08/2023	eBidDoc	
OKLAHOMA CONTRACTORS SUPPLY 7216 sw 3rd, OKC, OK-73099	JOSH LILES ibuildnoleaks@gmail.com	405-495-6161/405-787-5008		Supplier	09/08/2023	eBidDoc	



Addendum #1

Date: September 13, 2023
Project: City of Shawnee
Thompson Heights Waterline
Bid Closing Date: September 18, 2023
Shawnee, Oklahoma

The Items contained below now become a part of the referenced contract documents and specifications. Please read the following items and acknowledge receipt (see attached sheet) of this addendum on the proposal form when submitting bids.

- Please fax or e-mail Acknowledgement Page to Cowan Group Engineering, LLC, at 405-463-3369.
- If submitting a hard copy bid, bidders shall acknowledge receipt of this Addendum by signing and submitting the Acknowledgement Page with bid. Failure to do so may subject the Bidder to disqualification.
- Please find the attached revised specification documents and contract documents and replace the corresponding outdated documents with them.

PLAN SHEETS

1. Updated pay quantity note 7 to remove public works reference.

CLARIFICATIONS

1. The project is tax exempt.
2. Pipe size shall be DIPS.
3. All bids shall be typewritten or in blue ink pen.
4. Unit costs & total costs shall be provided.
5. The city does not have a dumping location for excess dirt. Hauling will need to be included in bid and incidental.
6. Street bonds shall be provided with the length of five years. The first year shall cover 100 percent of the cost with the remaining four years being 10 percent of the cost.
7. Utility bonds shall be provided with the length of two years. The first year shall cover 100 percent of the cost with the second year covering 10 percent.
8. Hydrant meters shall be obtained through public works for boring if needed for water.
9. Service connections shall only include tap and line to existing meter.
10. Strap (JCM) taps to be used for tapping valves.
11. Blue CTS shall be used for services.

Thank you for your attention. Should you have any questions, please contact the undersigned at 405.463.3369.

Cowan Group Engineering, LLC

Michael Taylor
Michael Taylor, P.E.
Team Lead

Attachment: Acknowledgement Page
Plan Sheet 3



Acknowledgement Page

Addendum #1 September 13, 2023

Project: City of Shawnee
Thompson Heights Waterline
Project Number: ARP-23-0092-G
Bid Closing Date: September 18, 2023
Shawnee, Oklahoma

Company: _____

Name: _____

Signature: _____

Title: _____

Date: _____

GENERAL CONSTRUCTION NOTES

1.

ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE, FEDERAL, AND LOCAL STANDARDS AND SPECIFICATIONS AND THE REQUIREMENTS OF THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY. WHERE IN CONFLICT THE MOST STRINGENT REQUIREMENT SHALL APPLY.
2.

ANY CONSTRUCTION ITEMS THAT ARE NOT LISTED IN THE SUMMARY OF QUANTITIES SHALL BE CONSIDERED INCIDENTAL CONSTRUCTION ITEMS. THE COST OF INCIDENTAL CONSTRUCTION ITEMS SHALL BE INCLUDED IN THE COST OF OTHER BID ITEMS.
3.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH ALL PUBLIC AND/OR PRIVATE UTILITY COMPANIES IN THE VICINITY OF CONSTRUCTION.
4.

EXISTING UTILITIES AND THEIR LOCATIONS, AS SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION OBTAINABLE FOR DESIGN. LOCATION INFORMATION HAS BEEN OBTAINED FROM THE VARIOUS UTILITY COMPANIES AND IS EITHER FROM COMPANY RECORD DRAWINGS OR COMPANY PROVIDED FIELD LOCATIONS. THE PLAN LOCATIONS SHOWN ARE NOT GUARANTEED. ADDITIONAL EXISTING UTILITIES MAY ALSO BE ENCOUNTERED.
5.

RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES AND EXCESS EXCAVATION WHICH IS TO BE WASTED ON SITES TO BE PROVIDED BY THE CONTRACTOR. THESE SITES SHALL BE APPROVED BY THE ENGINEER AS TO SUITABILITY. ALL DISPOSAL SITES MUST BE APPROVED BY THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOOD PLAIN SHALL REQUIRE THE NECESSARY PERMITS. ANY MATERIAL DUMPED IN THE WATERS OF THE UNITED STATES OR WETLANDS IS SUBJECT TO U.S. CORP OF ENGINEERS PERMITTING REGULATIONS. ANY MATERIAL BURIED OR STOCKPILED BEYOND APPROVED CONSTRUCTION LIMITS WOULD REQUIRE ADDITIONAL ARCHAEOLOGICAL INVESTIGATIONS AND STATE APPROVAL.
6.

A COPY OF THE EROSION CONTROL SITE PLANS AND THE STORM WATER POLLUTION PREVENTION PLAN MUST BE ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE INSPECTOR UPON REQUEST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION , MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL EROSION CONTROL DEVICES DAMAGED DUE TO CONSTRUCTION.
7.

CONTRACTOR SHALL PROVIDE BONDS AND PROOF OF INSURANCE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
8.

CONSTRUCTION STAKING AND TESTING SHALL BE PROVIDED BY THE CONTRACTOR.
9.

THE CONTRACTOR SHALL GIVE ALL PROPERTY OWNERS AND/OR TENANTS OF DEVELOPED PROPERTY DIRECTLY ABUTTING CONSTRUCTION OF THIS PROJECT MINIMUM OF TEN (10) DAYS NOTICE PRIOR TO START OF CONSTRUCTION.
10.

THE CONTRACTOR SHALL AVOID TREE DAMAGE IF AT ALL POSSIBLE AND SHALL PRUNE ALL ROOTS DAMAGED DURING CONSTRUCTION ACTIVITIES
11.

ALL WATER LINE MAINS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF FOUR (4) FEET, UNLESS OTHERWISE NOTED.
12.

SHOP DRAWINGS FOR ALL PIPE MATERIALS INCLUDING BUT NOT LIMITED TO VALVES, FITTINGS, AND PIPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION BEGINS.
13.

ALL DISTURBED AREAS SHALL HAVE 4” TOPSOIL AND SOLID SLAB SOD LAID. CONTRACTORS SHALL TAKE NECESSARY MEASURES TO RE-ESTABLISH SOD. PRICE BID TO INCLUDE COST OF (10–20–10) FERTILIZER, ESTIMATED AT 200 POUNDS PER 1000 SY. OF SODDING. PRICE BID ALSO TO INCLUDE COST OF WATERING, ESTIMATED AT 40 GALLONS PER SY.
14.

WATER VALVES TO BE ABANDONED IN SIDEWALKS OR PAVEMENT SHALL BE CLOSED; POUR CONCRETE OVER VALVE, PULL VALVE BOX, AND REPAIR SIDEWALK OR PAVING.
15.

CONTRACTOR SHALL CONDUCT PRESSURE TESTS AND DISINFECTION ON ALL WATER MAINS PRIOR TO CONNECTION TO EXISTING DISTRIBUTION SYSTEM.

PRESSURE AND LEAKAGE TESTS SHALL BE PERFORMED BY CONTRACTOR IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY OAC252:626–19–2(E) AND LATEST REVISION OF AWWA C906.

DISINFECTION TESTS SHALL BE PERFORMED BY CONTRACTOR IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY OAC252:626–19–2(F) AND LATEST REVISION OF AWWA STANDARD SPECIFICATIONS.
16.

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC CONTROL IN ACCORDANCE WITH FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THE CONTRACTOR IS RESPONSIBLE FOR THE PROMPT REPLACEMENT AND/OR REPAIR OF ALL TRAFFIC CONTROL DEVICES

- AND APPURTENANCES DAMAGED OR DISTURBED DUE TO CONSTRUCTION. COST OF TRAFFIC CONTROL SHALL BE CONSIDERED INCIDENTAL AND INCLUDED IN THE COST OF OTHER BID ITEMS.
17.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE REQUIRED 10 FOOT HORIZONTAL AND 2 FOOT VERTICAL SEPARATION BETWEEN SANITARY SEWER AND POTABLE WATER MAINS AND 5 FOOT HORIZONTAL AND 2 FOOT VERTICAL SEPARATION BETWEEN WATER MAINS AND OTHER UTILITIES
18.

CONTRACTOR SHALL MAINTAIN WATER SERVICE DURING CONSTRUCTION. CONNECTION SHALL BE COORDINATED WITH OWNER AND COMPLETED IN A TIMELY MANNER TO MINIMIZE INTERRUPTION TO SERVICE.
19.

ALL EXISTING WATER MAINS AND APPURTENANCES BEING ABANDONED BY ANY PROJECT ARE TO REMAIN THE PROPERTY OF SHAWNEE WATER DEPARTMENT, AND SHALL BE SALVAGED FOR THE SHAWNEE WATER DEPARTMENT.
20.

IN INSTANCES WHERE FLOW LINES ARE NOT INDICATED ON THE DRAWINGS, MAIN SHALL BE CONSTRUCTED WITH A MINIMUM OF 4’ COVER, OR AS DIRECTED BY THE CITY ENGINEER AND IN ACCORDANCE WITH OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY STANDARDS.
21.

ALL EMBANKMENTS AND BACKFILL SHALL MEET THE STANDARD SPECIFICATION.
22.

ANY CONSTRUCTION PROCEDURES NOT COVERED IN THE PLANS AND SPECIFICATIONS WILL BE EXECUTED IN ACCORDANCE WITH PROPER CONSTRUCTION TECHNIQUES AND SHALL BE APPROVED BY THE ENGINEER.
27.

CONTRACTOR IS RESPONSIBLE FOR PROMPT REPLACEMENT OF ANY FENCE DISTURBED DURING CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL.

PAY QUANTITIES

BASE BID					
ITEM #	ITEM	NOTES	UNIT	QUANTITY	AS-BUILT
1	MOBILIZATION		LS	1	
2	CLEARING AND GRUBBING		LS	1	
3	SOLID SLAB SOD	(3)(4)	SY	956	
4	STORMWATER POLLUTION PREVENTION PLAN	(2)	LS	1	
5	8" HDPE DR-11 WATERLINE (HDD & TRENCHING)	(10)(11)	LF	5,604	
6	BORING PIT	(13)	EA	36	
7	6" GATE VALVE & BOX	(4)(5)	EA	10	
8	8" GATE VALVE & BOX	(4)(5)	EA	7	
9	1" AIR RELIEF VALVE		EA	1	
10	HDPE WALL ANCHOR	(10)	EA	17	
11	FIRE HYDRANT ASSEMBLY	(7)	EA	10	
12	12"X8" TEE		LB	1	
13	8"X8" TEE		EA	3	
14	8"X6" TEE		EA	10	
15	8"X11 1/4" BEND		EA	19	
16	8"X22 1/2" BEND		EA	4	
17	8"X45" BEND		EA	29	
18	8"X90" BEND		EA	1	
19	6" CUT & PLUG		EA	8	
20	WATER SERVICE RECONNECTION (SHORT)	(12)	EA	72	
21	WATER SERVICE RECONNECTION (LONG)	(12)	EA	77	
22	LEAD SERVICE REPLACEMENT (SHORT)		EA	1	
23	LEAD SERVICE REPLACEMENT (LONG)		EA	1	
24	REMOVE & REPLACE CONCRETE PAVEMENT	(6)(8)	SY	25	
25	REMOVE & REPLACE CONCRETE DRIVE	(6)(8)	SY	133	
26	REMOVE & REPLACE ASPHALT PAVEMENT	(8)	SY	35	
27	REMOVE EXISTING FIRE HYDRANT		EA	6	
28	CONSTRUCTION SIGNING AND TRAFFIC CONTROL		LS	1	
29	TEMPORARY EROSION AND SEDIMENT CONTROL	(1)	LS	1	
30	PRESSURE AND LEAKAGE TESTING		LS	1	
31	DISINFECTION AND TESTING		LS	1	

PAY QUANTITY NOTES

7.

FIRE HYDRANT ASSEMBLY COMPLETE PRICE BID ITEM TO INCLUDE THE COST OF (3 L.F. OF 6" WATER LINE , 1–FIRE HYDRANT, 4–6" MEGALUG SERIES 2006 PV, 1–12" RISER IF REQUIRED).
8.

ESTIMATED QUANTITY. LOCATION, IF AND WHERE REQUIRED, TO BE DETERMINED BY THE ENGINEER. COST TO INCLUDE CURB AND GUTTER.
9.

EXISTING WATERLINES ARE SHOWN AT APPROXIMATE LOCATIONS ON PLANS. CONTRACTOR TO FIELD LOCATE THE EXISTING WATERLINES. CONNECTION TO EXISTING WATERLINE SHALL INCLUDE ALL COSTS FOR LABOR AND MATERIAL TO LOCATE AND CUT EXISTING WATERLINE AND INSTALL THE REQUIRED VALVES AND FITTINGS CONNECTING THE NEW WATERLINE. NO ADDITIONAL PAYMENT SHALL BE MADE.
10.

WALL ANCHORS SHALL BE PLACED IN EVERY BORE PIT AND AT MINIMUM EVERY 400 FEET. SEE SPECIAL DETAIL SHEET 25.
11.

PIPE SIZE SHALL BE DIPS.
12.

SERVICE CONNECTIONS SHALL ONLY INCLUDE TAP AND LINE TO EXISTING METER.
13.

EXCESS DIRT HAULING SHALL BE INCIDENTAL.

THOMPSON HEIGHTS WATERLINE IMPROVEMENTS

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

PAY QUANTITIES & NOTES

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	23-152
DATE	6/13/2023

REVISIONS

SHEET NUMBER



Advertisement for Bids

Notice is hereby given that the City of Shawnee (hereinafter called the "Owner") will receive sealed bids at the City Clerk's Office, 16 W. 9th Street, Shawnee, Potawatomie County, Oklahoma until 4pm on the 18th day of September, 2023 for the Sewer Pipe Bursting.

Funding for this project is provided through American Rescue Plan Act (ARPA) grant program. As such, compliance with Labor Standards Contract Provisions is mandatory. Compliance with the Davis Bacon Act is mandatory **if the total project cost exceeds \$10,000,000 (ten million dollars)**.

All bids received at said time will be opened and evaluated for completeness and correctness. All work shall be performed, and all construction and materials used and furnished shall be in accordance with the Plans and Specifications prepared by Cowan Group Engineering, and on file in the office of the City Clerk, 16 W. 9th Street, Shawnee, OK 74802-1448.

The Bid Packet and Contract Documents for this project may be examined at the following locations:

1. The City Clerk's Office, 16 W. 9th Street, Shawnee, OK 74802-1448.
2. Cowan Group Engineering, 7100 N. Classen, Suite 500, Oklahoma City, OK 73116

Hard copy plans and specifications may be obtained by the prospective bidders at these locations for \$100.00. No documents will be mailed until payment is received in full.

Complete digital project bidding documents are available for a non-refundable fee of \$50.00 by going to www.cowangroup.co, navigating to the Bid Documents page, and by entering Quest Project # 8556116 on the website's project search page. Please contact QuestCDN.com at 952.233.1632 or info@questcdn.com for assistance in free membership registration, downloading and working with this digital project information.

Each bidder shall accompany his original bid, filed with the City Clerk's Office with a certified or Cashier's Check on a solvent bank located in Oklahoma, or a Bidder's Bond, in the amount of five (5) percent of the amount bid, as a guarantee of his ability to perform the contract bid upon, and that he will enter into a written contract with the Owner to perform said work and/or furnish said materials in accordance with said Plans and Specifications and furnish the required bonds according to the Public Competitive Bidding Act of 1974.

The Owner will retain the deposit for liquidated damages in case the successful bidder fails to enter in said contract and furnish the required bonds provided for in the specifications within the time required. Deposit of the unsuccessful bidders will be returned upon the execution of the Contract and required bonds.

Each bidder shall accompany his bid with a sworn statement in writing that the bidder has not directly or indirectly entered into an agreement, expressed or implied, with any other bidder concerning the price or amount of such bid or any bids, the limiting of the bids or bidders, the paying to anyone any money for promotion expenses, the parceling or farming out to any bidder or bidders or other persons of any part of the contract or any part of the subject matter of the bid or of the profits thereof.

Construction, Maintenance and Statutory Payment Bonds in the amount of 100% of the contract price are required for this project. These bonds must be obtained from a Corporate Surety licensed in Oklahoma and approved by the Owner and Consulting Engineer. The bidder shall state in the proposal the name and address of the Surety or Sureties who will sign this bond in case the contract is awarded. The Maintenance Bond required will guarantee the repair of all damage due to improper materials or workmanship for a period of one (1) year after the acceptance of the work by the Owner.

This project is to be financed by the ARPA grant program managed by the Oklahoma Water Resources Board (OWRB) and shall be referred to as Project No. ARP-23-0092-G. The following requirements and regulations must be complied with:

- A. "Equal Opportunity in Employment: All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age or physical handicap. Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended."
- B. "Each bidder must fully comply with the requirements, terms and conditions of the Environmental Protection Agency's Disadvantaged Business Enterprise Requirements, which have been adopted for the OWRB ARPA program, and include employing the six (6) good faith efforts and soliciting disadvantaged business enterprises during the performance of this contract. Requirements are contained in OWRB's Guidance and Procedures, ARP-267. The bidder commits itself to following the good faith efforts to solicit disadvantaged business enterprises contained herein and all other requirements, terms, and conditions of these bid conditions by submitting a properly signed bid."
- C. **If the total project cost exceeds \$10,000,000 (ten million dollars)** "Davis Bacon Act wage rules shall apply. All laborers and mechanics employed by contractors and sub- contractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of Chapter 31 of Title 40, United States Code and 29 CFR parts 1,3, and 5. The Department of Labor provides all pertinent information related to compliance with labor standards, including prevailing wage rates and instructions for reporting. More information is available at <http://www.sam.gov/>" and <https://www.dol.gov/agencies/whd/government-contracts/construction>
- D. System for Award Management (SAM) registration is required for all Applicants and Awardees (Entities, Prime Contractors, Subcontractors, Vendors) in order to receive funds from the ARPA program. SAM replaced the Central Contractor Registration/Federal Agency Registration, Online Representations and Certifications Application, and Excluded Parties List System. Applicants and awardees are required to complete a one-time free registration to provide basic information relevant to procurement and financial transactions. On April 4, 2022, the unique entity identifier used across the federal government changed from the DUNS Number to the Unique Entity ID (generated by SAM.gov). Registrants must retain an active status to be eligible for ARPA funding. Applicants and Awardees can go to SAM.gov to complete the registration process.

The bids filed with the City Clerk's Office will be opened and considered by the Owner, at a meeting to be held in The City of Shawnee Commission Chambers, 16 W. 9th Street, Shawnee OK 74802, on the day of September 18th, 2023 at 6pm. Bids received past 4pm on the stated date prior to the Bid Opening will be returned.

The contract is to be awarded to the lowest, responsive, responsible bidder. The Owner reserves the right to correct any non-material clerical errors in the bidding as allowed under Oklahoma Law. The Owner reserves the right to reject any and all bids in accordance with the Oklahoma Public Competitive Bidding Act of 1974. Conditional bids shall not be accepted.

A pre-bid conference will be held on this project at: City of Shawnee, Commission Chambers on the 7th day of September, 2023 at 10am.

Approved on this ____ day of _____, 2023



Andrea Weckmueller-Behringer, City Manager

SURVEY CONTROL DATA

- HORIZONTAL/VERTICAL CONTROL
HORIZONTAL DATUM IS BASED ON THE OKLAHOMA STATE
PLANE COORDINATE SYSTEM (NORTH ZONE) NAD 83. VERTICAL
DATUM IS BASED ON THE NORTH AMERICAN VERTICAL DATUM
OF 1988 (NAVD 88)
- BASIS OF BEARINGS:
BEARINGS ARE BASED ON GRID NORTH (N00°00'00"E)

BENCHMARKS

BM #1 CUT 'X' ON CONC. N: 743388.771 E: 2286591.835 ELEV.=1051.67'	BM #6 CUT 'X' ON CONC. CURB N: 730986.205 E: 2290308.776 ELEV.=1035.33'
BM #2 CUT 'X' ON CONC. CURB N: 730957.569 E: 2286364.869 ELEV.=1070.79'	BM #7 SET PK NAIL IN ASPHALT N: 730103.163 E: 2294618.354 ELEV.=1033.53'
BM #3 CUT 'X' ON CONC. DRNG. STRC. N: 730400.844 E: 2286386.763 ELEV.=1068.69'	BM #8 CUT 'X' ON CONC. CURB N: 729019.309 E: 2295000.479 ELEV.=1073.92'
BM #4 CUT 'X' ON CONC. CURB N: 729282.495 E: 2287156.967 ELEV.=1063.42'	BM #9 CUT 'X' ON CONC. CURB N: 728432.671 E: 2292400.901 ELEV.=1022.82'
BM #5 CUT 'X' ON CONC. DRIVEWAY N: 729267.822 E: 2287521.874 ELEV.=1067.49'	BM #10 CUT 'X' ON CONC. CURB N: 727654.730 E: 2291493.107 ELEV.=1020.35'

UTILITY CONTACTS

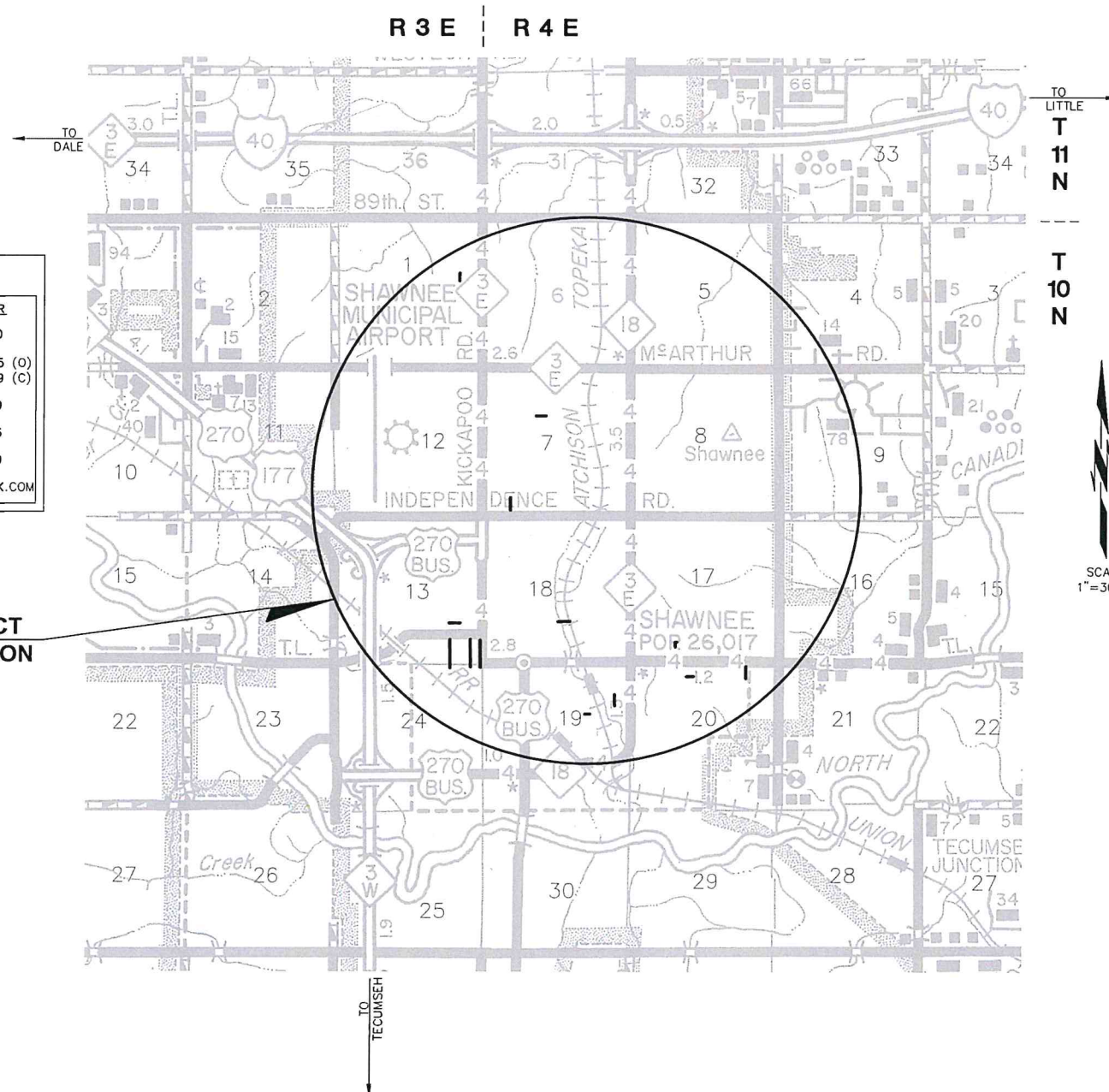
COMPANY NAME	CONTACT NAME	PHONE NUMBER
SHAWNEE UTILITIES	SHAWNEE PUBLIC WORKS	405-273-1960
OG&E ENERGY CORPORATION	RAE ANN LAWRENCE, P.E. SENIOR LAND MANAGEMENT COORDINATOR	405-553-5785 (O) 405-388-8599 (C)
OG&E ENERGY CORPORATION	TIM THOMPSON	405-401-7229
AT&T OKLAHOMA	JOE ANDERSON	539-444-1026
OKLAHOMA NATURAL GAS	ALEXANDRIA MARSHALL	405-551-6889
BLUEPEAK	JERRY LEIBY	JERRY.LEIBY@MYBLUEPEAK.COM

LEGEND

---	EXISTING CONTOUR
---	PROPOSED CONTOUR
---	SECTION LINE
---	QUARTER SECTION LINE
---	RIGHT-OF-WAY (EXISTING)
---	RIGHT-OF-WAY (PROPOSED)
---	EXISTING ROAD
---	PROPOSED ROAD
-X-X-	FENCES
---	POWER OVERHEAD
---	POWER UNDERGROUND
---	TELEPHONE UNDERGROUND
---	GAS LINE
---	WATER LINE
---	SANITARY SEWER LINE
---	STORM SEWER (EXISTING)
---	STORM SEWER (PROPOSED)



- AN EFFORT HAS BEEN MADE TO LOCATE AND SHOW APPROXIMATE LOCATION OF UNDERGROUND UTILITY LINES. BURIED UTILITIES ARE NOT NECESSARILY SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PRESERVE ALL UTILITIES.
- CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES WITHIN WORK ZONE PRIOR TO CONSTRUCTION.

PLAN OF PROPOSED
SANITARY SEWER PIPE BURSTINGCITY OF SHAWNEE
SECTION 1 & 13, T10N, R3E, I.M.
& SECTION 7 & 17-20, T10N, R4E, I.M.
POTTAWATOMIE COUNTY, OKLAHOMASTATE OF OKLAHOMA
Department of Environmental Quality

APPROVED

August 23 2023

Rocky W. Chen, P.E.

Water Quality Division

Adam Divine

D. Adam Divine, P.E.

Construction Permitting Section

Sheet List Table

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2	PAY QUANTITIES & NOTES
3	OVERALL MAP
4	SURVEY DATA
5	LINE 1 P&P
6	LINE 2 P&P
7	LINE 3 P&P
8	LINE 4 P&P
9	LINE 5 P&P (1 OF 2)
10	LINE 5 P&P (2 OF 2)
11	LINE 6 P&P (1 OF 2)
12	LINE 6 P&P (2 OF 2)
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16	LINE 9 P&P
17	LINE 10 P&P
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20	LINE 13 P&P
21	DETAIL SHEET (1 OF 3)
22	DETAIL SHEET (2 OF 3)
23	DETAIL SHEET (3 OF 3)

PREPARED BY

MICHAEL TAYLOR, P.E.
OKLAHOMA REGISTERED PROFESSIONAL ENGINEER NO. 27655
COWAN GROUP ENGINEERING, LLC
OKLAHOMA CERTIFICATE OF AUTHORIZATION NO. 6414
EXPIRES JUNE 30, 2024

SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

TITLE SHEET

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	23-153
DATE	5/8/2023

REVISIONS

SHEET NUMBER	1

SUMMARY OF QUANTITIES

PAY ITEM	DESCRIPTION	NOTES	UNIT	QUANTITY	AS-BUILT
1	MOBILIZATION		LSUM	1	
2	8-INCH HDPE DR-17 SANITARY SEWER (BURSTING AND TRENCHING)	(1)(2)(3)(4)	LF	2766	
4	10-INCH HDPE DR-17 SANITARY SEWER (BURSTING AND TRENCHING)	(1)(2)(3)(4)	LF	2222	
5	12-INCH HDPE DR-17 SANITARY SEWER (BURSTING AND TRENCHING)	(1)(2)(3)(4)	LF	1440	
6	SERVICE CONNECTION	(5)	EA	196	
7	CEMENTITIOUS MANHOLE COATING		VF	69	
8	1' MANHOLE GRADE ADJUSTMENT WITH SEAL AND REPLACE FRAME, COVER AND SEAL		EA	1	
9	4' DIAMETER MANHOLE GRADE ADJUSTMENT WITH SEAL AND REPLACE FRAME, COVER AND SEAL		EA	1	
10	STANDARD 4' DIAMETER MANHOLE REMOVAL AND REPLACEMENT	(6)(7)	EA	15	
11	CONSTRUCT 4' DIAMETER MANHOLE	(6)(7)	EA	2	
12	ASPHALT REMOVAL AND REPLACEMENT		SY	106	
13	CONCRETE REMOVAL AND REPLACEMENT	(1)	SY	21	
14	GRAVEL REMOVAL AND REPLACEMENT		SY	49	
15	SOLID SLAB SODDING		SY	53	
16	EXTRA DEPTH MANHOLE		VF	71	
17	PRE INSTALLATION VIDEO INSPECTION		LF	6428	
18	POST INSTALLATION VIDEO INSPECTION		LF	6428	
19	TESTING		LSUM	1	
20	BYPASS PUMPING		EA	24	
21	TEMPORARY EROSION AND SEDIMENT CONTROL		LSUM	1	
22	CONSTRUCTION SIGNING & TRAFFIC CONTROL		LSUM	1	
23	SPOT REPAIRS	(8)	EA	4	

PAY QUANTITY NOTES

1. CONCRETE USED FOR DRIVE REPLACEMENT AND PAVING PATCH SHALL BE 3,500 PSI HIGH EARLY STRENGTH CONCRETE.
2. HDPE PIPE SHALL HAVE AN ENTIRELY LIGHT COLOR (NATURAL, WHITE, GREEN, ETC.) INSIDE SURFACE TO ALLOW LIGHT REFLECTION FOR ROBOTIC TELEVISION INSPECTIONS AND SHALL CONFORM TO DIPS PIPE SIZING WITH A DR RATING OF 17.
3. IF PRE-INSTALLATION VIDEO REVEALS A SAG IN THE EXISTING SEWER THAT IS GREATER THAN ONE-HALF THE DIAMETER OF THE EXISTING PIPE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL THE REPLACEMENT PIPE TO RESULT IN AN ACCEPTABLE GRADE WITHOUT THE SAG.
4. CONTRACTOR TO TELEVISION INSPECT EXISTING LINES PRIOR TO CONSTRUCTION TO VERIFY SERVICE LINE PIPE SIZE. AND LOCATION. COST SHALL INCLUDE CLEANING EXPENSES.
5. APPLIES TO ALL SERVICE RECONNECTIONS REGARDLESS OF SIZE, MATERIAL, OR LENGTH. INCLUDES MATERIAL AND LABOR FOR THE REROUTING OF SERVICE LINES TO THE TRUNK LINE ON ALL NEW AND/OR REPLACED MANHOLES. SERVICE RECONNECTIONS SHALL INCLUDE A BACKFLOW PREVENTER AT THE EASEMENT OR R.O.W. LINE AND SHALL BE INCIDENTAL TO THE COST OF THIS ITEM.
6. STANDARD DEPTH FOR ALL MANHOLES SHALL BE 6'. BID ITEM SHALL INCLUDE ANY NECESSARY GRAVEL REMOVAL & REPLACEMENT.
7. MANHOLE GRADE ADJUSTMENTS FOR MANHOLE RINGS WHICH REQUIRE LEVEL ADJUSTMENTS TO GRADE ARE INCIDENTAL AND SHALL BE INCLUDED IN COSTS.
8. TO BE USED IN 15FT INCREMENTS FOR ANY SAGS FOUND DURING PRE INSTALLATION VIDEO INSPECTION, AS COORDINATED WITH THE ENGINEER.

STRUCTURE TABLE				
STRUCTURE NAME:	LINE #:	RIM:	PIPE INVERTS	DESCRIPTION:
30228	LINE 1	1048.44	8" 1038.94	REMOVE AND REPLACE 4' DIA. MH
1	LINE 1	1050.20	8" 1040.49	EX. 4' DIA. MH
30202	LINE 2	1096.60	10" 1084.46	REHAB EX. 4' DIA. MH
30207	LINE 2	1100.74	10" 1094.83	REMOVE AND REPLACE 4' DIA. MH
30218	LINE 3	1077.53	10" 1070.33	REHAB EX. 4' DIA. MH
30223	LINE 3	1084.52	10" 1068.79	REMOVE AND REPLACE 4' DIA. MH
2	LINE 4	1071.78	10" 1065.65	EX. 4' DIA. MH
20033	LINE 4	1073.94	10" 1064.49	REMOVE AND REPLACE 4' DIA. MH
3	LINE 5	1062.18	8" 1058.20	CONST. 4' DIA. MH
30008	LINE 5	1064.21	8" 1057.25 8" 1056.87	EX. 4' DIA. MH
30013	LINE 5	1066.05	8" 1058.97 8" 1059.02	REMOVE AND REPLACE 4' DIA. MH
30028	LINE 5	1068.81	8" 1060.93	EX. 4' DIA. MH
30005	LINE 6	1065.31	12" 1056.07	EX. 4' DIA. MH
30006	LINE 6	1066.51	12" 1054.21 12" 1054.18	REMOVE AND REPLACE 4' DIA. MH
30007	LINE 6	1068.58	12" 1058.10 12" 1058.08	EX. 4' DIA. MH
4	LINE 6	1071.16	12" 1058.81	CONST. 4' DIA. MH
30001	LINE 7	1065.75	8" 1056.91	REMOVE AND REPLACE 4' DIA. MH
30003	LINE 7	1066.76	8" 1057.48 8" 1057.38	REMOVE AND REPLACE 4' DIA. MH
30002	LINE 7	1068.64	8" 1054.91 8" 1054.88	REHAB EX. 4' DIA. MH
30004	LINE 7	1070.67	8" 1058.88	REHAB EX. 4' DIA. MH

STRUCTURE TABLE				
STRUCTURE NAME:	LINE #:	RIM:	PIPE INVERTS	DESCRIPTION:
5	LINE 8	1022.63	12" 1013.55	REHAB AND RAISE LID- EX.4' DIA. MH
20028	LINE 8	1034.62	12" 1017.32	CONST. 4' DIA. MH W/ DROP
30073	LINE 9	1020.60	10" 1008.60	EX. 4' DIA. MH
30085	LINE 9	1023.94	10" 1010.06	REMOVE AND REPLACE 4' DIA. MH
30104	LINE 10	1011.73	10" 1001.47	EX. 4' DIA. MH
30097	LINE 10	1020.55	10" 1011.71	REMOVE AND REPLACE 4' DIA. MH
6	LINE 11	1033.82	8" 1025.00	EX. 4' DIA. MH (PAVED OVER, TO FIELD VERIFY)
30122	LINE 11	1033.90	8" 1025.90 8" 1025.75	REMOVE AND REPLACE 4' DIA. MH
30139	LINE 11	1034.07	8" 1026.13	REHAB EX. 4' DIA. MH
30167	LINE 12	1072.70	8" 1063.65	REHAB EX. 4' DIA. MH
30156	LINE 12	1078.16	8" 1070.22	REMOVE AND REPLACE 4' DIA. MH
30193	LINE 13	1059.76	10" 1053.62	REHAB EX. 4' DIA. MH
30178	LINE 13	1071.04	10" 1062.32	REMOVE AND REPLACE 4' DIA. MH
2019	LINE 14	1053.68	12" 1041.08	EX. 4' DIA. MH
7	LINE 14	1061.79	12" 1046.04 12" 1046.36	REMOVE AND REPLACE 4' DIA. MH
1894	LINE 14	1063.93	12" 1050.00	EX. 4' DIA. MH

GENERAL CONSTRUCTION NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF SHAWNEE STANDARDS AND SPECIFICATIONS AND THE REQUIREMENTS OF THE OKLAHOMA DEPARTMENT OF TRANSPORTATION, AND OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY WHERE IN CONFLICT THE MOST STRINGENT REQUIREMENT SHALL APPLY.
2. ANY CONSTRUCTION ITEMS THAT ARE NOT LISTED IN THE SUMMARY OF QUANTITIES SHALL BE CONSIDERED INCIDENTAL CONSTRUCTION ITEMS. THE COST OF INCIDENTAL CONSTRUCTION ITEMS SHALL BE INCLUDED IN THE COST OF OTHER BID ITEMS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH ALL PUBLIC AND/OR PRIVATE UTILITY COMPANIES IN THE VICINITY OF CONSTRUCTION.
4. EXISTING UTILITIES AND THEIR LOCATIONS, AS SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION OBTAINABLE FOR DESIGN. LOCATION INFORMATION HAS BEEN OBTAINED FROM THE VARIOUS UTILITY COMPANIES AND IS EITHER FROM COMPANY RECORD DRAWINGS OR COMPANY PROVIDED FIELD LOCATIONS. THE PLAN LOCATIONS SHOWN ARE NOT GUARANTEED. ADDITIONAL EXISTING UTILITIES MAY ALSO BE ENCOUNTERED.
5. RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES AND EXCESS EXCAVATION SHALL BE WASTED ON SITES TO BE PROVIDED BY THE CONTRACTOR. THESE SITES SHALL BE APPROVED BY THE ENGINEER AS TO SUITABILITY. ALL DISPOSAL SITES MUST BE APPROVED BY THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOOD PLAIN SHALL REQUIRE THE NECESSARY PERMITS. ANY MATERIAL DUMPED IN THE WATERS OF THE UNITED STATES OR WETLANDS IS SUBJECT TO U.S. CORP OF ENGINEERS PERMITTING REGULATIONS. ANY MATERIAL BURIED OR STOCKPILED BEYOND APPROVED CONSTRUCTION LIMITS WOULD REQUIRE ADDITIONAL ARCHAEOLOGICAL INVESTIGATIONS AND STATE APPROVAL.
6. A COPY OF THE EROSION CONTROL SITE PLANS AND THE STORM WATER POLLUTION PREVENTION PLAN MUST BE ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE INSPECTOR UPON REQUEST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION, MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL EROSION CONTROL DEVICES DAMAGED DUE TO CONSTRUCTION.
7. ALL DISTURBED AREAS SHALL BE SODDED WITH SOLID SLAB PER CITY OF SHAWNEE STANDARD SPECIFICATIONS, INCLUDES WATER AT 40 GALLONS PER S.Y. AND FERTILIZE PER TOWN STANDARD. THE CITY OF SHAWNEE TO PAY PLAN QUANTITIES ONLY, ANY EXCESS WILL BE RESPONSIBILITY OF CONTRACTOR.
8. CONTRACTOR SHALL PROVIDE BONDS AND PROOF OF INSURANCE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
9. CONSTRUCTION STAKING AND TESTING SHALL BE PROVIDED BY THE CONTRACTOR.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE PROMPT REPLACEMENT AND/OR REPAIR OF ALL TRAFFIC CONTROL DEVICES AND APPURTENANCES DAMAGED OR DISTURBED DUE TO CONSTRUCTION.
11. THE CONTRACTOR SHALL GIVE ALL PROPERTY OWNERS AND/OR TENANTS OF DEVELOPED PROPERTY DIRECTLY ABUTTING CONSTRUCTION OF THIS PROJECT MINIMUM OF TEN (10) DAYS NOTICE PRIOR TO START OF CONSTRUCTION.
12. THE CONTRACTOR SHALL AVOID TREE DAMAGE IF AT ALL POSSIBLE AND SHALL PRUNE ALL ROOTS DAMAGED DURING CONSTRUCTION ACTIVITIES.
13. ALL MANHOLE RIMS SHALL BE 6--INCHES ABOVE SURROUNDING GRADE UNLESS LOCATED IN LOW--LYING AREA SUBJECT TO FLOODING SPECIFIED BY ENGINEER.
14. TEMPORARY EROSION AND SEDIMENT CONTROL SHALL CONSIST OF TEMPORARY MEASURES WITHIN THE PROJECT LIMITS AND MINIMIZE POLLUTION OF RIVERS, STREAMS, AND PRIVATE PROPERTIES. SUCH MEASURES MAY INCLUDE BERMS, DIKES, SLOPE DRAINS, BALE BARRIERS, SEDIMENT FILTERS, SEDIMENT BASINS, MULCHES, AND GRASSES. ALL UNPAVED AND DISTURBED AREAS SHALL RECEIVE SOLID SLAB SOD TREATMENT IN ACCORDANCE WITH SECTION 31 25 00 OF THE PROJECT SPECIFICATIONS.
15. CONSTRUCTION SIGNING AND TRAFFIC CONTROL SHALL CONSIST OF FURNISHING AND ERECTING SIGNS, LIGHTS, BARRICADES, AND DEVICES IN ACCORDANCE WITH CITY STANDARD SPECS AND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
16. CONTRACTOR TO PHOTOGRAPH EACH MANHOLE PRIOR TO, AND AFTER REHABILITATION.
17. DEFLECTION TESTS SHALL BE IN ACCORDANCE WITH OAC 252:656--5--5(A). PERFORM DEFLECTION TESTS ON ALL FLEXIBLE PIPE AFTER FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. DEFLECTION MUST NOT EXCEED 5%. TEST MUST BE RUN USING A RIGID BALL OR MANDREL WITH A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE TAKING INTO ACCOUNT MANUFACTURING TOLERANCES. TESTS MUST BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES. TESTING MUST ADHERE ASTM F2160.
18. LEAKAGE TESTS SHALL BE IN ACCORDANCE WITH OAC 252:656--5--5(B). LEAKAGE TESTS ARE REQUIRED FOR ALL GRAVITY LINES. HYDROSTATIC TESTS MUST USE A 2--FOOT TEST HEAD AND LEAKAGE INWARD OR OUTWARD MUST NOT EXCEED 10 GALLONS PER INCH OF PIPE DIAMETER PER MILE PER DAY. TESTING MUST ADHERE ASTM F2164. THE PROCEDURES LISTED IN THE HANDBOOK OF PVC PIPE, UNI--BELL PVC PIPE ASSOCIATION, 2001 MAY BE USED FOR PVC PIPE. AN AIR TEST RESULT MUST ASSURE A LEAKAGE LIMIT EQUIVALENT TO THE HYDROSTATIC TEST LIMIT.
19. CONTRACTOR SHALL CONSTRUCT ALL MANHOLES IN ACCORDANCE TO THE MANHOLE SCHEDULES ON SHEET 3 PER SPECIFICATIONS 33 01 30 & 33 05 61. RIM ELEVATIONS AND SURFACE SHOWN IN ALL PROFILE VIEWS ARE APPROXIMATE AND SHALL NOT BE CONSIDERED FINAL GRADE.



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SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

PAY QUANTITES & NOTES

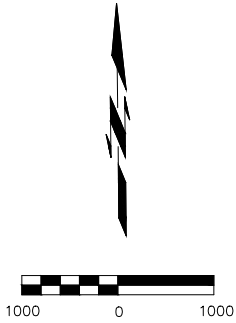
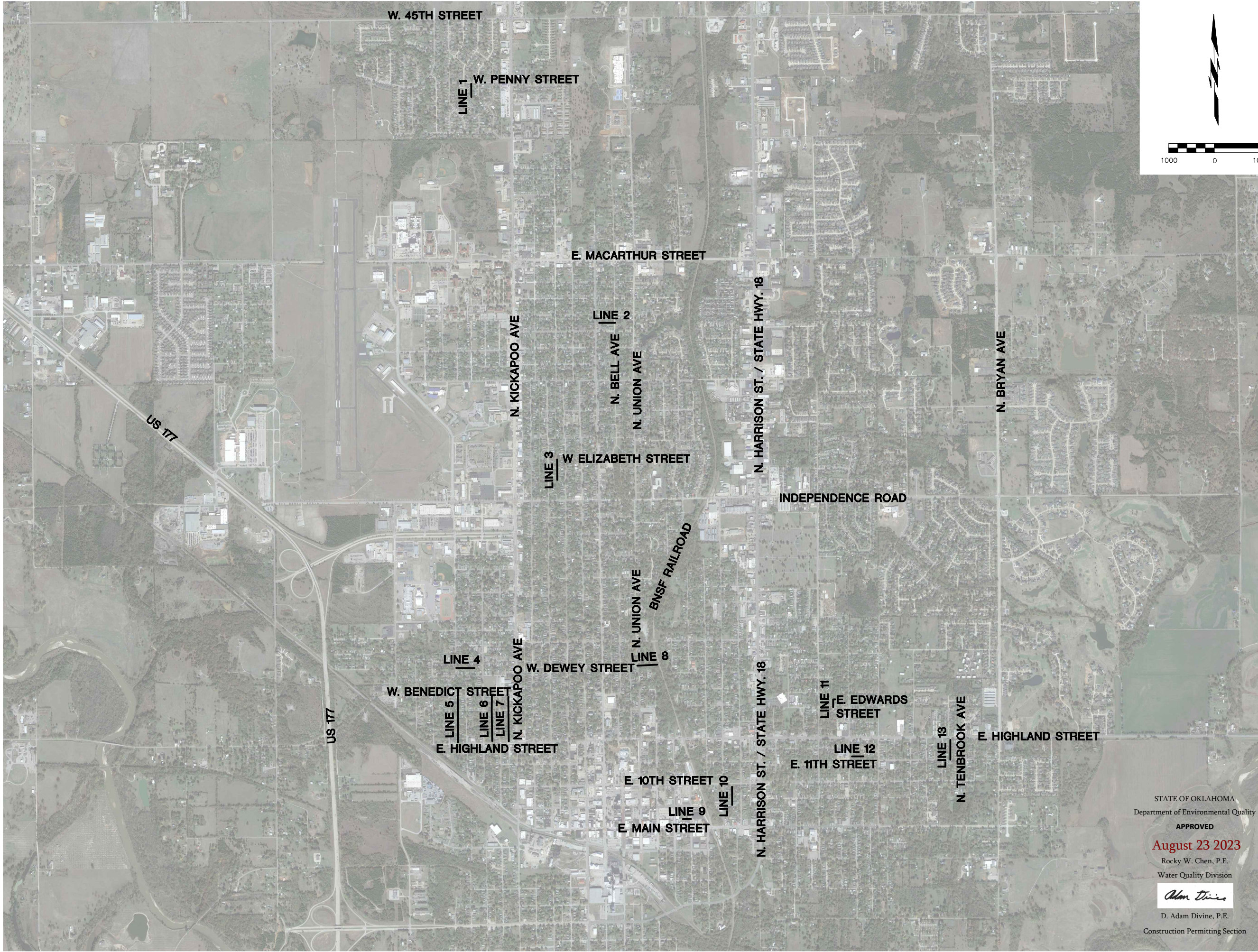
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SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

OVERALL MAP

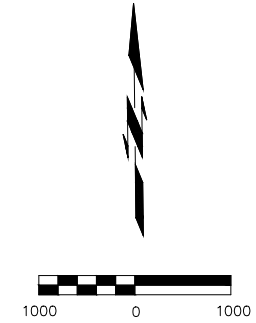
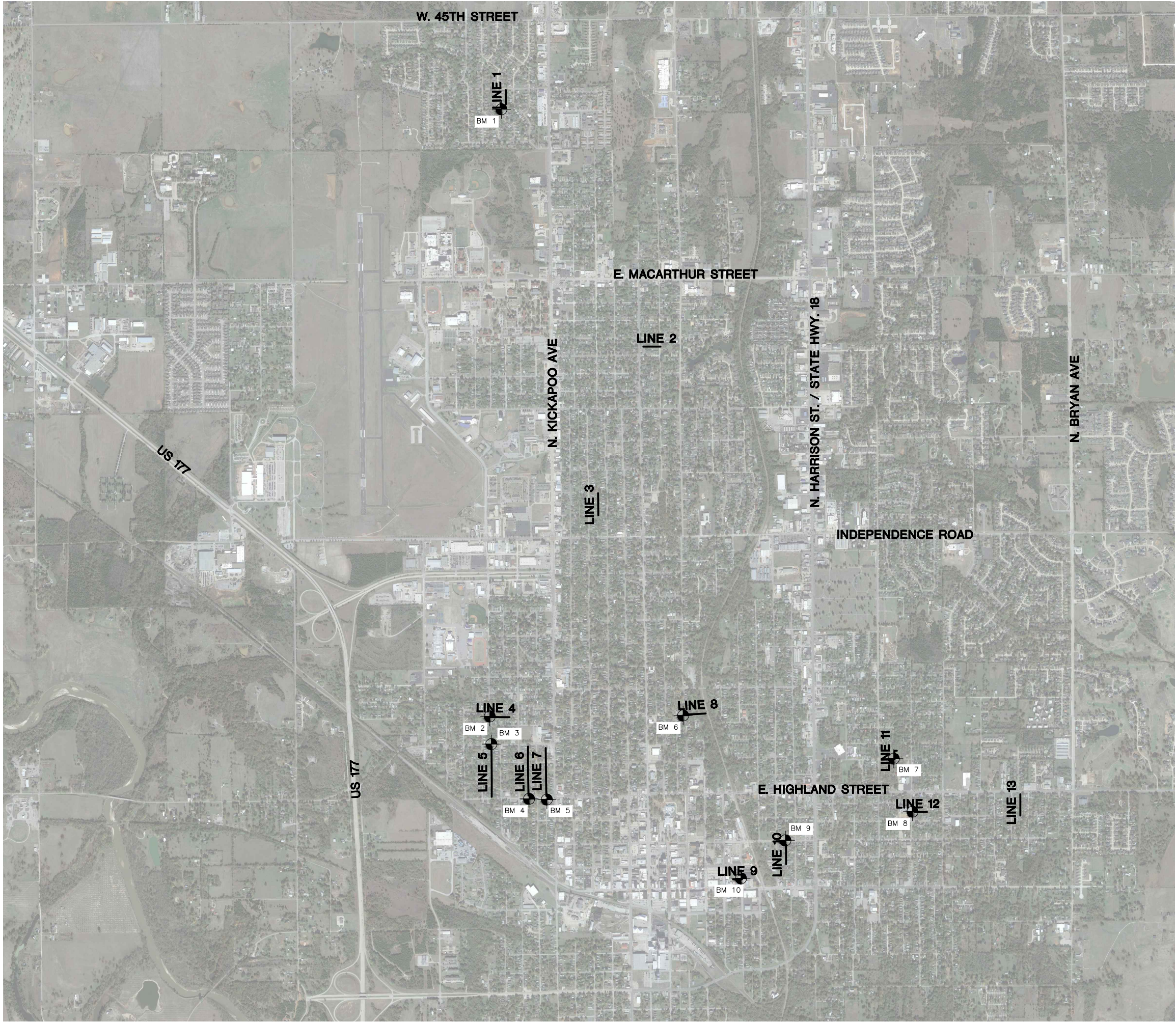
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DATE	5/8/2023

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3

STATE OF OKLAHOMA
Department of Environmental Quality
APPROVED
August 23 2023
Rocky W. Chen, P.E.
Water Quality Division

D. Adam Divine, P.E.
Construction Permitting Section

G:\PROJECTS\23-153 SHAWNEE SEWER PIPE BURSTING\CAD\SWAN\23-153 OVERALL MAP.DWG



BM-1
CUT 'X' ON CONC.
N: 743388.771
E: 2286591.835
ELEV.=1051.67'

BM-2
CUT 'X' ON CONC. CURB
N: 730957.569
E: 2286364.869
ELEV.=1070.79'

BM-3
CUT 'X' ON CONC. DRNG. STRC.
N: 730400.844
E: 2286386.763
ELEV.=1068.69'

BM-4
CUT 'X' ON CONC. CURB
N: 729282.495
E: 2287156.967
ELEV.=1063.42'

BM-5
CUT 'X' ON CONC. DRIVEWAY
N: 729267.822
E: 2287521.874
ELEV.=1067.49'

BM-6
CUT 'X' ON CONC. CURB
N: 730986.205
E: 2290308.776
ELEV.=1035.33'

BM-7
SET PK NAIL IN ASPHALT
N: 730103.163
E: 2294618.354
ELEV.=1033.53'

BM-8
CUT 'X' ON CONC. CURB
N: 729019.309
E: 2295000.479
ELEV.=1073.92'

BM-9
CUT 'X' ON CONC. CURB
N: 728432.671
E: 2292400.901
ELEV.=1022.82'

BM-10
CUT 'X' ON CONC. CURB
N: 727654.730
E: 2291493.107
ELEV.=1020.35'



SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

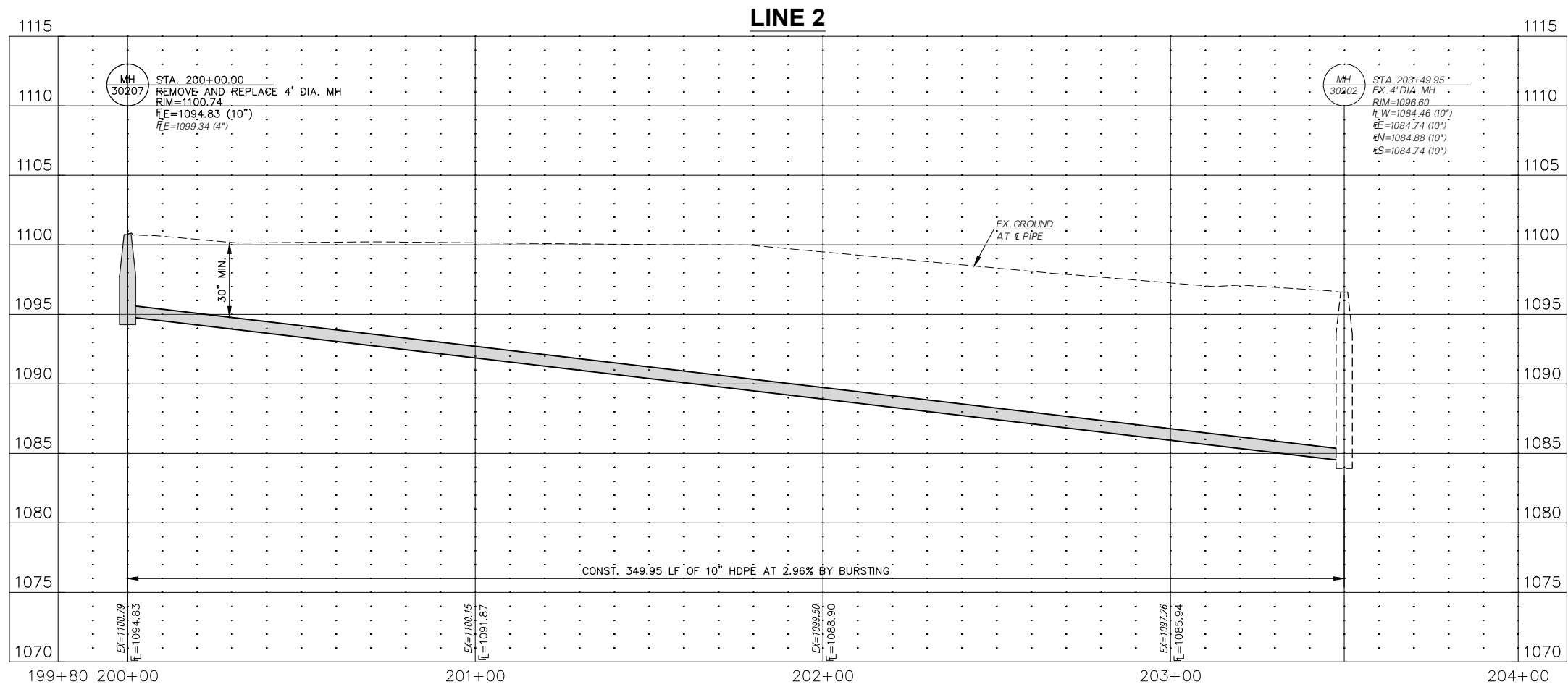
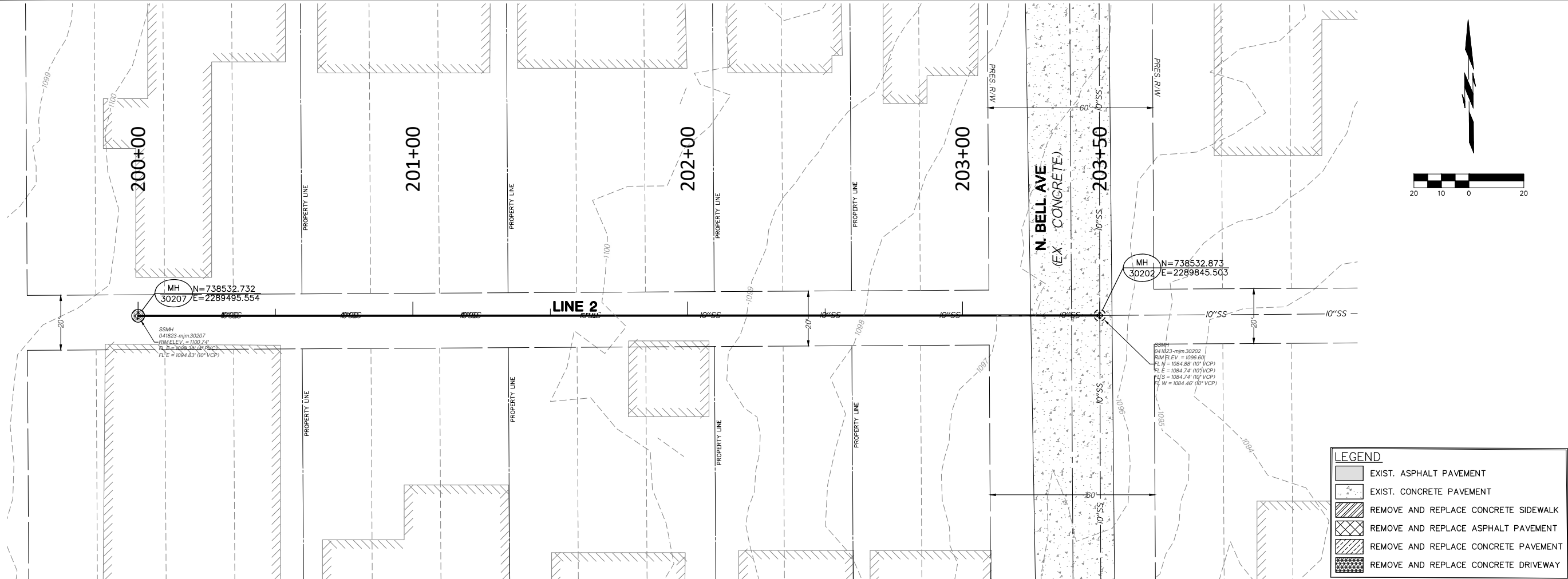
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SANITARY SEWER PIPE BURSTING

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POTTAWATOMIE COUNTY, OKLAHOMA

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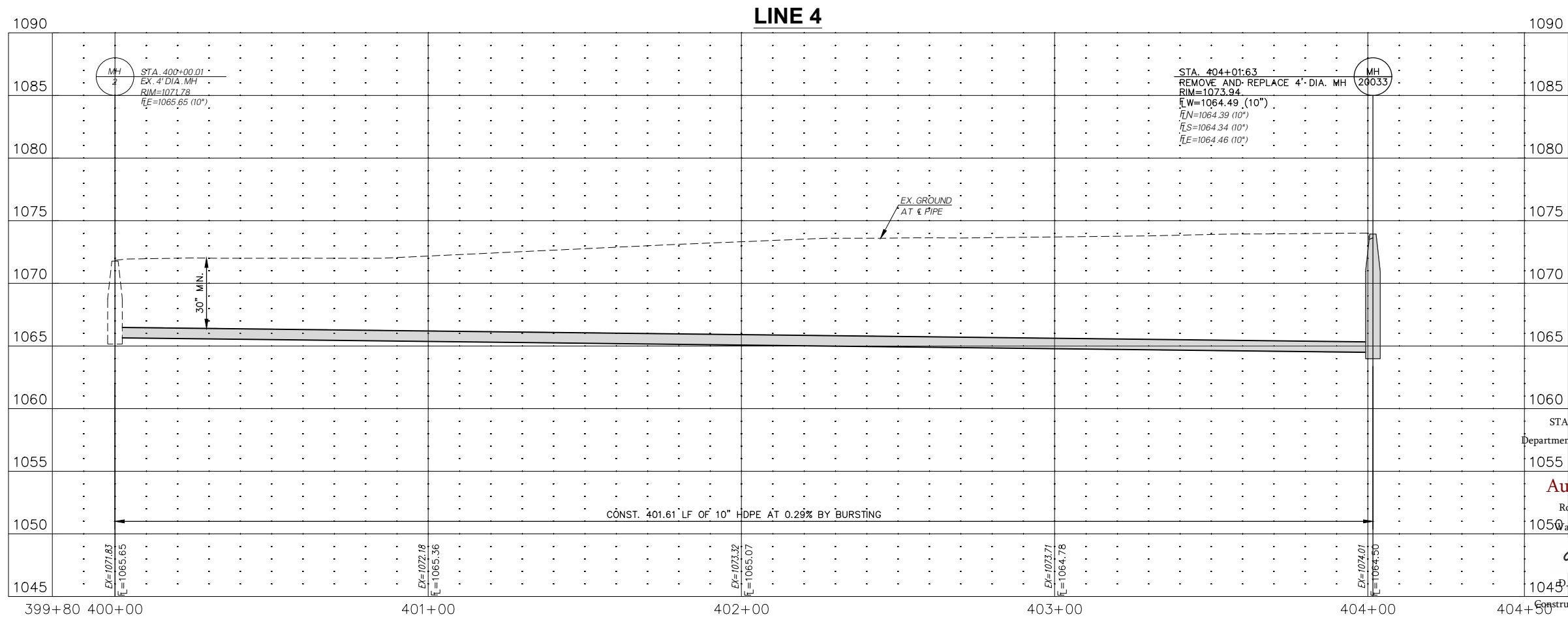
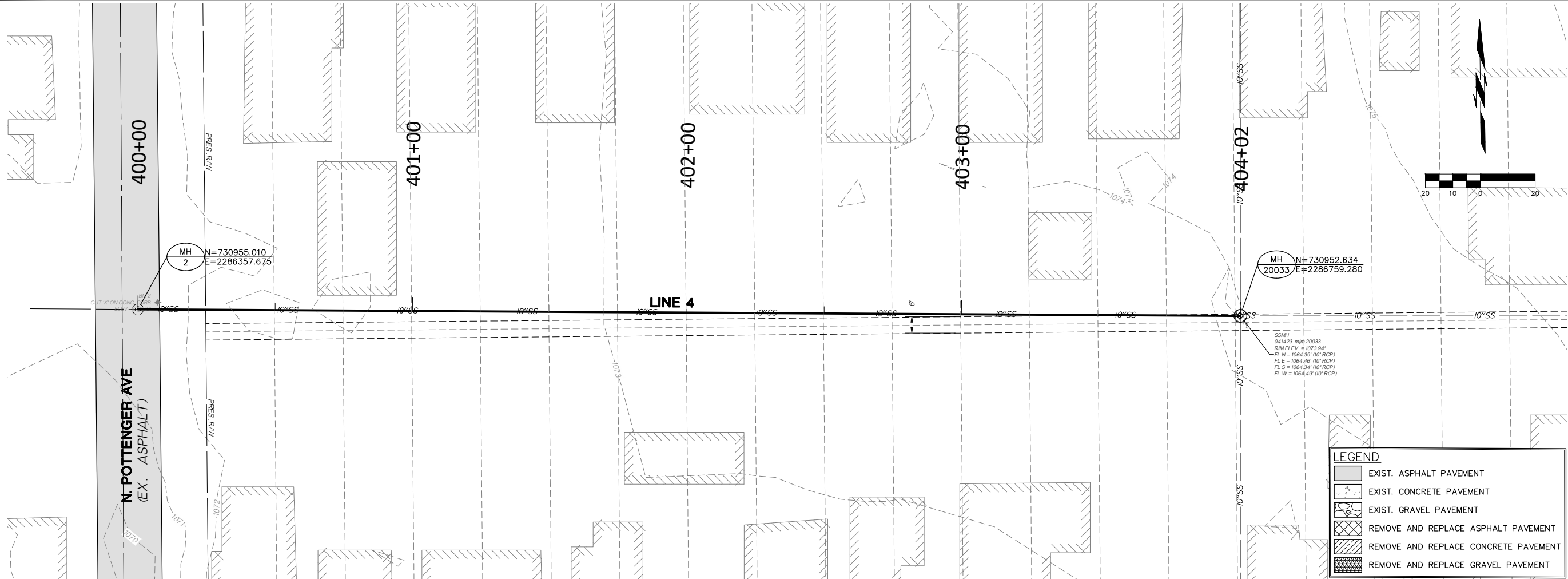
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STATE OF OKLAHOMA
Department of Environmental Quality
APPROVED
August 23 2023
Rocky W. Chen, P.E.
Water Quality Division
Adam Divine
D. Adam Divine, P.E.
Construction Permitting Section

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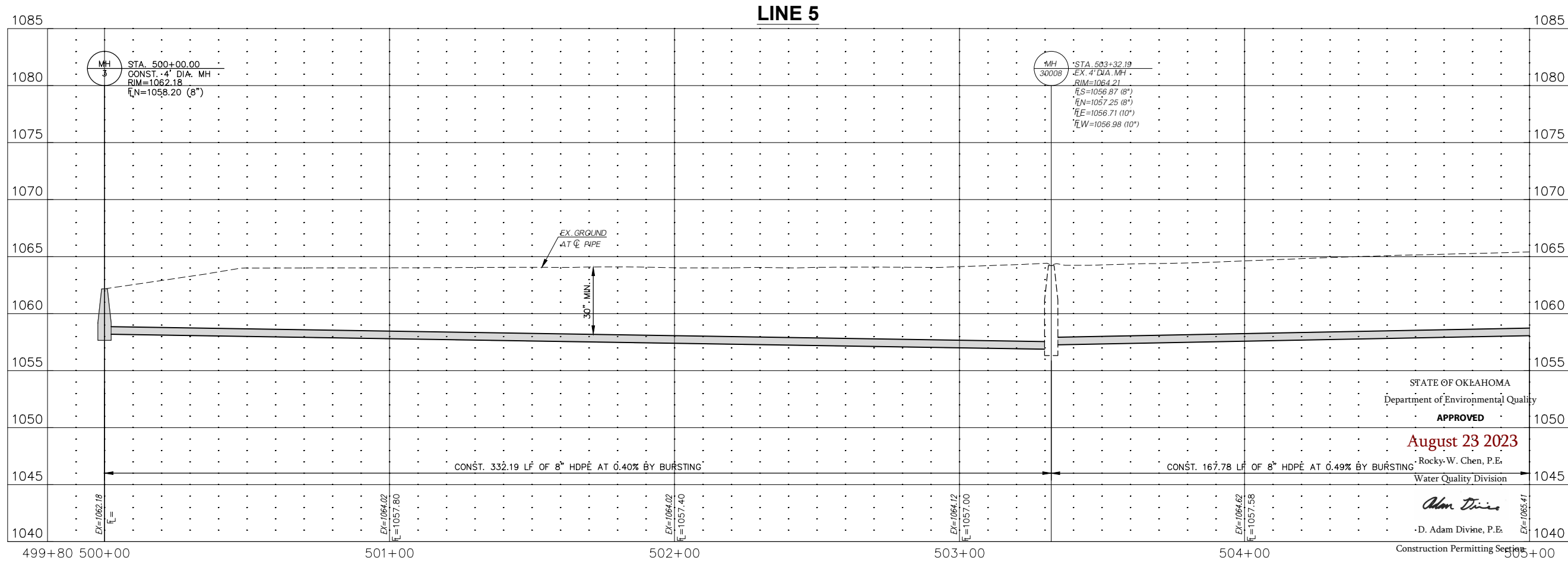
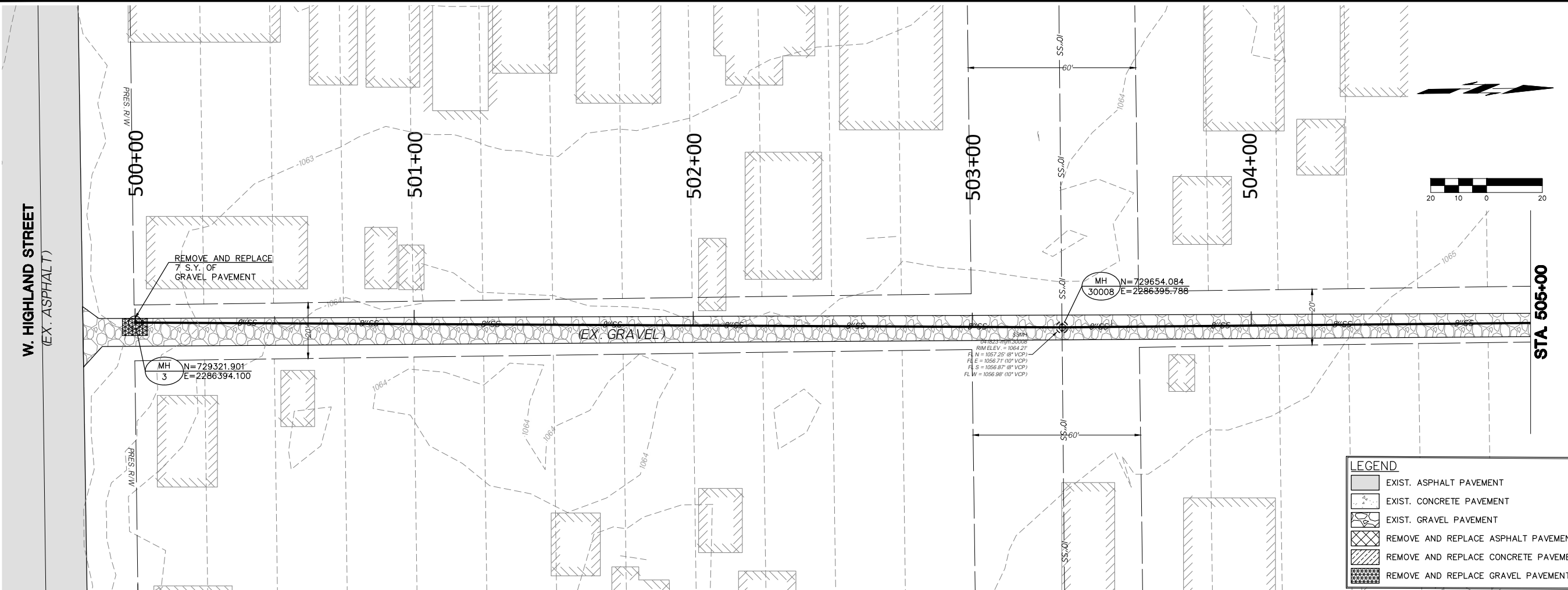
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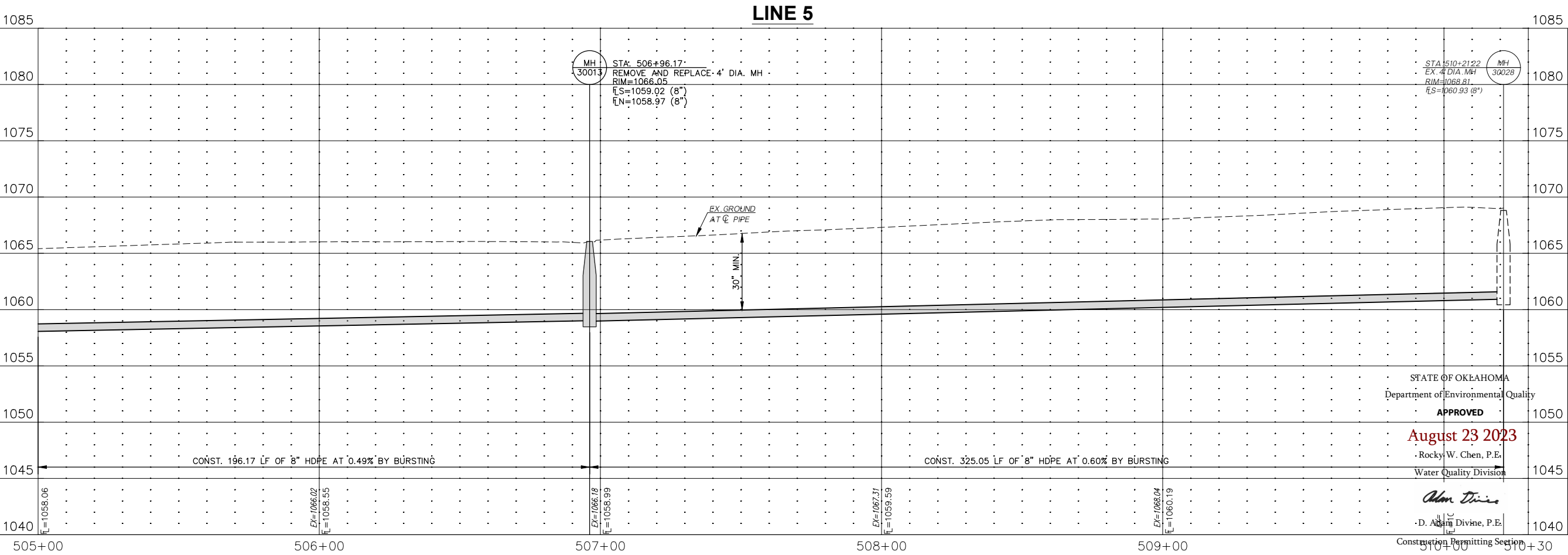
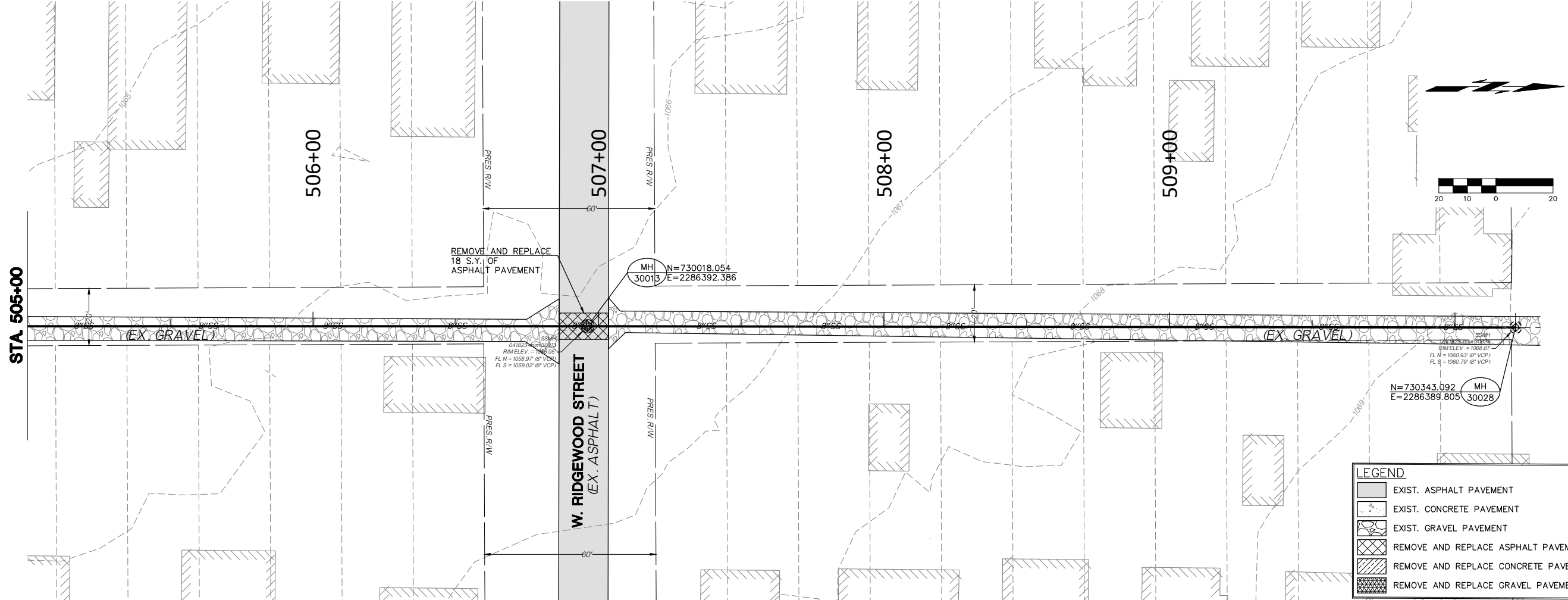
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LINE 5 P&P (1 OF 2)

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LINE 5 P&P
(2 OF 2)

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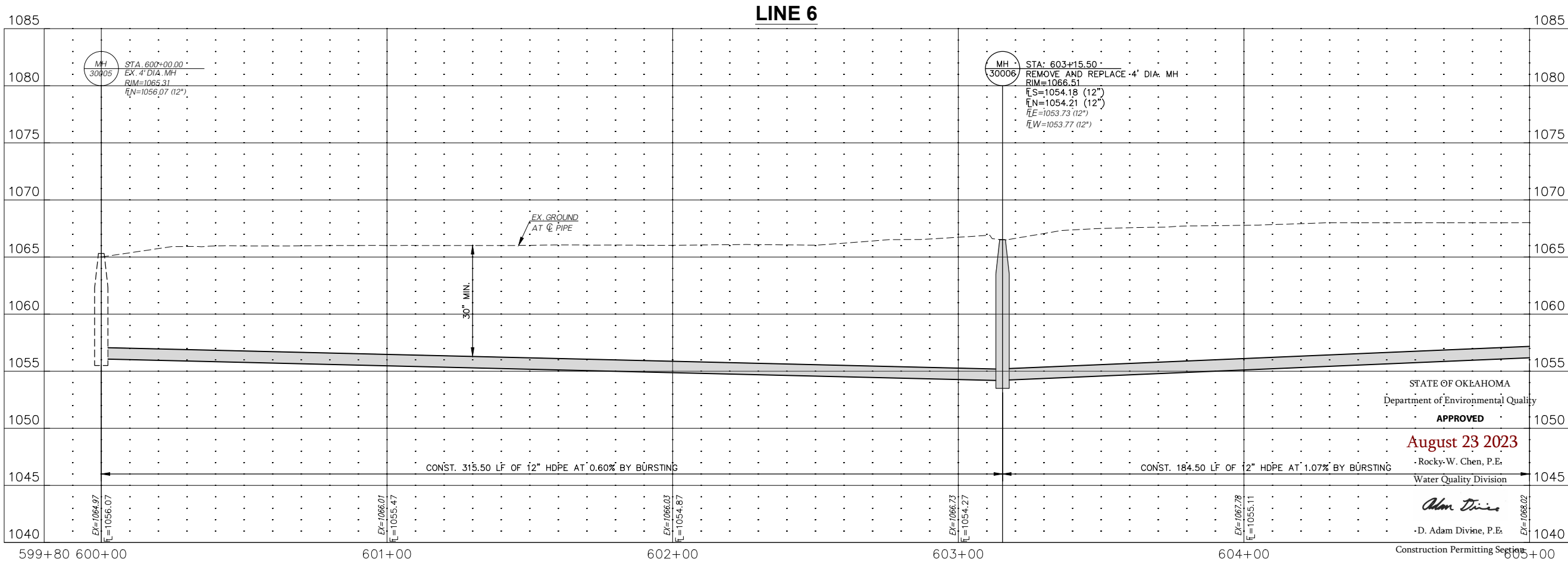
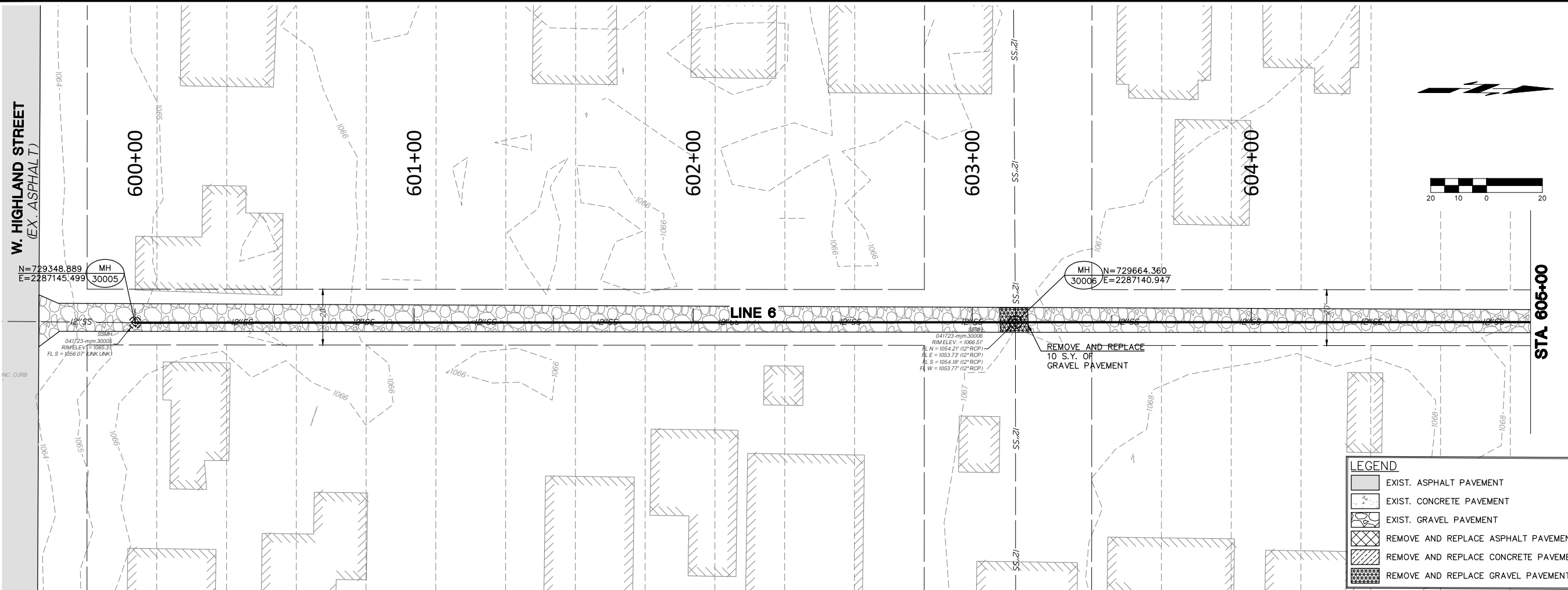
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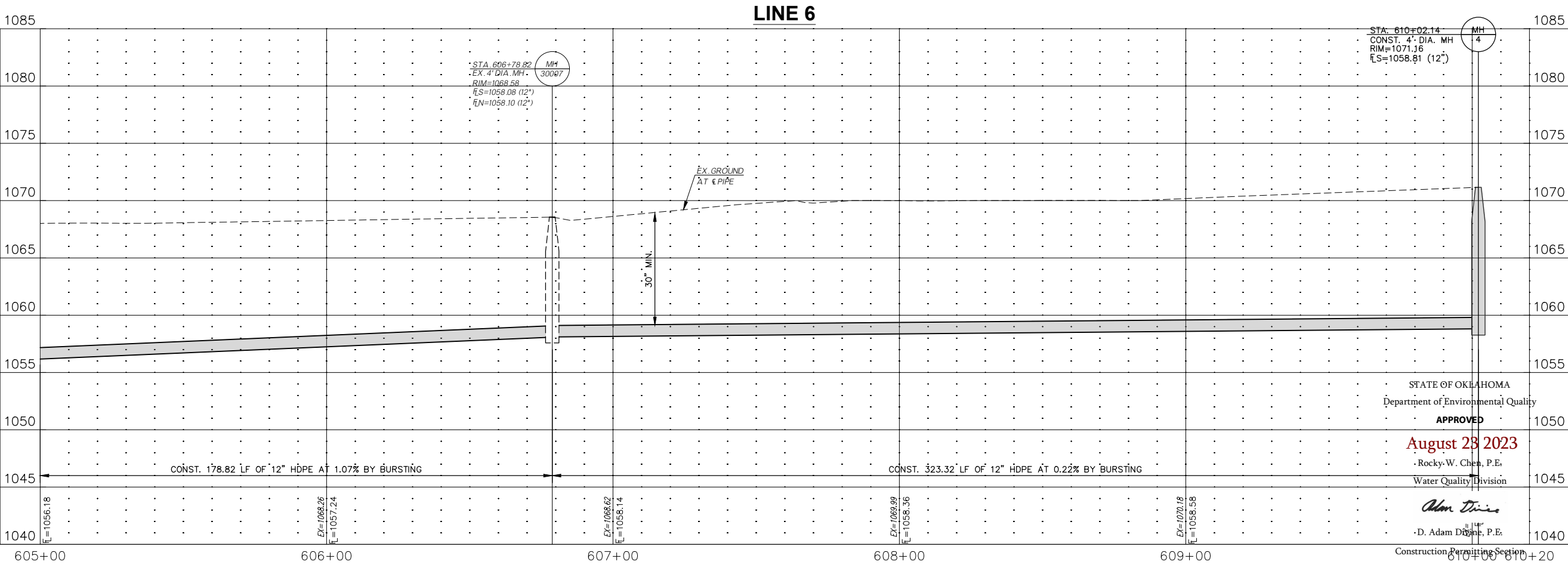
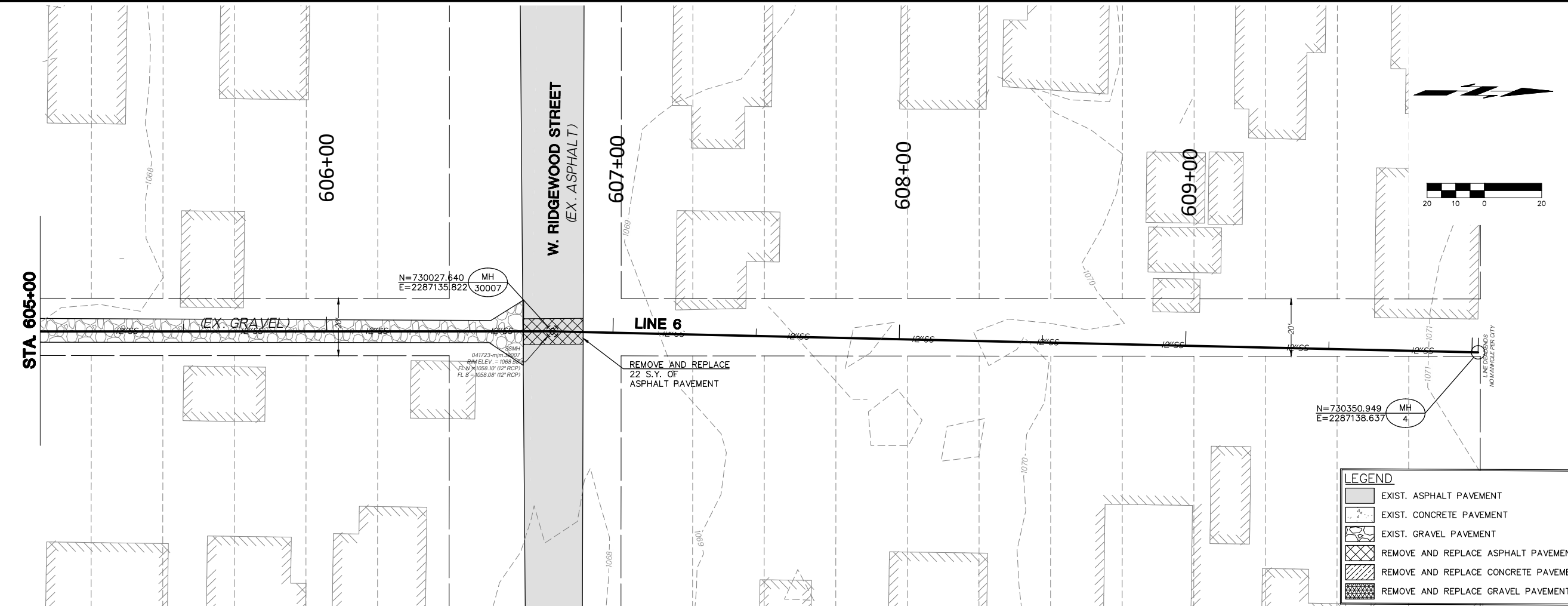
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LINE 6 P&P (1 OF 2)

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SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE
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LINE 6 P&P (2 OF 2)

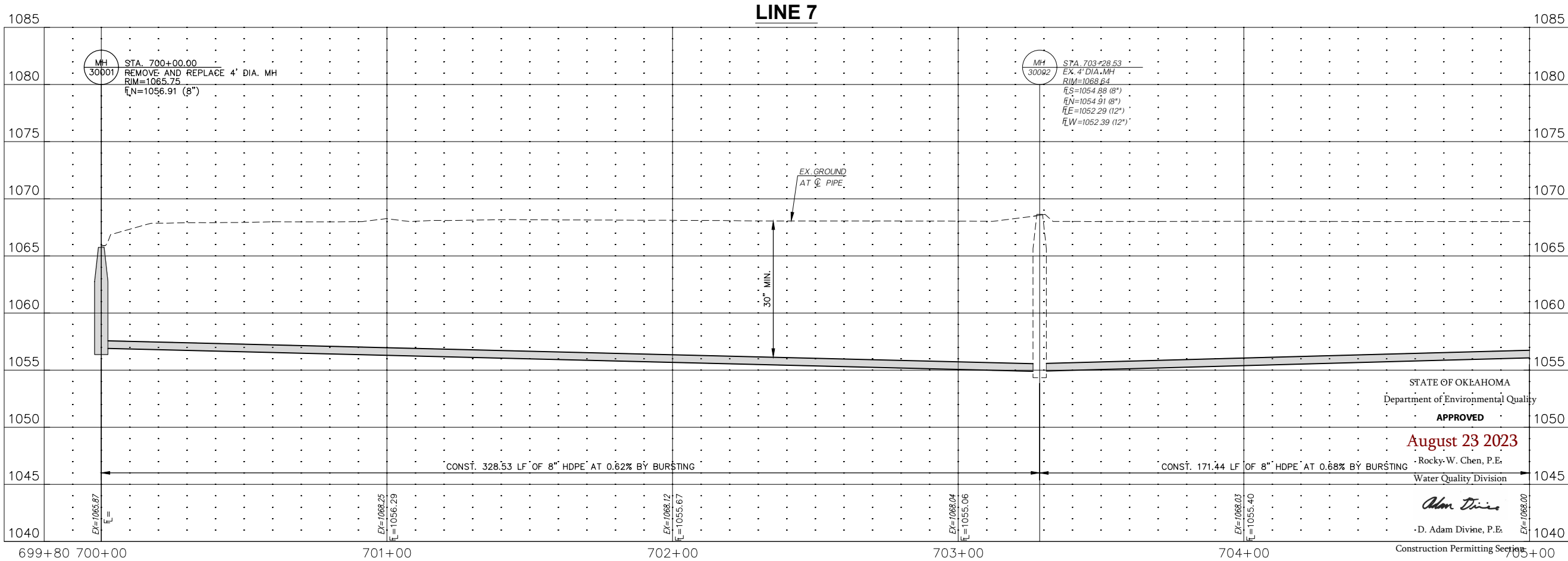
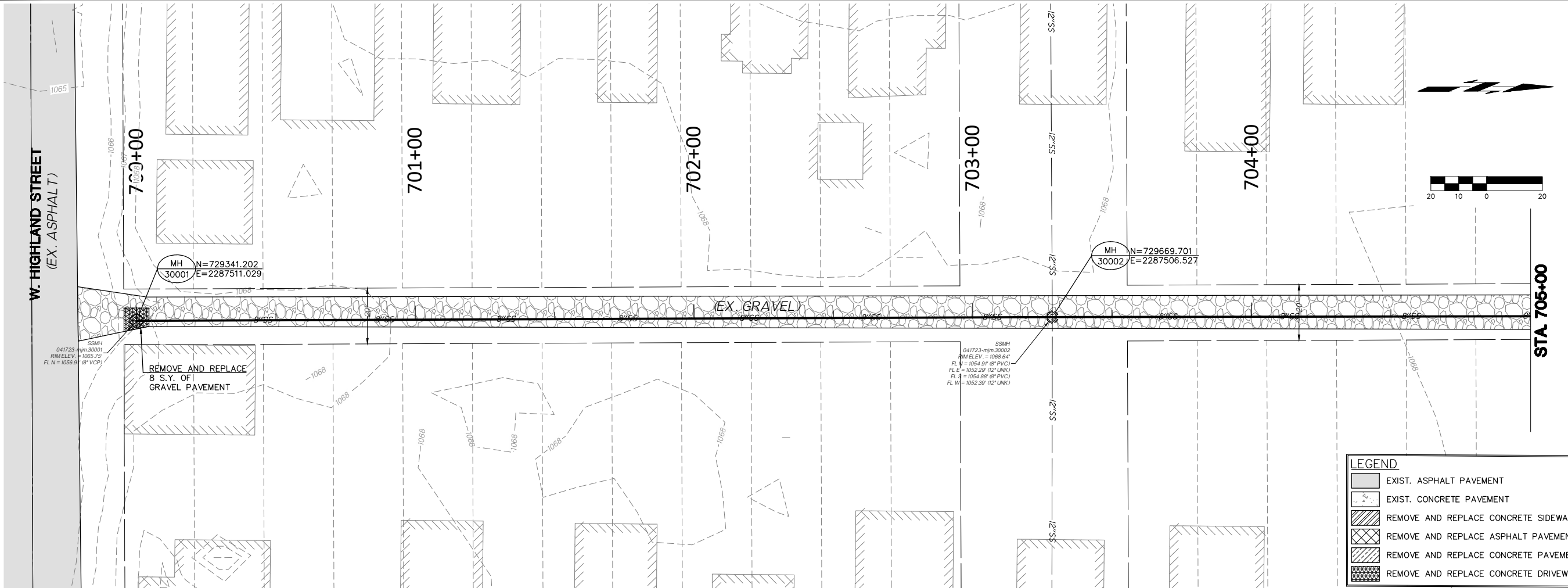
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POTTAWATOMIE COUNTY, OKLAHOMA

LINE 7 P&P (1 OF 2)

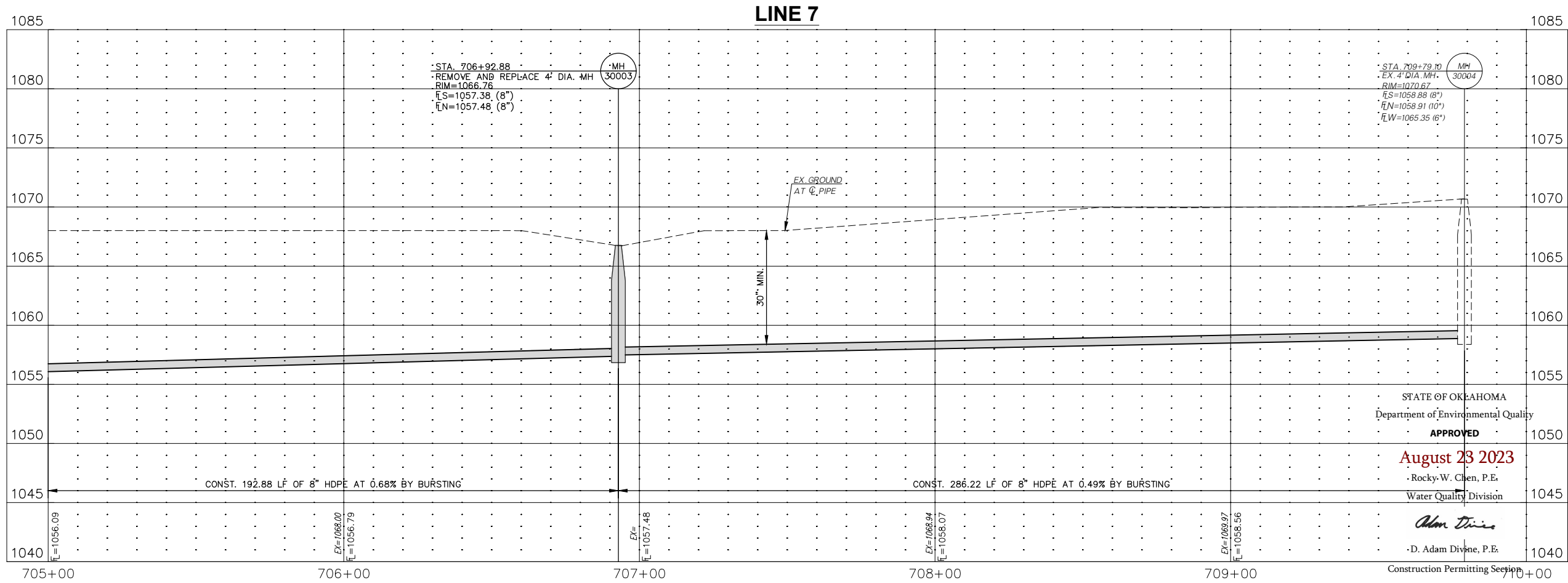
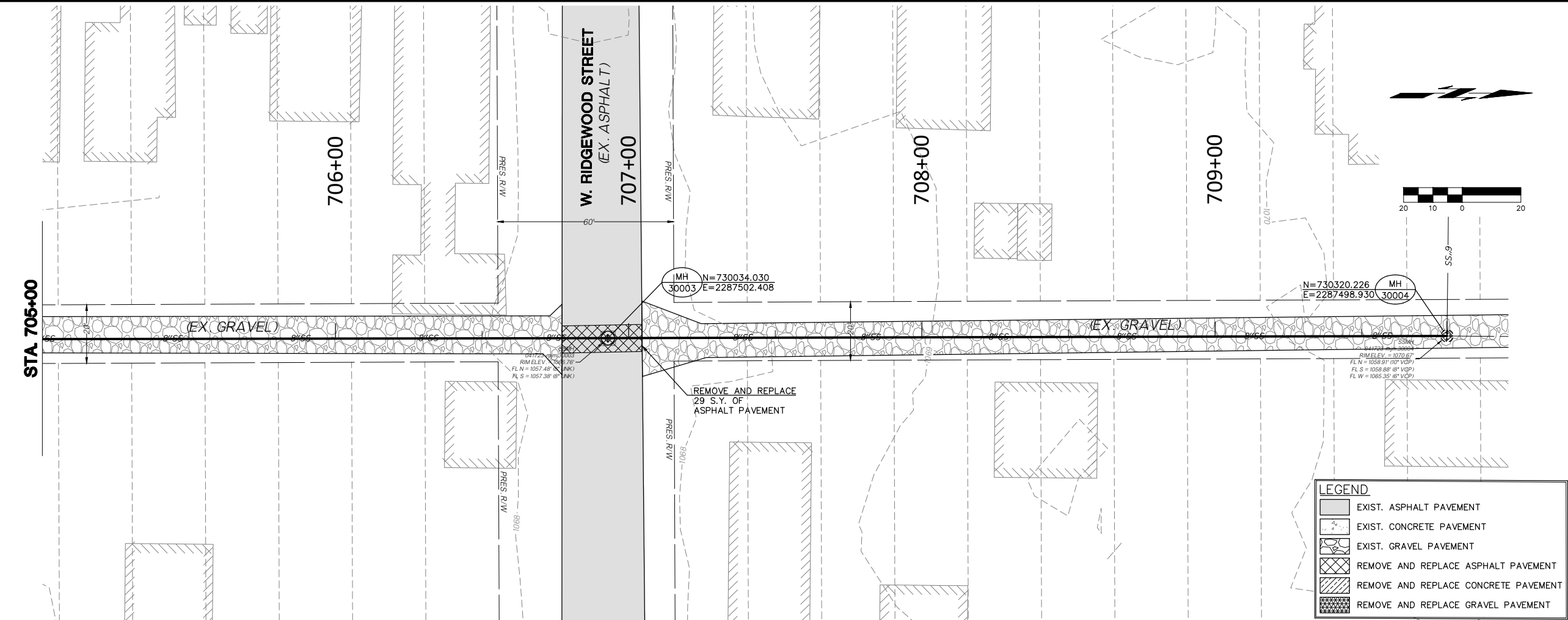
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LINE 7 P&P (2 OF 2)

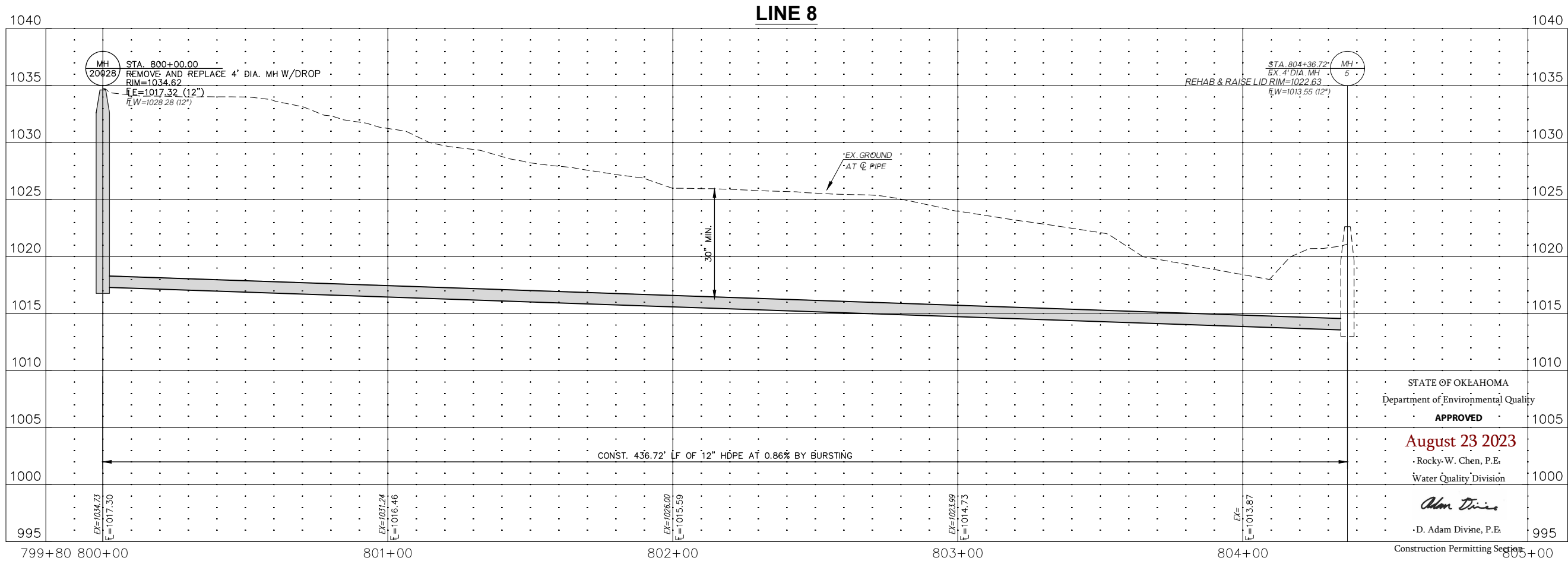
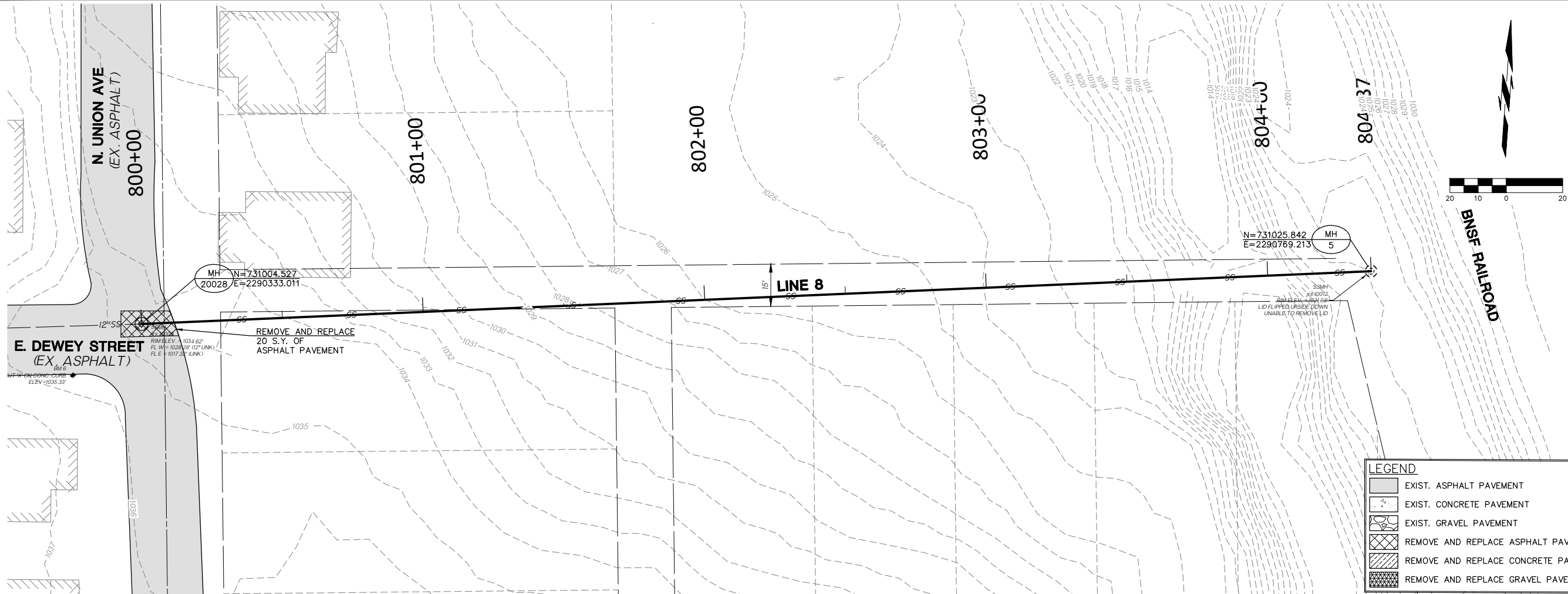
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August 23 2023
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Water Quality Division
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SHEET NUMBER **14**

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SANITARY SEWER PIPE BURSTING

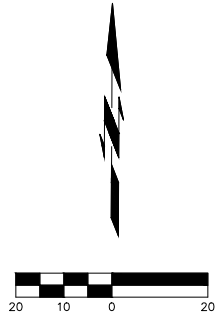
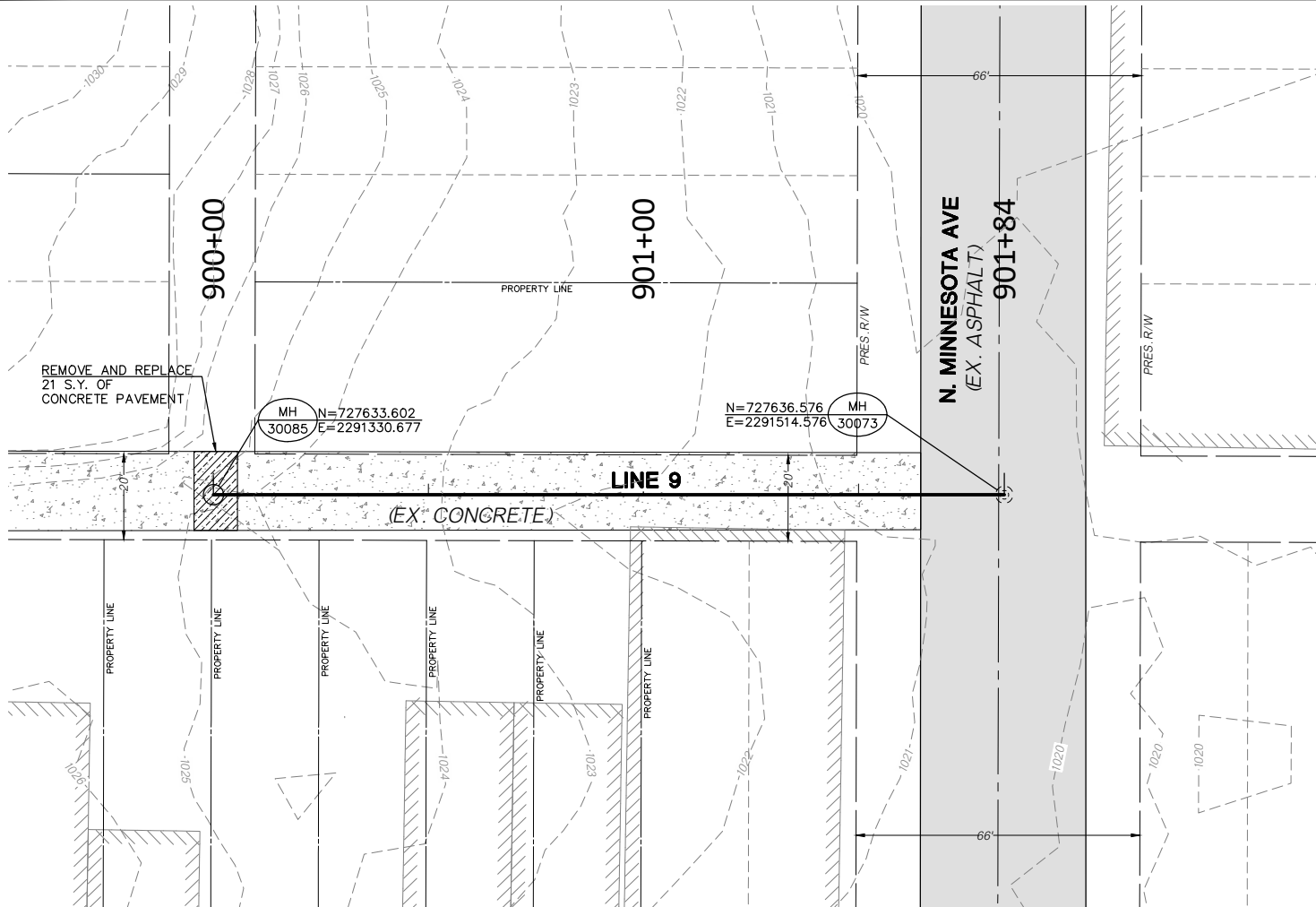
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PROJECT NUMBER	23-153
DATE	5/8/2023

REVISIONS

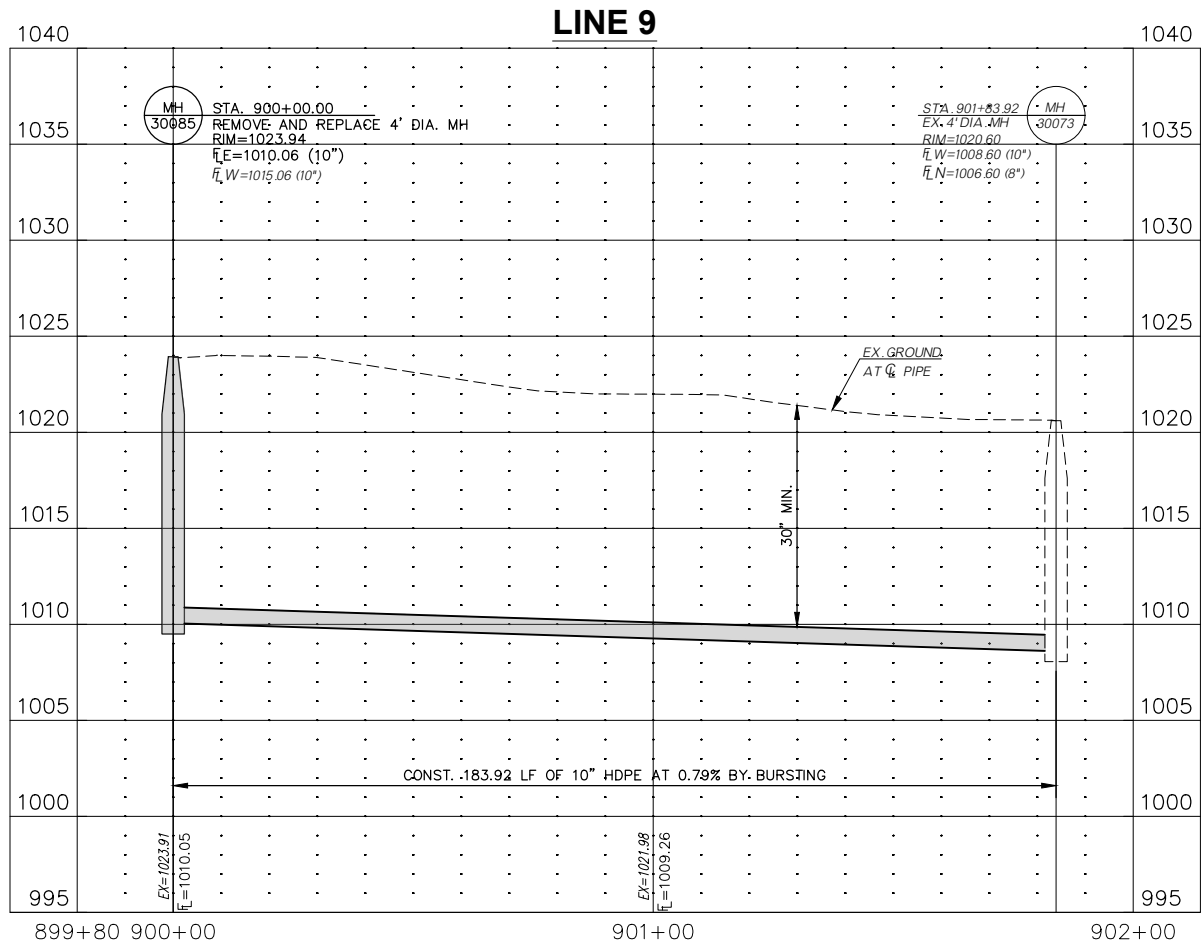
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CA# 6414 EXPIRES 6/30/2024

LEGEND	
	EXIST. ASPHALT PAVEMENT
	EXIST. CONCRETE PAVEMENT
	EXIST. GRAVEL PAVEMENT
	REMOVE AND REPLACE ASPHALT PAVEMENT
	REMOVE AND REPLACE CONCRETE PAVEMENT
	REMOVE AND REPLACE GRAVEL PAVEMENT



SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE

POTTAWATOMIE COUNTY, OKLAHOMA

LINE 9 P&P

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REVIEWED BY	GMT
PROJECT NUMBER	23-153
DATE	5/8/2023

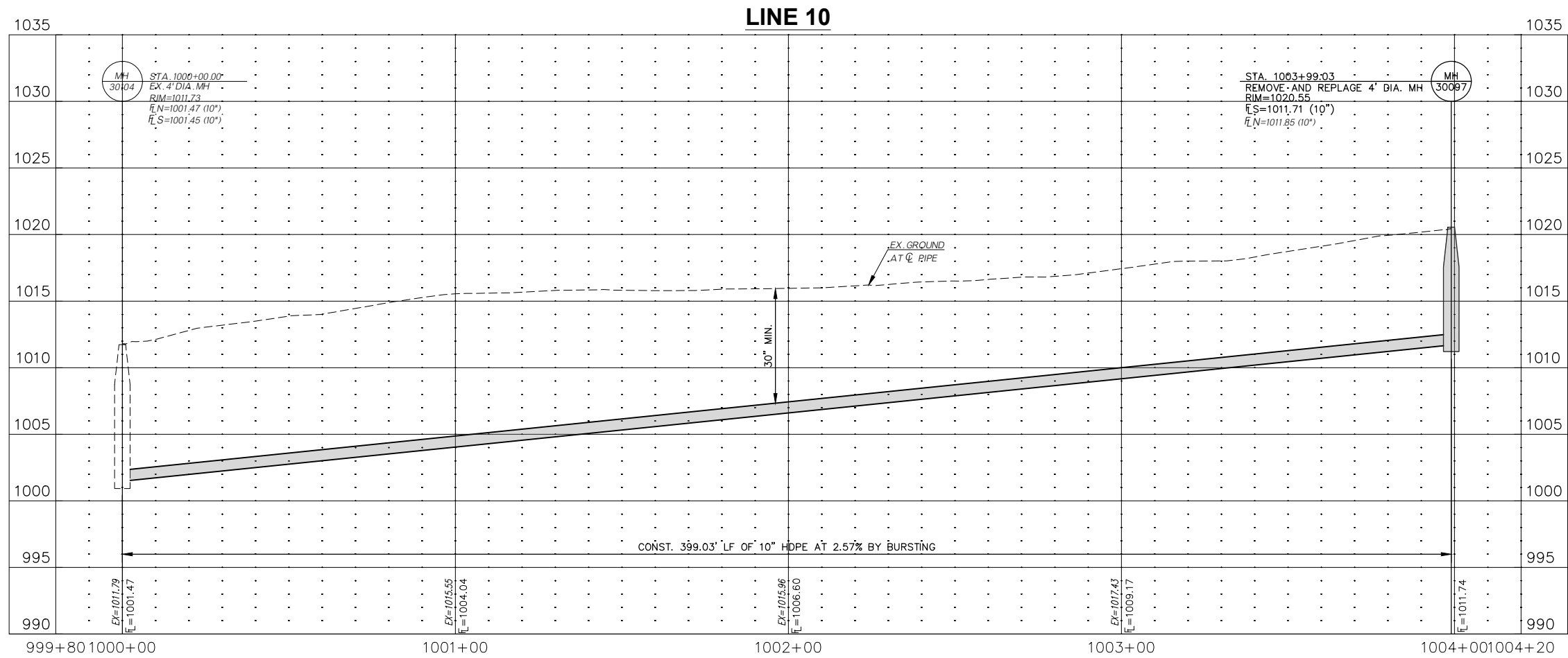
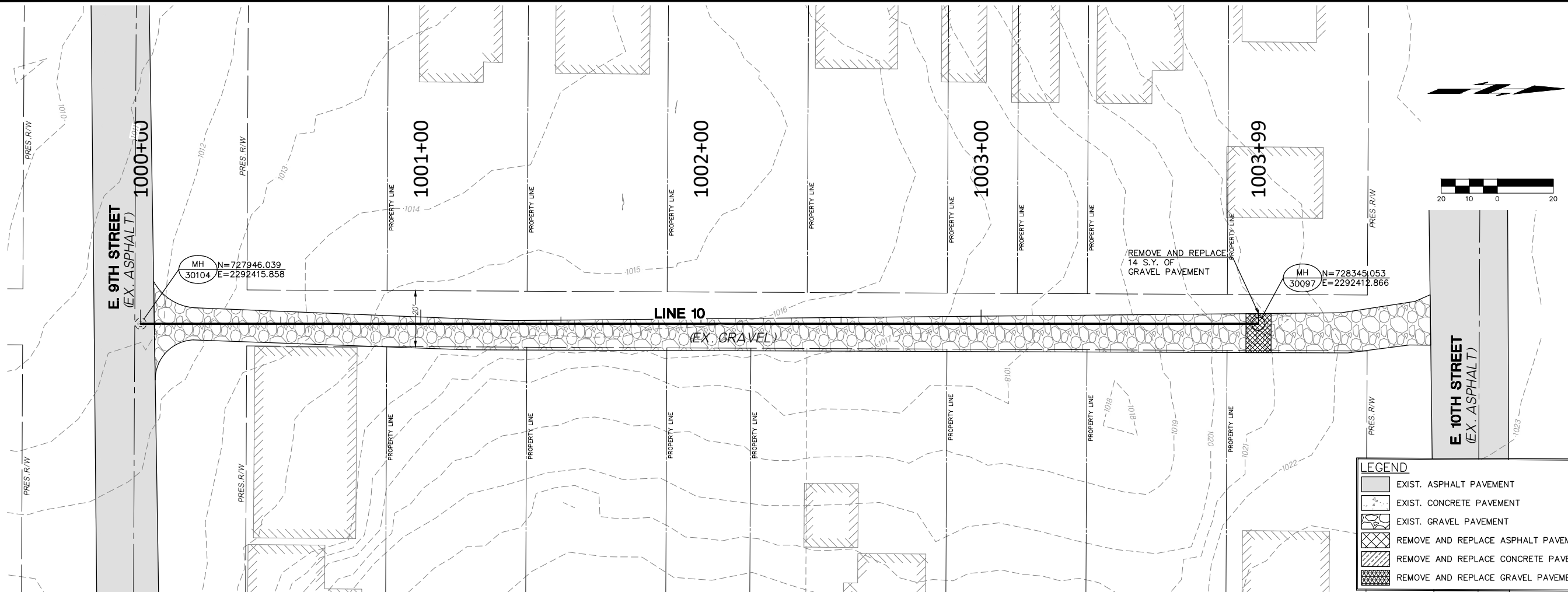
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SHEET NUMBER	16
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STATE OF OKLAHOMA
Department of Environmental Quality
APPROVED
August 23 2023
Rocky W. Chen, P.E.
Water Quality Division
Adam Divine
D. Adam Divine, P.E.
Construction Permitting Section

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	EXIST. ASPHALT PAVEMENT
	EXIST. CONCRETE PAVEMENT
	EXIST. GRAVEL PAVEMENT
	REMOVE AND REPLACE ASPHALT PAVEMENT
	REMOVE AND REPLACE CONCRETE PAVEMENT
	REMOVE AND REPLACE GRAVEL PAVEMENT

SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

LINE 10 P&P

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	23-153
DATE	5/8/2023

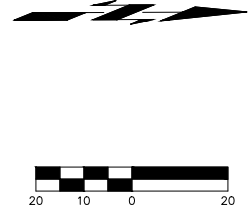
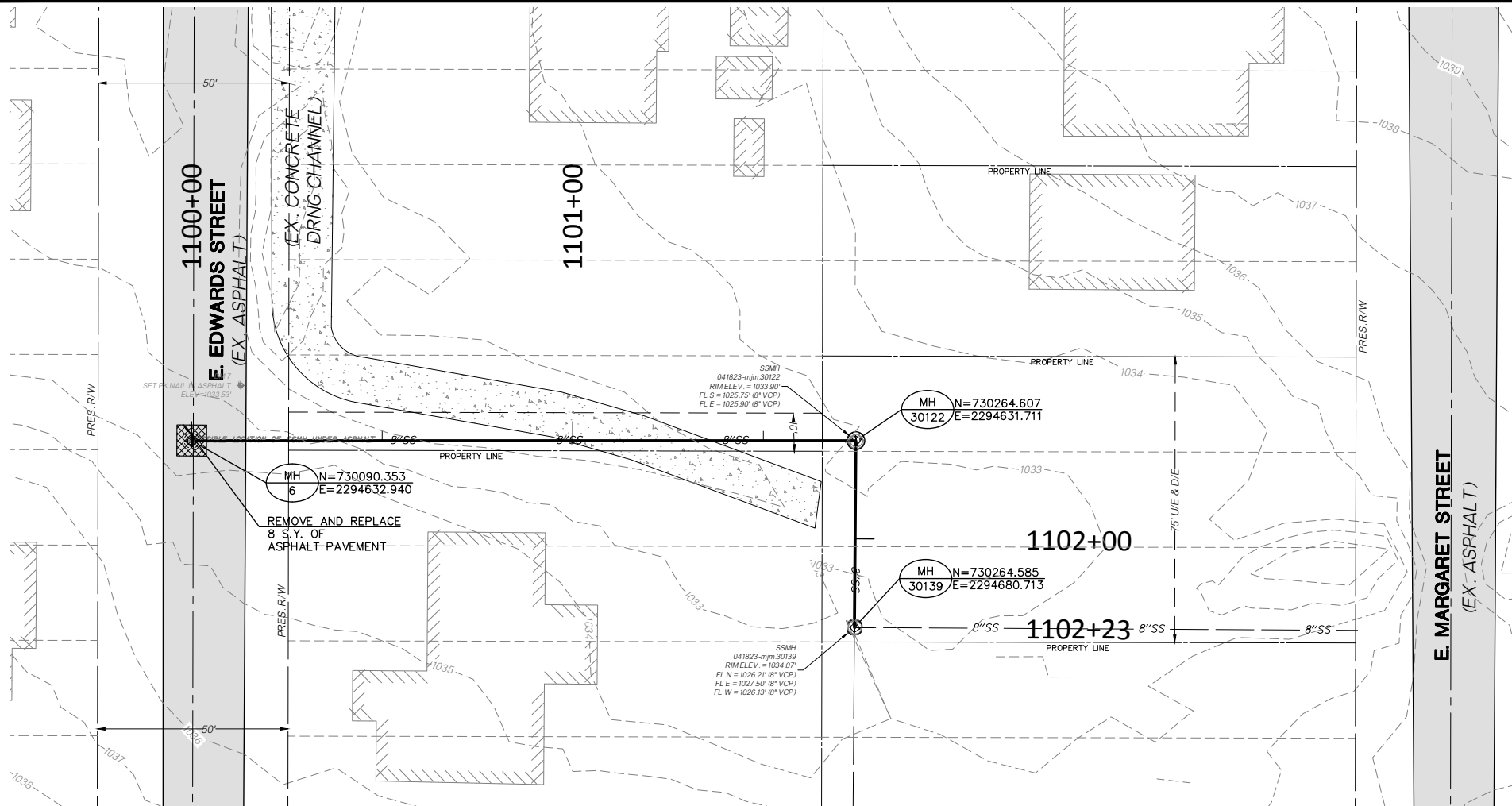
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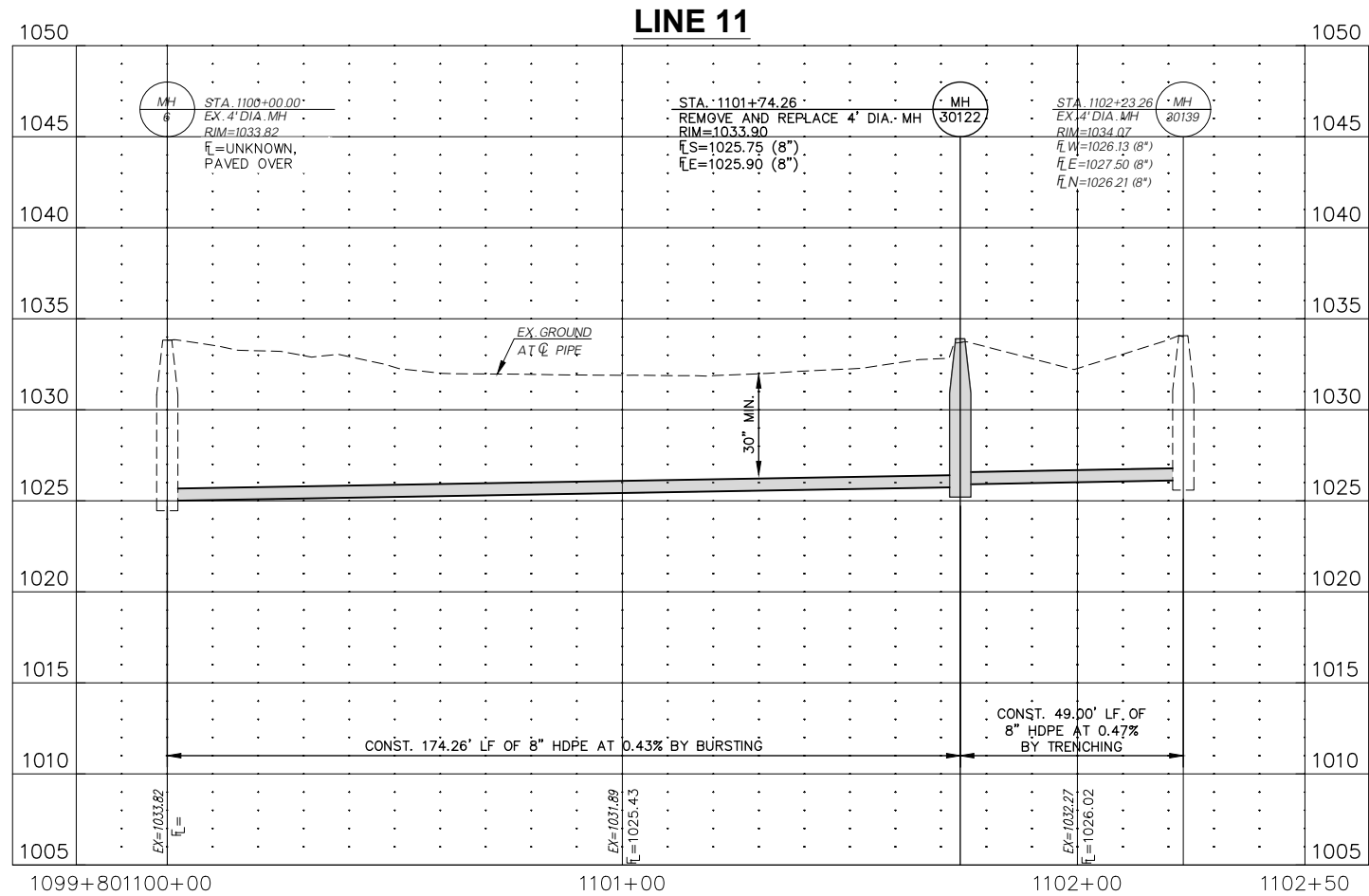
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	EXIST. CONCRETE PAVEMENT
	EXIST. GRAVEL PAVEMENT
	REMOVE AND REPLACE ASPHALT PAVEMENT
	REMOVE AND REPLACE CONCRETE PAVEMENT
	REMOVE AND REPLACE GRAVEL PAVEMENT



SANITARY SEWER PIPE BURSTING
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

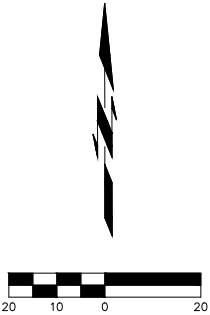
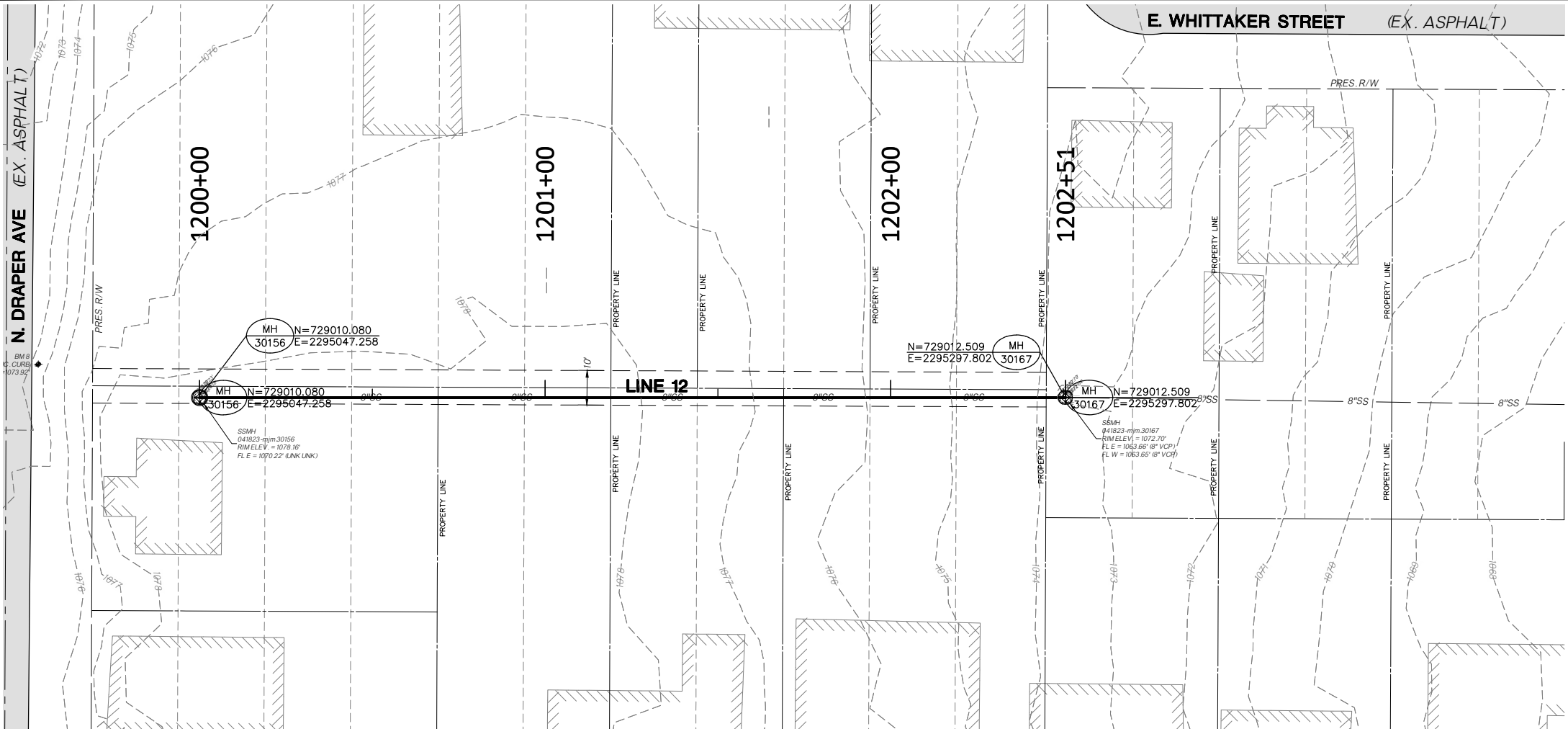
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18	

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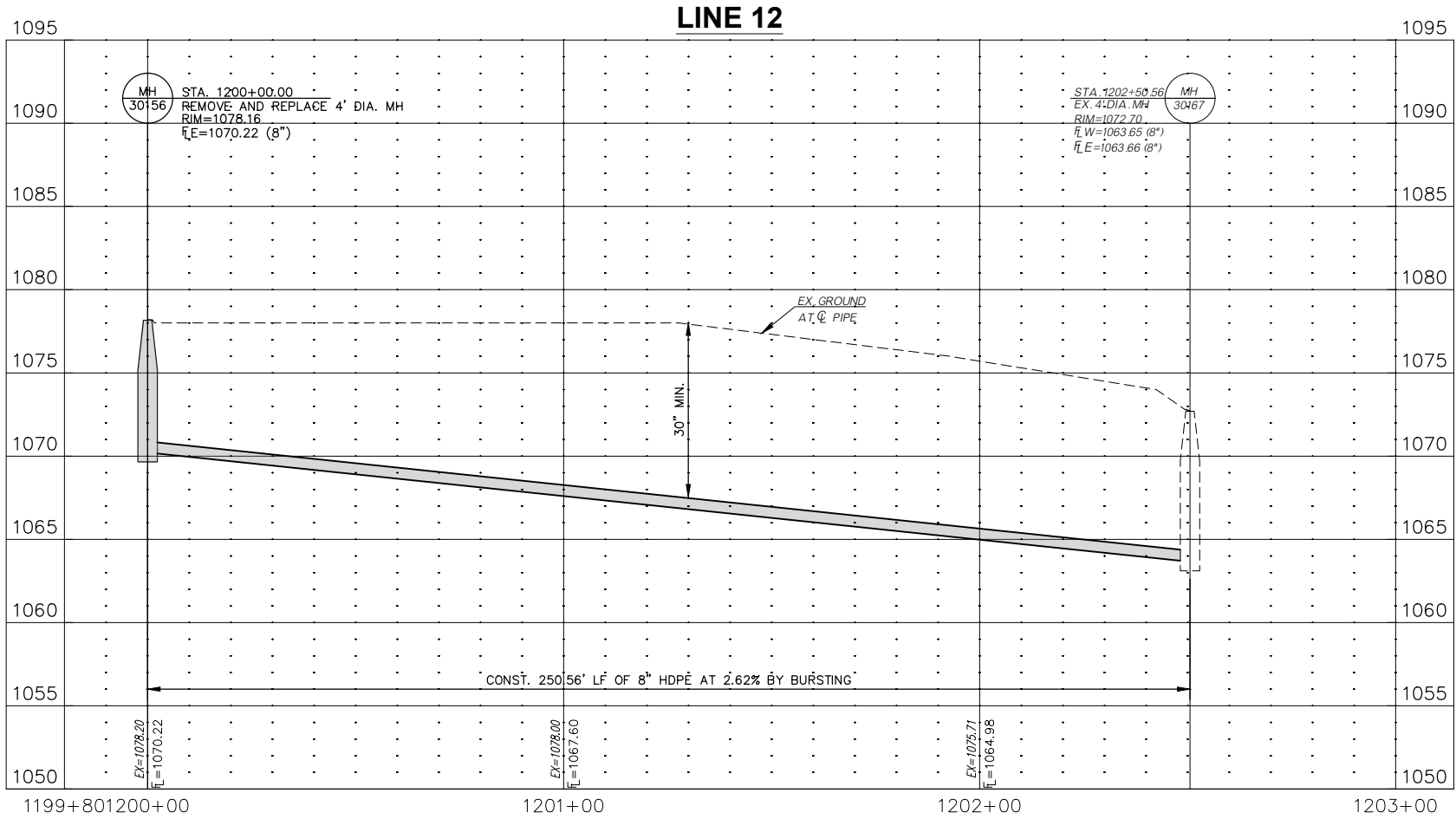
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LEGEND

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- EXIST. CONCRETE PAVEMENT
- EXIST. GRAVEL PAVEMENT
- REMOVE AND REPLACE ASPHALT PAVEMENT
- REMOVE AND REPLACE CONCRETE PAVEMENT
- REMOVE AND REPLACE GRAVEL PAVEMENT



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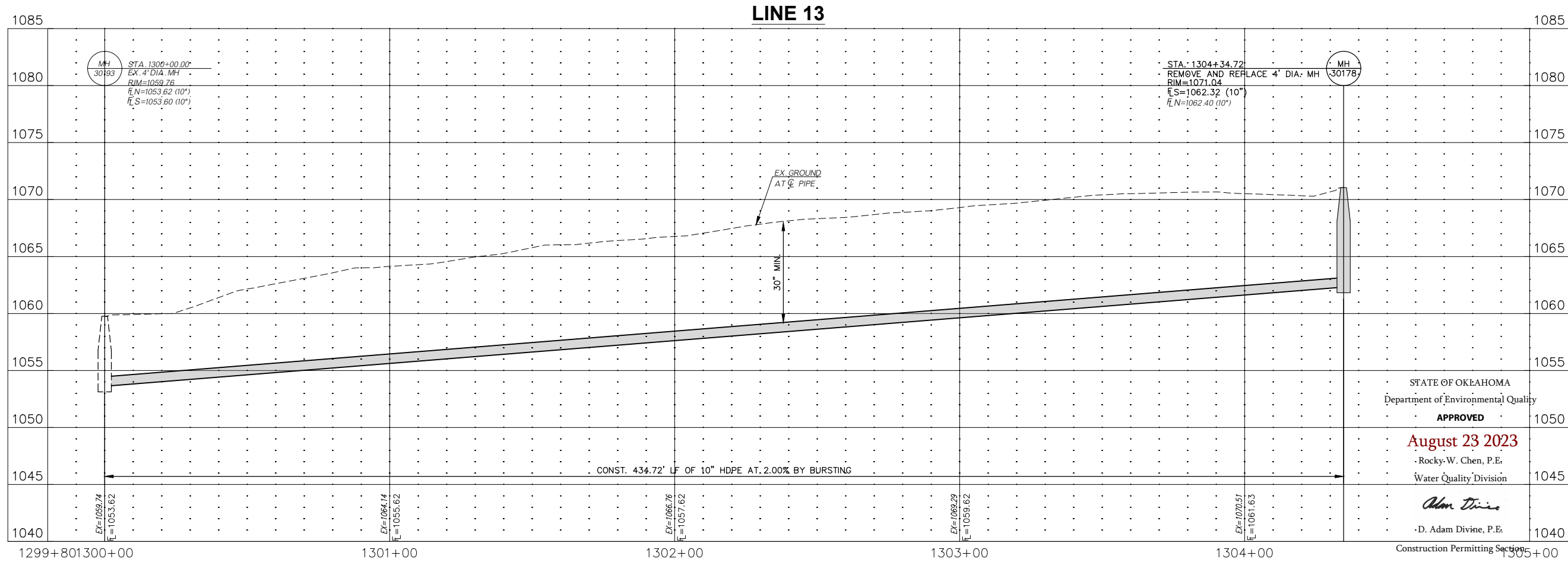
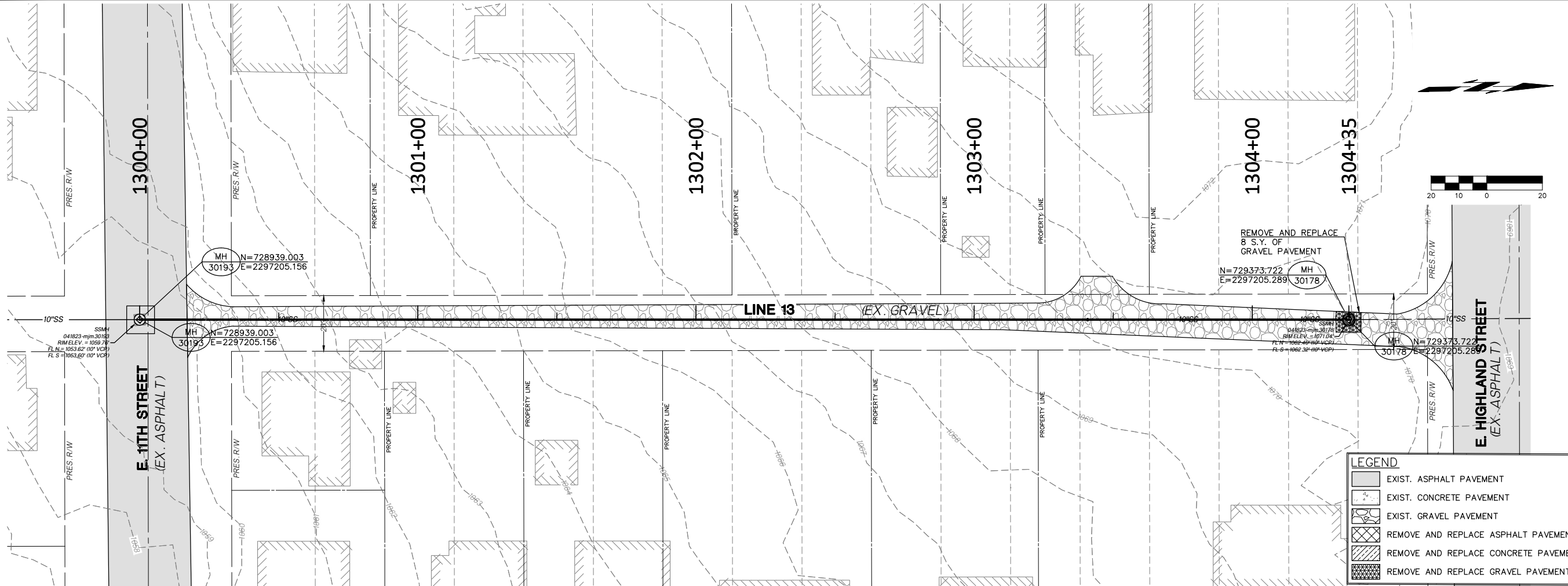
SANITARY SEWER PIPE BURSTING
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

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DATE	5/8/2023
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19	

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20	

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GENERAL NOTES

- BACKFILL WITH SUITABLE, ON SITE SOIL COMPACTED TO REQUIRED DENSITY. IN ACCORDANCE WITH SPECIFICATIONS.
- THE COST OF MOVING, REMOVING AND REPLACING ALL FENCES, TREES, STRUCTURES OR OTHER OBSTRUCTIONS NECESSARY FOR CONSTRUCTION WILL NOT BE PAID FOR AS SUCH, BUT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OTHER ITEMS UNLESS OTHERWISE NOTED.
- A WATER TIGHT PLUG SHALL BE INSTALLED IN ANY NEW LINE AT ITS ENTRANCE INTO AN EXISTING MANHOLE. UPON SATISFACTORY COMPLETION OF THE PROJECT, PERMISSION WILL BE GIVEN BY THE CITY ENGINEER TO REMOVE THE PLUG.
- DO NOT BREAK OUT THE EXISTING SEWER PIPE WITHIN ANY MANHOLE BUILT AROUND AN EXISTING SEWER UNTIL PROPER APPROVAL TO DO SO IS GIVEN BY THE CITY ENGINEER.
- ALL STUBS SHALL BE ONE LENGTH OF BELL-END PIPE EXTENDING THRU THE MANHOLE WALL AND SHALL BE TIGHTLY PLUGGED.
- AT ABANDONED MANHOLES AND SEWERS, PLUG ALL SEWERS AT MANHOLES, TEAR MANHOLES DOWN 3' BELOW FINISHED GROUND ELEVATION, AND FILL BALANCE OF MANHOLES WITH APPROVED BACKFILL.
- ALL ABANDONED MANHOLE RINGS AND LIDS SHALL BE PROPERTY OF THE MUNICIPALITY OR AUTHORITY UTILITY LINE MAINTENANCE WASTEWATER DEPARTMENT.
- PIERS AND COLLARS TO BE BUILT ACCORDING TO STANDARD SPECIFICATIONS, OR AS NOTED.
- ALL FILL AREAS SHOWN ON PROFILE SHALL BE MADE BEFORE CONSTRUCTION OF SEWER.
- UNLESS OTHERWISE REQUIRED, DENSITY TESTING SHALL BE PERFORMED ON A AVERAGE OF EVERY 200 L.F. OF TRENCH EACH 5 FT. OF DEPTH. DENSITY REQUIREMENTS FOR TRANSVERSE CROSSINGS UNDER PAVING OR DRIVEWAYS SHALL COMPLY WITH THE SCHEDULE SHOWN ON STANDARD CONSTRUCTION PAVING DETAILS.
- THE CONSTRUCTION OF MONOLITHICALLY CAST-IN-PLACE MANHOLES WILL BE ALLOWED ONLY AS SHOWN ON THE PLANS. THE SUBMITTAL OF PROPOSED LEG SUPPORTS SHALL BE REQUIRED AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- PLACEMENT OF CONCRETE STRUCTURES, MANHOLES AND ETC., SHALL COMPLY WITH THE SPECIFICATIONS.
- IN LIEU OF THE COLD WEATHER REQUIREMENTS SHOWN IN THE SPECIFICATIONS, PLACEMENT OF CONCRETE BELOW GRADE WILL BE ALLOWED TO TEMPERATURES AS LOW AS 25° F. HOWEVER, UNTIL SUCH TIME AS FINAL BACKFILL IS PLACED, ADDITIONAL PROTECTION, INSULATION, HEATING AND ETC. SHALL BE REQUIRED.
- EXCAVATION AND BACKFILL NEAR MANHOLES SHALL BE EQUAL ON ALL SIDES OF THE MANHOLE.
- REINFORCING STEEL: ASTM 416 GR60
- WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1.
- GROUT SHALL BE NON-SHRINK EPOXY GROUT.
- ALL COUPLINGS SHALL BE SUBSIDIARY AND INCLUDED IN THE BID PRICE.

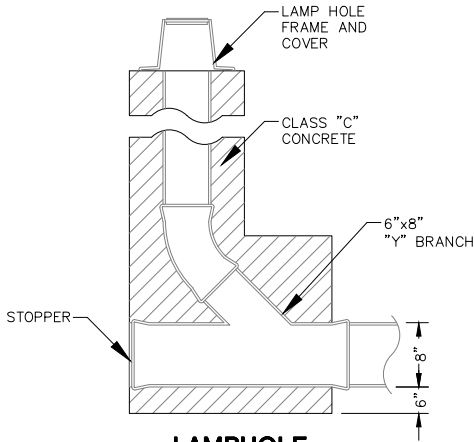
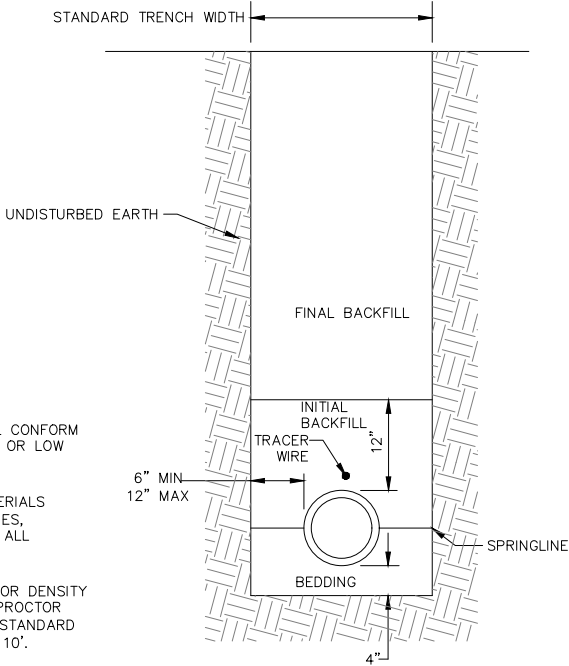
INSIDE PIPE DIAMETER (IN.)	STANDARD TRENCH WIDTH (IN.)
8	24
10	30
12	30
15	36
18	36
21	42
24	42
27	48
30	48
36	54
42	60
48	66

- NOTES:
- STANDARD BEDDING MATERIAL (SBM) SHALL CONFORM TO ASTM D2321 CLASS I AGGREGATE BASE OR LOW STRENGTH BACKFILL MATERIAL.
 - SELECT FILL CONSISTS OF EXCAVATED MATERIALS FREE OF ROCKS LARGER THAN 2-1/2 INCHES, ORGANIC MATERIAL, RUBBISH, DEBRIS, AND ALL OTHER OBJECTIONABLE MATERIAL.
 - COMPACTION REQUIREMENTS:
A. PAVED AREAS: 95% STANDARD PROCTOR DENSITY
B. NON-PAVED AREAS: 90% STANDARD PROCTOR DENSITY IF COVER DEPTH < 10'. 95% STANDARD PROCTOR DENSITY IF COVER DEPTH > 10'.

DESCRIPTION	BEDDING MATERIALS			
	PAVED AREAS		NON-PAVED AREAS	
	FLEXIBLE PIPE	RIGID PIPE	FLEXIBLE PIPE	RIGID PIPE
FINAL BACKFILL	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	EXCAVATED MATERIAL	EXCAVATED MATERIAL
INITIAL BACKFILL	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	COVER DEPTH ≤ 10' - SELECT FILL COVER DEPTH ≥ 10' - STAND. BEDDING MATERIAL	SELECT FILL
BEDDING	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)	STAND. BEDDING MATERIAL (SBM)

PIPE INSTALLATION

SCALE: NTS



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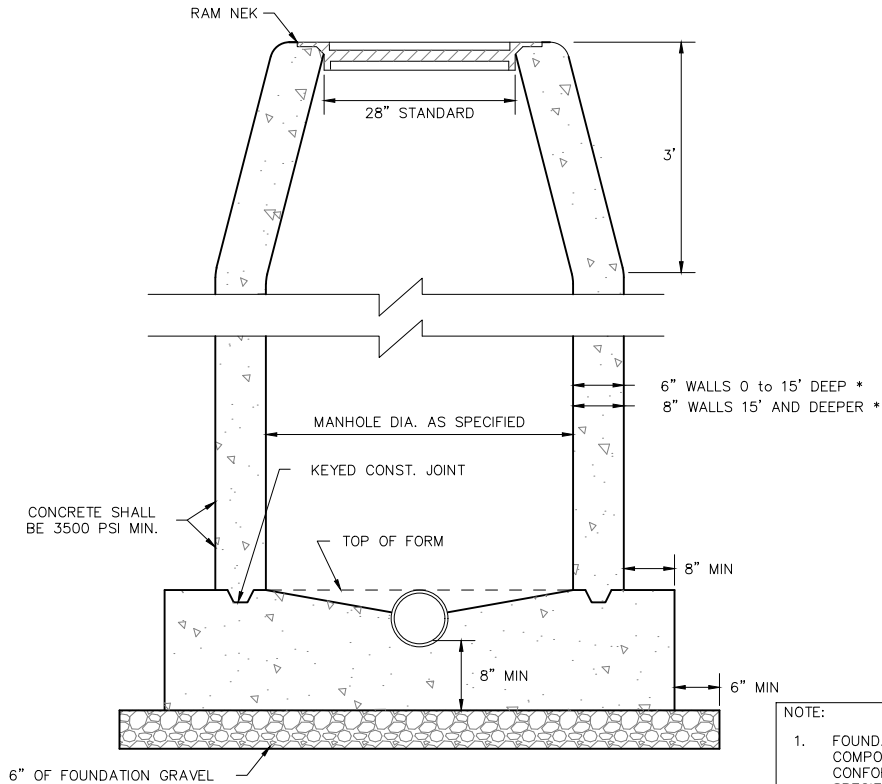
SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

DETAIL SHEET
(1 OF 3)

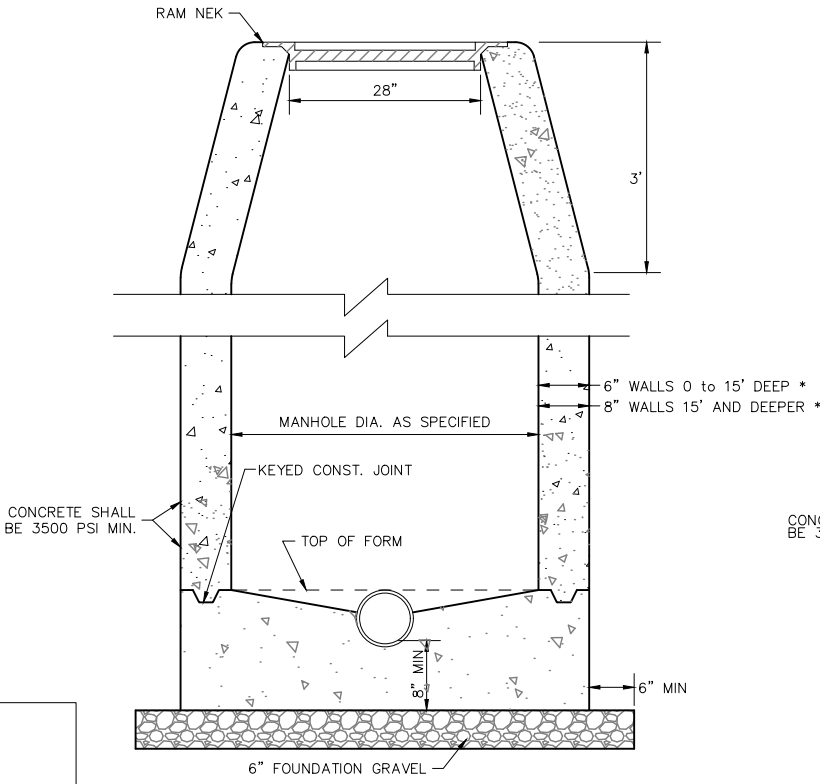
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DATE 5/8/2023

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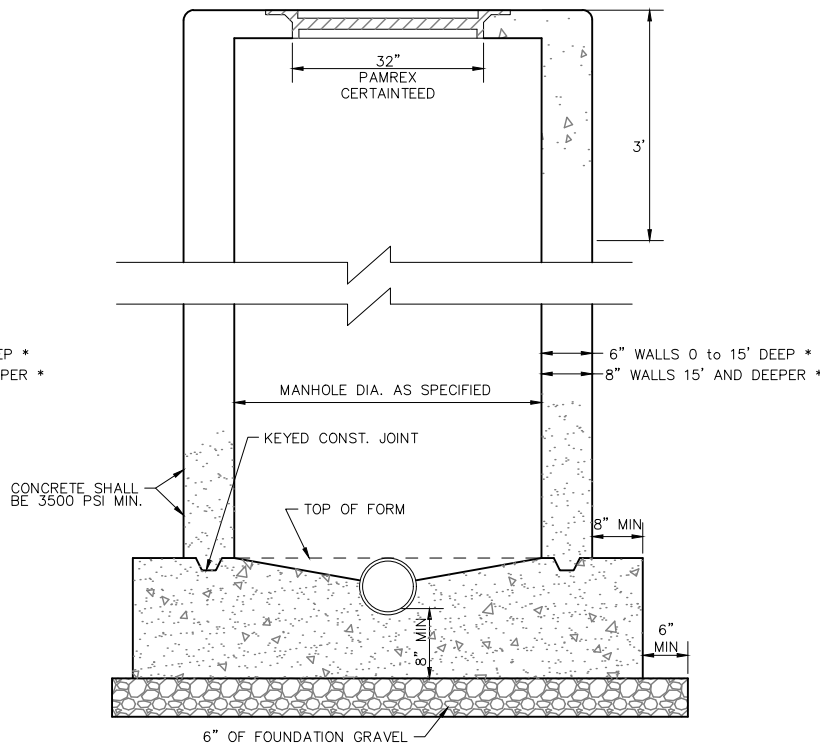


STANDARD MANHOLE
SCALE: NTS

- NOTE:
- FOUNDATION GRAVEL SHALL BE COMPOSED OF CRUSHED ROCK CONFORMING TO STANDARD SPECIFICATIONS, SECTION 31 23 33.
- * MANHOLE WALL THICKNESS SHALL BE CONSTANT. NO TRANSITION SHALL BE ALLOWED



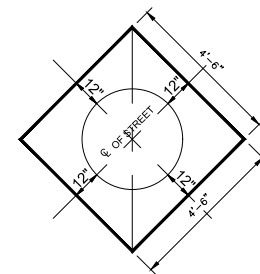
STANDARD MANHOLE TYPE 'A'
SCALE: NTS



STANDARD MANHOLE FLAT TOP
SCALE: NTS



Adam Dineo



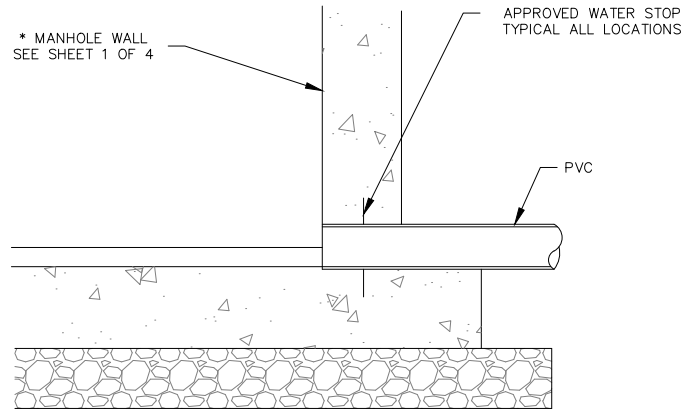
1. THE MANHOLE FRAME SHALL BE SET TO GRADE AND CONCRETE BASE POURED AFTER RESURFACING OPERATIONS.
2. CONCRETE BASE SHALL BE H.E.S. CLASS A P.C. CONCRETE (3000 PSI IN 24 HOURS).
3. THE WORK SHALL BE PROTECTED BY BARRIERS AND LIGHTS MEETING MUTCD AND SHALL NOT BE REMOVED FOR A PERIOD OF 24 HOURS AFTER THE POUR IS MADE.



CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

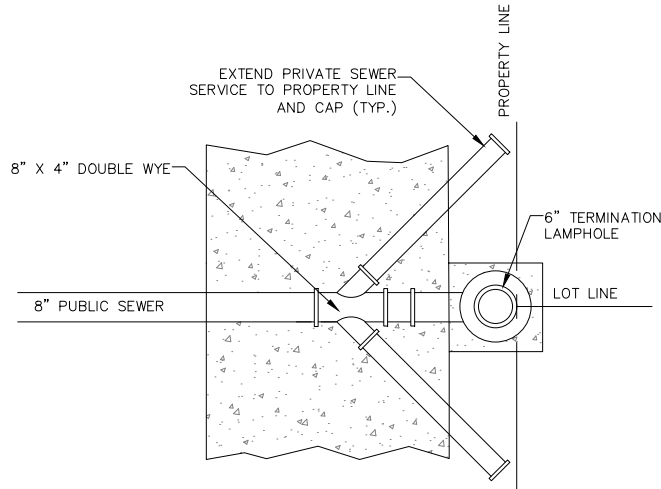
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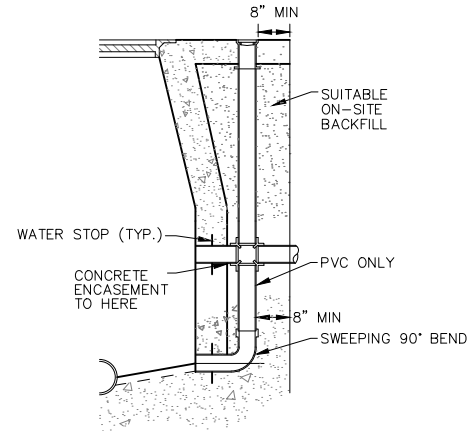


PVC PIPE DETAILS
SCALE: NTS

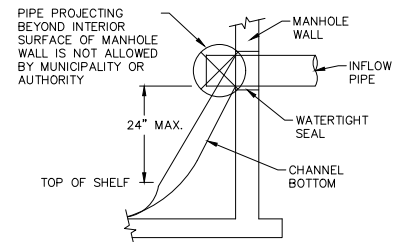
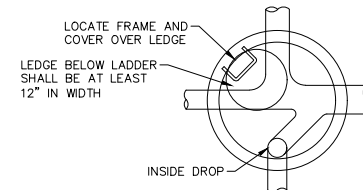
NOTE:
COMPRESSION JOINTS AND COUPLINGS SHALL BE ASSEMBLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. JOINTS AND COUPLINGS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH ASTM-D3212-92.



**PLAN VIEW OF SEWER LAMPHOLE
WITH DOUBLE WYE SEWER SET**
SCALE: N.T.S.



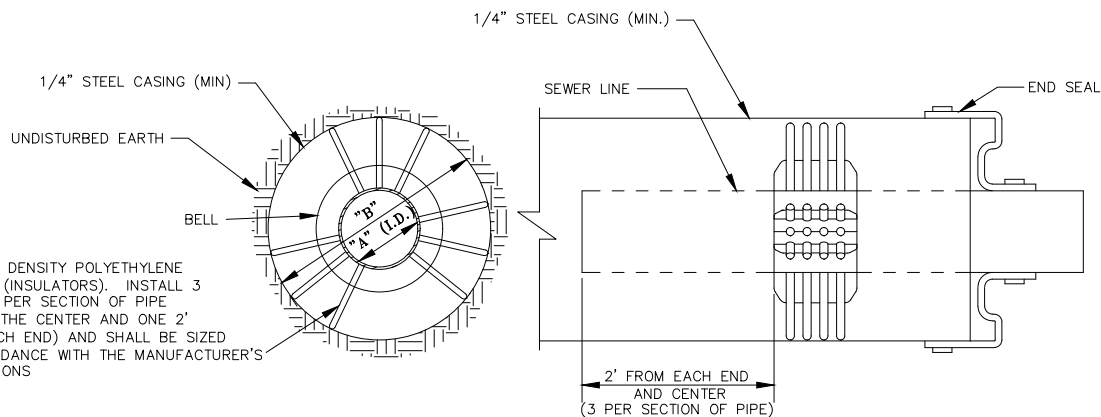
STANDARD DROP MANHOLE
SCALE: NTS



**OPEN INSIDE DROP
WITH BEAVER SLIDE**

PIPE & STEEL CASING SCHEDULE	
PIPE DIA. "A"	CASING DIA. "B"
6"	12"
8"	14" OR 16"
10"	18"
12"	20"
16"	24"
18"	26"
24"	33"

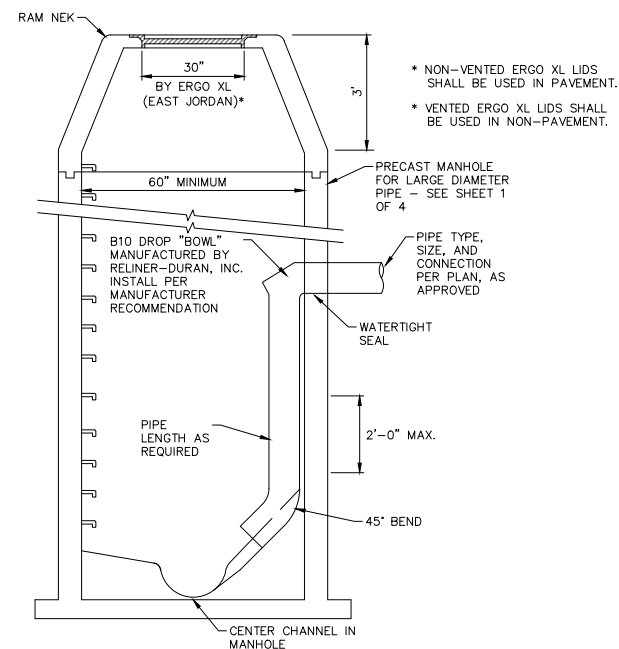
NOTE: CONSTRUCT WATER TIGHT PLUG
AT EACH END OF CASING



NOTE: STEEL CASING PIPE SHALL CONFORM WITH ASTM A-139.
STANDARD SPECIFICATION FOR ELECTRIC-FUSION(ARC)-WELDED
STEEL PIPE (NPS4 AND OVER). THE STEEL MATERIAL SHALL BE
NEW, SMOOTH WALL, CARBON STEEL, GRADE B, WITH A MINIMUM
TENSILE STRENGTH, AND MINIMUM 35,000 PSI YIELD STRENGTH.

CASING DETAIL
SCALE: NTS

- UNLESS OTHERWISE SHOWN OR NOTED ON THIS DRAWING, ALL SANITARY SEWER INSIDE DROP MANHOLE CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF ASTM C 478
- A SINGLE "OPEN" (UNENCLOSED) INSIDE DROP WITH A "BEAVER SLIDE" MAY BE ALLOWED WITH PRIOR WRITTEN APPROVAL OF THE ENGINEER.
- THE MUNICIPALITY OR AUTHORITY DOES NOT ALLOW OUTSIDE DROPS, "OPEN" (UNENCLOSED) INSIDE DROPS OVER 2 FEET HIGH, OR PARTITIONED INSIDE DROPS.
- PIPE AND FITTINGS FOR DROP ASSEMBLY SHALL BE SAME SIZES AS INFLOW PIPE TO MANHOLE.
- PIPE AND FITTINGS FOR DROP ASSEMBLY SHALL BE: DUCTILE IRON ANSI A21.50-1, AWWA C150-1, AWWA C-900 OR PVC ASTM 3034 SDR 35.
- PIPE CONNECTIONS OF FOUR OR MORE MAINLINES SHALL REQUIRE A MANHOLE CONNECTION AND CHANNEL DETAIL.
- PROVIDE A MINIMUM OF 8-INCHES OF INTACT (UNDISTURBED) MANHOLE WALL BETWEEN PIPE BREAKOUTS AS MEASURED ON THE INSIDE FACE OF THE MANHOLE.
- MINIMUM FALL BETWEEN INLET AND OUTLET TO BE NOT LESS THAN 0.20 FEET.
- THE MUNICIPALITY OR AUTHORITY RESERVES THE RIGHT TO DEViate FROM THIS DRAWING AND RELATED REQUIREMENTS AS DICTATED BY PROJECT DESIGN PARAMETERS, AND AS APPROVED BY THE ENGINEER.



MECHANICAL INSIDE DROP
SCALE: NTS

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7100 N GLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
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SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE
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**DETAIL SHEET
(3 OF 3)**

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PROJECT NUMBER	23-153
DATE	5/8/2023

REVISIONS	

SHEET NUMBER	23
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CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

SEWER PIPE BURSTING

ARPA Grant Project Number: ARP-23-0092-G

BID DATE:

By:

Cowan Group Engineering, LLC
7100 N Classen, Suite 500
Oklahoma City, OK 73116
Phone: 405-463-3369
CA # 6414 Expires 6/30/24

July 2023

STATE OF OKLAHOMA
Department of Environmental Quality

APPROVED

August 23 2023

Rocky W. Chen, P.E.

Water Quality Division

D. Adam Divine, P.E.

Construction Permitting Section

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Responsible Registrant

Cowan Group Engineering, LLC
CA No. 6414 (Expires 6/30/24)



Michael Taylor

Michael Taylor, PE
Project Manager
OK PE 27655

Advertisement for Bids

Notice is hereby given that the City of Shawnee (hereinafter called the "Owner") will receive sealed bids at the City Clerk's Office, 16 W. 9th Street, Shawnee, Potawatomie County, Oklahoma until the ____ day of _____, 2023 for the Sewer Pipe Bursting.

Funding for this project is provided through American Rescue Plan Act (ARPA) grant program. As such, compliance with Labor Standards Contract Provisions is mandatory. Compliance with the Davis Bacon Act is mandatory **if the total project cost exceeds \$10,000,000 (ten million dollars)**.

All bids received at said time will be opened and evaluated for completeness and correctness. All work shall be performed, and all construction and materials used and furnished shall be in accordance with the Plans and Specifications prepared by Cowan Group Engineering, and on file in the office of the City Clerk, 16 W. 9th Street, Shawnee, OK 74802-1448.

The Bid Packet and Contract Documents for this project may be examined at the following locations:

1. The City Clerk's Office, 16 W. 9th Street, Shawnee, OK 74802-1448.
2. Cowan Group Engineering, 7100 N. Classen, Suite 500, Oklahoma City, OK 73116

Hard copy plans and specifications may be obtained by the prospective bidders at these locations for \$100.00. No documents will be mailed until payment is received in full.

Complete digital project bidding documents are available for a non-refundable fee of \$50.00 by going to www.cowangroup.co, navigating to the Bid Documents page, and by entering Quest Project # 8556116 on the website's project search page. Please contact QuestCDN.com at 952.233.1632 or info@questcdn.com for assistance in free membership registration, downloading and working with this digital project information.

Each bidder shall accompany his original bid, filed with the City Clerk's Office with a certified or Cashier's Check on a solvent bank located in Oklahoma, or a Bidder's Bond, in the amount of five (5) percent of the amount bid, as a guarantee of his ability to perform the contract bid upon, and that he will enter into a written contract with the Owner to perform said work and/or furnish said materials in accordance with said Plans and Specifications and furnish the required bonds according to the Public Competitive Bidding Act of 1974.

The Owner will retain the deposit for liquidated damages in case the successful bidder fails to enter in said contract and furnish the required bonds provided for in the specifications within the time required. Deposit of the unsuccessful bidders will be returned upon the execution of the Contract and required bonds.

Each bidder shall accompany his bid with a sworn statement in writing that the bidder has not directly or indirectly entered into an agreement, expressed or implied, with any other bidder concerning the price or amount of such bid or any bids, the limiting of the bids or bidders, the paying to anyone any money for promotion expenses, the parceling or farming out to any bidder or bidders or other persons of any part of the contract or any part of the subject matter of the bid or of the profits thereof.

Construction, Maintenance and Statutory Payment Bonds in the amount of 100% of the contract price are required for this project. These bonds must be obtained from a Corporate Surety licensed in Oklahoma and approved by the Owner and Consulting Engineer. The bidder shall state in the proposal the name and address of the Surety or Sureties who will sign this bond in case the contract is awarded. The Maintenance Bond required will guarantee the repair of all damage due to improper materials or workmanship for a period of one (1) year after the acceptance of the work by the Owner.

This project is to be financed by the ARPA grant program managed by the Oklahoma Water Resources Board (OWRB) and shall be referred to as Project No. ARP-23-0092-G. The following requirements and regulations must be complied with:

- A. "Equal Opportunity in Employment: All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age or physical handicap. Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended."
- B. "Each bidder must fully comply with the requirements, terms and conditions of the Environmental Protection Agency's Disadvantaged Business Enterprise Requirements, which have been adopted for the OWRB ARPA program, and include employing the six (6) good faith efforts and soliciting disadvantaged business enterprises during the performance of this contract. Requirements are contained in OWRB's Guidance and Procedures, ARP-267. The bidder commits itself to following the good faith efforts to solicit disadvantaged business enterprises contained herein and all other requirements, terms, and conditions of these bid conditions by submitting a properly signed bid."
- C. **If the total project cost exceeds \$10,000,000 (ten million dollars)** "Davis Bacon Act wage rules shall apply. All laborers and mechanics employed by contractors and sub- contractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of Chapter 31 of Title 40, United States Code and 29 CFR parts 1,3, and 5. The Department of Labor provides all pertinent information related to compliance with labor standards, including prevailing wage rates and instructions for reporting. More information is available at <http://www.sam.gov/>" and <https://www.dol.gov/agencies/whd/government-contracts/construction>
- D. System for Award Management (SAM) registration is required for all Applicants and Awardees (Entities, Prime Contractors, Subcontractors, Vendors) in order to receive funds from the ARPA program. SAM replaced the Central Contractor Registration/Federal Agency Registration, Online Representations and Certifications Application, and Excluded Parties List System. Applicants and awardees are required to complete a one-time free registration to provide basic information relevant to procurement and financial transactions. On April 4, 2022, the unique entity identifier used across the federal government changed from the DUNS Number to the Unique Entity ID (generated by SAM.gov). Registrants must retain an active status to be eligible for ARPA funding. Applicants and Awardees can go to SAM.gov to complete the registration process.

The bids filed with the City Clerk's Office will be opened and considered by the Owner, at a meeting to be held in _____, on the day of _____, 2023. Bids received more than ninety-six (96) hours prior to the Bid Opening will be returned.

The contract is to be awarded to the lowest, responsive, responsible bidder. The Owner reserves the right to correct any non-material clerical errors in the bidding as allowed under Oklahoma Law. The Owner reserves the right to reject any and all bids in accordance with the Oklahoma Public Competitive Bidding Act of 1974. Conditional bids shall not be accepted.

A pre-bid conference will be held on this project at:
_____ on the _____ day of _____, 2023.

Approved on this _____ day of _____, 2023

Information for Bidders

Notice is hereby given that the City of Shawnee (hereinafter called the "Owner") will receive sealed bids at the City Clerk's Office, 16 W. 9th Street, Shawnee, Pottawatomie County, Oklahoma until the ____ day of _____, 2023, for the Sewer Pipe Bursting.

This project is to be financed by the ARPA grant program managed by the Oklahoma Water Resources Board (OWRB) and shall be referred to as Project No. ARP-23-0092-G. The following requirements and regulations must be complied with:

- A. "Equal Opportunity in Employment: All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age or physical handicap Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended."
- B. " Each bidder must fully comply with the requirements, terms, and conditions of the Environmental Protection Agency's Disadvantaged Business Enterprise Requirements, which have been adopted for the OWRB ARPA program, and include employing the six (6) good faith efforts and soliciting disadvantaged business enterprises during the performance of this contract. Requirements are contained in OWRB's Guidance and Procedures, ARP-267. The bidder commits itself to following the good faith efforts to solicit disadvantaged business enterprises contained herein and all other requirements, terms, and conditions of these bid conditions by submitting a properly signed bid."
- C. **If the total project cost exceeds \$10,000,000 (ten million dollars)** "Davis Bacon Act wage rules shall apply. All borers and mechanics employed by contractors and sub-contractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of Chapter 31 of Title 40, United States Code and 29 CFR parts 1,3, and 5. The Department of Labor provides all pertinent information related to compliance with labor standards, including prevailing wage rates and instructions for reporting. More information is available at <https://www.dol.gov/agencies/whd/government-contracts/construction> and <http://www.sam.gov/>"
- D. System for Award Management (SAM) registration is required for all Applicants and Awardees (Entities, Prime Contractors, Subcontractors, Vendors) in order to receive funds from the ARPA program. SAM replaced the Central Contractor Registration/Federal Agency Registration, Online Representations and Certifications Application, and Excluded Parties List System. Applicants and awardees are required to complete a one-time free registration to provide basic information relevant to procurement and financial transactions. On April 4, 2022, the unique entity identifier used across the federal government changed from the DUNS Number to the Unique Entity ID (generated by SAM.gov). Registrants must retain an active status to be eligible for ARPA funding. Applicants and Awardees can go to SAM.gov to complete the registration process.

Each sealed envelope containing a bid must be plainly marked on the outside as "Bid for Independence Avenue Waterline", and the envelope should bear on the outside the bidder's name, address, and license number (if applicable). If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to the Owner at: City of Shawnee, City Clerk's Office, P.O. Box 1448, Shawnee, OK 74802-1448.

All bids must be made on the required bid form, where all blank spaces for bid prices must be filled in, in ink or typewritten. The bid form must be fully completed and executed when submitted. Only one copy of the bid form is required. The Owner may waive any informalities or minor defects or reject any and all bids as allowed under Oklahoma Law. Any bid may be withdrawn prior to the above scheduled time for bid opening, or authorized postponement thereof. Bids received more than ninety-six (96) hours before the time specified, or those received after the time set for bid opening will not be considered and will be returned unopened. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the Owner and the bidders.

Bidders must satisfy themselves of the accuracy of estimated quantities in the bid proposal by review of the Plans and Specifications, including any existing addenda, and by examination of the project site. Once a bid is submitted, the bidder shall not assert that there was a misunderstanding concerning the quantities or the nature of work to be performed. The failure or omission of any bidder to do any of the foregoing shall in no way relieve any bidder from any obligation in respect to its bid.

Prior to bidding, the Owner shall provide to the bidders all pertinent information that delineates and describes the land owned and rights-of-way acquired or to be acquired.

The Contract Documents contain the provisions required for the construction of the product. Information obtained from an officer, agent, or employee of the Owner or any other person shall not affect the risks or obligations assumed by the contractor or relieve the contractor from fulfilling any of the conditions of the contract.

Each bid exceeding \$100,000 must be accompanied by a Bid Bond for five percent of the total amount of the bid and payable to the Owner. A certified check may be used in lieu of the Bid Bond. As soon as the bid prices have been compared, the Owner will return the bonds of all except the three lowest responsive, responsible bidders. The bid securities of the successful bidder and the two remaining unsuccessful bidders will be returned upon Owner's approval of the successful bidder's executed certificate of insurance and construction bonds.

Construction bonds (Performance, Statutory, and Maintenance) in the amount of 100 percent with a corporate surety approved by the Owner will be required for the faithful performance of the contract. Attorneys-in-fact who sign bid and construction bonds must file with each bond a certified and effective dated copy of their Power-of-Attorney.

The Owner shall award a contract to the lowest, responsive, responsible bidder or bidders within thirty (30) calendar days after bid opening. The Owner may extend the award period not to exceed fifteen (15) calendar days by formal recorded action and for good cause. The time may be extended further by mutual agreement between the Owner and the bidder per O.S. Title 61 Section 111, Public Competitive Bidding Act of 1974 (PCBA).

The Notice of Award shall be accompanied by the necessary contract, bonds, and insurance. In the event of failure of the bidder to execute the contract, the Owner may consider the bidder in default, in which case the Bid Bond accompanying the proposal shall become the property of the Owner.

The party to whom the contract is awarded will be required to execute the contract and obtain the construction bonds (Performance, Statutory and Maintenance) and certificate of insurance within 30 calendar days (not to exceed 60 days) from the date when the Notice of Award is delivered to the bidder. The time may be extended further by mutual agreement between the Owner and the bidder per O.S. Title 61 Section 113 (PCBA).

With an acceptable contract, bonds and certificate of insurance signed by the party to whom the Contract was awarded, the Owner shall sign the contract and return to such party an executed duplicate. Should the Owner not execute the contract within the agreed upon period, the bidder may by written notice withdraw the signed contract. Such notice of withdrawal shall be effective upon its receipt by the Owner.

The Owner shall issue the Notice to Proceed after the execution of the contract, approval of bonds and certificate of insurance. If the Notice to Proceed has not been issued within the agreed upon period, the contractor may terminate the contract without further liability on the part of either party.

The Owner may make such investigations as deemed necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of such bidders fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

A conditional or qualified bid will not be accepted. Tied bids are non-restrictive, and in order for a tied bid to be accepted it must be lower than the sum of low separate bids.

All applicable laws, ordinances, rules, and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout. The successful bidder will be required to meet all requirements of the Underground Facilities Damage Prevention Act when engaged in work within public rights-of-way.

When using alternate bids, they will be listed in numerical order, with the highest priority being number one, the second highest priority being number two, etc. The lowest bidder will be determined by comparing all bids that contain the selected alternates and computing the total value of the base bid plus the alternates.

All bidders and owners shall comply with the Oklahoma PCBA of 1974.

The awarded bidder shall supply the names and addresses of all subcontractors and material suppliers when required to do so by the Owner.

To avoid bypassing of raw sewage during construction, the contractor shall use the methods and/or schedule(s) described in Section _____ of these Specifications, or the method(s) and/or schedule(s) described as follows:

The Contractor will be required to begin work within 15 calendar days of the date shown on the Notice to Proceed. The time for completion is 90 calendar days. Liquidated damages will be \$500 per calendar day.

In the event of a conflict between the Plans and the Specifications, the Specifications will govern.

The following items, included in this Bid Packet, shall be submitted along with the bid:

- Bid Proposal
- Bid Bond
- Non-Collusion Affidavit
- Business Relationship Affidavit
- Contractor's Statement about Equal Opportunity (ARP-211)
- Contractor's Certificate of Non-Segregated Facilities (ARP-212)
- Sub-Contractor's Certificate of Non-Segregated Facilities (ARP-212a)
- Bidder's/Supplier's List (ARP-249)
- Subcontractor Performance form (ARP-6100-3)
- Subcontractor Utilization form (ARP-6100-4)
- DBE documentation (if applicable)
- Statement of Qualifications

The consulting engineer is Cowan Group Engineering. The consulting engineer's contact person for this project is Michael Taylor, PE, with phone number 405.463.3369 and email michael@cowangroup.co.

BID PROPOSAL FORM

CITY OF SHAWNEE **BID NOTICE: ARP 23-0092-G**

THE UNDERSIGNED BIDDER, having examined the plans, specifications, the locations, arrangements, and conditions of roads, street, utilities and other facilities or appurtenances which affect or may be affected by the proposed work, the actual sites of the proposed improvements and being acquainted with and fully understanding: (1) the extent and character of the work covered by this proposal; (2) the locations and specified requirements of and for the proposed improvements and other items of work appurtenant thereto; and (3) the normal existing and probable construction difficulties, hazards or all other factors or conditions which may or may not be apparent, which may affect or be affected by the specified work.

HEREBY PROPOSES to furnish all required materials, supplies, equipment, tools, and plant; to perform all necessary labor; and to construct, erect, equip, and complete all work stipulated in, required by, and in accordance with the contract documents hereto attached and the specifications referred to therein (as altered, changed, or modified by any and all addenda thereto), for and in connection with the Contract for which this proposal is herein submitted for and in consideration of the prices set out herein.

The undersigned bidder hereby agrees to furnish the required Performance Bond, Statutory Bond, Maintenance Bond, and evidence of insurance and to enter into a contract within fifteen (15) days after the acceptance of this proposal, and further agrees to complete the work in 90 days (stipulated in the Contract Agreement) from the date of the issuance by the City's Engineer of a Work Order authorizing commencement of work.

Attached hereto is a Certified Check, Cashier's Check or Bidder's Surety Bond in the amount of: _____ DOLLARS \$ _____ which the undersigned agrees is to be forfeited to and become the property of the City of Shawnee, as liquidated damages, should this proposal be accepted and the Contract be awarded to him, he fails to enter into a Contract in the form prescribed and to furnish the required bonds and evidence of insurance within fifteen (15) days as above stipulated, but otherwise the proposal guarantee shall be returned to the undersigned upon the signing of the Contract and delivery of the approved bonds and evidence of insurance to the City of Shawnee.

DATED this _____ day of _____ 20 _____.

Signature: _____

Name and Title: _____

Company: _____ Circle One: Corporation Partnership Individual

Address: _____

Phone: _____ Fax: _____

E-mail Address: _____

Federal Tax I.D. _____

Attest: _____

Secretary

Corporate Seal

(if applicable)

SEWER PIPE BURSTING

BID SCHEDULE: ARP 23-0092-G



COWAN GROUP ENGINEERING
7100 N CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
405.463.3369 O
405.463.3381 F



PROJECT NAME SANITARY SEWER PIPE BURSTING
DESCRIPTION SS COLLECTION IMPROVEMENTS
LOCATION SHAWNEE, OKLAHOMA
PHASE FINAL ESTIMATE
DATE 7/5/2023

ITEM NUMBER	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
BASE BID					
1	MOBILIZATION	1	LSUM		
2	8-INCH HDPE DR-17 SANITARY SEWER (BURSTING)	2,766	LF		
3	8-INCH HDPE DR-17 SANITARY SEWER (TRENCHING)	49	LF		
4	10-INCH HDPE DR-17 SANITARY SEWER (BURSTING)	2,222	LF		
5	12-INCH HDPE DR-17 SANITARY SEWER (BURSTING)	1,440	LF		
6	SERVICE CONNECTION	196	EA		
7	CEMENTITIOUS MANHOLE COATING	69	VF		
8	1' MANHOLE GRADE ADJUSTMENT WITH SEAL AND REPLACE FRAME, COVER AND SEAL	1	EA		
9	4' DIAMETER MANHOLE GRADE ADJUSTMENT WITH SEAL AND REPLACE FRAME. COVER AND SEAL	1	EA		
10	STANDARD 4' DIAMETER MANHOLE REMOVAL AND REPLACEMENT	15	EA		
11	CONSTRUCT 4' DIAMETER MANHOLE	2	EA		
12	ASPHALT REMOVAL AND REPLACEMENT	106	SY		
13	CONCRETE REMOVAL AND REPLACEMENT	21	SY		
14	GRAVEL REMOVAL AND REPLACEMENT	49	SY		
15	SOLID SLAB SODDING	53	SY		
16	EXTRA DEPTH MANHOLE	71	VF		
17	PRE INSTALLATION VIDEO INSPECTION	6,428	LF		
18	POST INSTALLATION VIDEO INSPECTION	6,428	LF		
19	TESTING	1	LSUM		
20	BYPASS PUMPING	1	LSUM		
21	TEMPORARY EROSION AND SEDIMENT CONTROL	1	LSUM		
22	CONSTRUCTION SIGNING & TRAFFIC CONTROL	1	LSUM		
23	SPOT REPAIRS	-	EA		

ALL ITEMS TO INCLUDE ALL APPURTENANCES NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM AS DESCRIBED IN THE PLANS AND SPECIFICATIONS.

TOTAL BASE BID \$ _____

TOTAL BASE BID IN WORDS _____

Bidder's Statement about: Equal Opportunity Clause (ARP-211)

Mark one:

- ☐ I have participated in previous contract(s) or subcontract(s) subject to the equal opportunity clause under Executive Orders 11246 and 11375 or preceding Executive Orders 10925 and 11114. I have filed all reports due under the requirements contained in 40 CFR, Part C, 8.11.
- ☐ I have not participated in previous contract(s) subject to the equal opportunity clause under Executive Orders 11246 and 11375 or preceding Executive Orders 10925 and 11114.

- ☐ I will obtain a similar statement from any proposed subcontractor(s), when appropriate.

Bidder's Statement about: Non-Segregated Facilities (ARP-212 and ARP-212a)

- ☐ I hereby certify that I do not and will not maintain any facilities provided for my employees in a segregated manner or permit my employees to perform their services at any location under my control where segregated facilities are maintained; and that I will obtain a similar certification prior to the award of any subcontract exceeding \$10,000 which is not exempted from the equal opportunity clause.

Bidder's Statement about: Bonds

- ☐ I hereby certify that I will obtain and provide a Bid Bond along with my Bid.
- ☐ I hereby certify that, in the event of being awarded a Contract, I will provide a Performance Bond for 100% of the contract amount.
- ☐ I hereby certify that, in the event of being awarded a Contract, I will provide a Statutory/Payment Bond for 100% of the contract amount.
- ☐ I hereby certify that, in the event of being awarded a Contract, I will provide a Maintenance Bond for at least 1 year after construction completion, and 100% of the contract amount

Bidder's Statement about: sam.gov registration

Mark one:

- ☐ I have registered in SAM.gov and my status is "active".
- ☐ I am not currently registered in SAM.gov, but I will be registered and holding an "active" status prior to the beginning of any construction.

- ☐ I certify that I will actively review the SAM.gov status of all of the subcontractors in this work to verify they are registered and their status is "active".

Bidder's Statement about: Davis Bacon Act

If the total project cost exceeds \$10,000,000 (ten million dollars):

- ☐ I hereby certify that all of my employees will be paid according to the Davis Bacon Act.

Name and Title of Prospective Prime Contractor's Representative

Signature of Prospective Prime Contractor's Representative

Name and address of Prospective Prime Contractor

AFFIDAVITS

State of _____ ss.
County of _____

_____, of lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by the bidder to submit the attached bid.

Non-Collusion

Affiant further states that the bidder has not been a party to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or with any government official or employee as to quantity, quality, or price in the prospective contract, or any other terms of said prospective contract; or in any discussions between bidders and any government official concerning exchange of money or other value for special consideration in the letting of a contract; that the bidder/contractor had not paid, given or donated or agreed to pay, give or donate to any officer or employee of the _____ (or other entity) any money or other thing of value, either directly or indirectly in the procurement of a contract or pursuant to this bid.

Business Relationships

Affiant further states that the nature of any partnership, joint venture, or other business relationship presently in effect or which existed within one (1) year prior to the date of this statement with the architect, engineer, or other party to the project is as follows:

Affiant further states that any such business relationship presently in effect or which existed within one (1) year prior to the date of this statement between any officer or director of the bidding company and any officer or director of the architectural or engineering firm or other party to the project is as follows:

Affiant further states that the names of all persons having any such business relationships and the positions they hold with their respective companies or firms are as follows:

If none of the business relationship herein above mentioned exists, affiant should so state.

Subscribed and sworn to before me this ____ day of _____, 20 ____.

Notary Public Signature

My Commission Expires: _____

ARP-249 BIDDERS/SUPPLIERS LIST

To be completed by Project Owner with documentation from all bidding Prime Contractors & Subcontractors
(List of all firms that bid or quote on Prime Contracts and Subcontracts on the project including Services and Supplies)

Project Name: _____ OWRB Project Number: ARP- ____ - ____ - ____

Company Name:	
Address:	
Contact Name:	
Phone:	
Email:	
Quote/Bid Amount (\$)	
Date:	
Utilized: Yes No	If <u>utilized</u> and >\$10,000 then ARP 212a form is required (from all subcontractors and suppliers).
DBE: Yes No	If <u>yes</u> , MBE or WBE? _____ Check one: Construction _____ Equipment _____ Services _____ Supplies _____ ARP 6100-3 form is <u>required</u> for all DBEs that bid/quote, even if not utilized. <u>Submit with Bidders List</u> . If <u>utilized</u> submit the following with Bidders List: - A copy of the companies MBE or WBE certificate is <u>required</u>. - ARP 6100-4 form is also <u>required</u>.

Company Name:	
Address:	
Contact Name:	
Phone:	
Email:	
Quote/Bid Amount (\$)	
Date:	
Utilized: Yes No	If <u>utilized</u> and >\$10,000 then ARP 212a form is required (from all subcontractors and suppliers).
DBE: Yes No	If <u>yes</u> , MBE or WBE? _____ Check one: Construction _____ Equipment _____ Services _____ Supplies _____ ARP 6100-3 form is <u>required</u> for all DBEs that bid/quote, even if not utilized. <u>Submit with Bidders List</u> . If <u>utilized</u> submit the following with Bidders List: - A copy of the companies MBE or WBE certificate is <u>required</u>. - ARP 6100-4 form is also <u>required</u>.

Company Name:	
Address:	
Contact Name:	
Phone:	
Email:	
Quote/Bid Amount (\$)	
Date:	
Utilized: Yes No	If <u>utilized</u> and >\$10,000 then ARP 212a form is required (from all subcontractors and suppliers).
DBE: Yes No	If <u>yes</u> , MBE or WBE? _____ Check one: Construction _____ Equipment _____ Services _____ Supplies _____ ARP 6100-3 form is <u>required</u> for all DBEs that bid/quote, even if not utilized. <u>Submit with Bidders List</u> . If <u>utilized</u> submit the following with Bidders List: - A copy of the companies MBE or WBE certificate is <u>required</u>. - ARP 6100-4 form is also <u>required</u>.

STATEMENT OF QUALIFICATIONS:

Bidder

Address

Similar Projects Completed by Bidder:

1. NAME OF PROJECT: _____

OWNER: _____ ADDRESS: _____

DATE STARTED: _____ DATE COMPLETED: _____

APPROX. QUANTITIES OF MAJOR ITEMS: _____

VALUE OF CONTRACT: _____

2. NAME OF PROJECT: _____

OWNER: _____ ADDRESS: _____

DATE STARTED: _____ DATE COMPLETED: _____

APPROX. QUANTITIES OF MAJOR ITEMS: _____

VALUE OF CONTRACT: _____

3. NAME OF PROJECT: _____

OWNER: _____ ADDRESS: _____

DATE STARTED: _____ DATE COMPLETED: _____

APPROX. QUANTITIES OF MAJOR ITEMS: _____

VALUE OF CONTRACT: _____

4. OTHER PROJECT REFERENCES: _____

NOTE: THIS FORM IS TO BE RETURNED WITH THE BID.

BID BOND

We, the undersigned, _____, as Principal, and _____, as Surety, are hereby held and firmly bound unto **City of Shawnee**, as Owner, in the penal sum of _____ for the payment of which, well and truly to be made, hereby jointly and severally bind ourselves, our successors and our assigns.

Signed this _____ day of _____, _____.

The condition of the above obligation is such that, whereas the Principal has submitted to **City of Shawnee**, a certain bid, attached hereto and hereby made a part hereof, to enter into a contract, in writing, for the **Sewer Pipe Bursting**.

NOW, THEREFORE, if said bid shall be rejected or if said bid shall be accepted and the Principal shall execute and deliver a contract in the form of the contract attached hereto (properly completed in accordance with said bid) and shall furnish a bond for faithful performance of said contract and for the payment of all persons performing labor or furnishing materials in connection therewith and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void; otherwise, the same shall remain in force and effect, it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bonds shall in no way be impaired or affected by any extension of the time within which the Owner may accept such bid and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers the day and year first set forth above.

Principal

Surety

By:_____

ATTEST: (if by corporation)

Type Name & Title

Corporate Seal

NOTE: THIS FORM IS TO BE RETURNED WITH THE BID.

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____,
hereinafter called the Principal, and the _____
of, _____, a corporation duly organized under the laws of the State
of _____, hereinafter called the Surety, as Surety, are held and firmly bound unto the City of
Shawnee, hereinafter call the Obligee, in the sum of _____
Dollars (\$_____), for the payment of which sum well and truly to be made, the said Principal
and the said Surety, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and
severally, firmly by these presents.

WHEREAS, said Principal entered into a written Contract with said Obligee dated _____,
for Sewer Pipe Bursting, all in compliance with the plans and specifications therefore, made a part of said Contract
and on file in the office of Cowan Group Engineering, LLC, 7100 N. Classen Blvd., Suite 500, Oklahoma City, OK
73116.

WHEREAS, this bond is given in compliance with Title 61, Oklahoma Statutes 2001, Section 113(B)(3).

NOW THEREFORE, if said Principal shall pay or cause to be paid to Obligee all damage, loss, and expense which
may result by reason of defective materials and/or workmanship in connection with said work, occurring within a
period of one (1) year after acceptance of said project by Obligee; and if Principal shall pay or cause to be paid all
labor and materials, including the prime contractor and all subcontractors; and if Principal shall save and hold Obligee
harmless from all damages, loss, and expense occasioned by, or resulting from, any failure whatsoever of said
Principal, then this obligation shall be null and void, otherwise to be and remain in full force and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alternations in said Contract
and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or
any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, this instrument is executed in 4 counterparts, each of which shall be deemed an original,
this ____ day of _____, 2023.

_____	(	_____
WITNESS AS TO PRINCIPAL	(	PRINCIPAL
	(	
	BY:	_____

_____	(	_____
WITNESS AS TO SURETY	(	SURETY
	(	
	BY:	_____
	(	ATTORNEY-IN-FACT

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list
(Circular 570 as amended) and be authorized to transact business in the State of Oklahoma. Attach a certified Copy
of the Power of Attorney.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____,
hereinafter called the Principal, and the _____
of, _____, a corporation duly organized under the laws of the State
of _____, hereinafter called the Surety, as Surety, are held and firmly bound unto the City of Shawnee, hereinafter call the Obligee, in the sum of _____
Dollars (\$_____), for the payment of which sum well and truly to be made, the said Principal
and the said Surety, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and
severally, firmly by these presents.

WHEREAS, said Principal entered into a written Contract with said Obligee dated _____,
for Sewer Pipe Bursting, all in compliance with the plans and specifications therefore, made a part of said Contract
and on file in the office of Cowan Group Engineering, 7100 N. Classen Blvd., Suite 500, Oklahoma City, OK 73116.

WHEREAS, this bond is given in compliance with Title 61, Oklahoma Statutes 2001, Section 113(B)(2).

NOW THEREFORE, if said Principal shall, in all particulars, well, truly and faithfully perform and abide by said
Contract and each and every covenant, condition, and part thereof, and shall fulfill all obligations resting upon said
Principal by the terms of said Contract and said specifications, and if said Principal shall protect and save harmless
said Obligee from any pecuniary loss resulting from the breach of any of the items, covenants and conditions of said
Contract resting upon said Principal, the this obligation shall be null and void, otherwise to be and remain in full force
and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alternations in said Contract
and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or
any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, this instrument is executed in 4 counterparts, each of which shall be deemed an original,
this ____ day of _____, 2023.

WITNESS AS TO PRINCIPAL ((_____
(PRINCIPAL
(BY: _____

WITNESS AS TO SURETY ((_____
(SURETY
(BY: _____
(ATTORNEY-IN-FACT

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list
(Circular 570 as amended) and be authorized to transact business in the State of Oklahoma. Attach a certified Copy
of the Power of Attorney.

STATUTORY BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____,
hereinafter called the Principal, and the _____
of, _____, a corporation duly organized under the laws of the State
of _____, hereinafter called the Surety, as Surety, are held and firmly bound unto the City of
Shawnee, hereinafter call the Obligee, in the sum of _____
Dollars (\$_____), for the payment of which sum well and truly to be made, the said Principal
and the said Surety, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and
severally, firmly by these presents.

WHEREAS, said Principal entered into a written Contract with said Obligee dated _____,
for Sewer Pipe Bursting, all in compliance with the plans and specifications therefore, made a part of said Contract
and on file in the office of Cowan Group Engineering, LLC, 7100 N. Classen Blvd., Oklahoma City, OK 73116.

WHEREAS, this bond is given in compliance with Title 61, Oklahoma Statutes 2001, Sections 1 and 113(B)(1).
NOW THEREFORE, if said Principal shall fail or neglect to pay all indebtedness incurred by said Principal or
subcontractors of said Principal who perform work in the performance of such contract, for labor and materials and
repairs to and parts for equipment used and consumed in the performance of said contract after the same becomes
due and payable the person, firm, or corporation entitled thereto may sue and recover on this bond, the amount so
due and unpaid.

It is further expressly agreed and understood by the parties hereto that no changes or alternations in said Contract
and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or
any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, this instrument is executed in 4 counterparts, each of which shall be deemed an original,
this ____ day of _____, 2023.

_____	(	_____
WITNESS AS TO PRINCIPAL	(	PRINCIPAL
	(	BY: _____

_____	(	_____
WITNESS AS TO SURETY	(	SURETY
	(	BY: _____
	(	ATTORNEY-IN-FACT

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list
(Circular 570 as amended) and be authorized to transact business in the State of Oklahoma. Attach a certified
Copy of the Power of Attorney

APPLICATION AND CERTIFICATE FOR PAYMENT

PROJECT: SEWER PIPE BURSTING
TO: (OWNER): CITY OF SHAWNEE

ENGINEER: Cowan Group Engineering, LLC

CONTRACTOR:

CONTRACT FOR:

APPLICATION DATE:

APPLICATION NO:

PERIOD FROM:

TO:

CHANGE ORDER SUMMARY

Application is made for Payment, as shown below, in connection with the Contract. The present status of the account for this Contract is as follows:

Change Orders approved		ADDITIONS \$	DEDUCTIONS \$		
in previous months by				ORIGINAL CONTRACT SUM	\$ _____
Owner					
TOTAL				Net change by Change Orders	\$ _____
Subsequent Change Orders					
No. Approved				CONTRACT SUM TO DATE	\$ _____
(Date)				TOTAL COMPLETED TO DATE	\$ _____
				RETAINAGE _____%	\$ _____
				TOTAL EARNED LESS RETAINAGE	\$ _____
				LESS PREVIOUS CERTIFICATES FOR PAYMENT	\$ _____

TOTALS

Net change by Change Orders \$ _____

CURRENT PAYMENT DUE \$ _____

The undersigned Contractor certifies that the work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by him for work for which previous Certificates for Payment were issued and payments received from the Owner, and that the current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

In accordance with the Contract Documents, based on on-site observations and the data comprising the above application, the Engineer certifies to the Owner that to the best of the Engineer's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED. \$ _____

INSPECTOR:

ENGINEER:

OWNER:

By: _____

By: _____

By: _____

Item No.	Description of Item	Scheduled Quantities	Unit Price	<u>Quantities of Work Completed</u>				
				<u>Previous Applications</u>		<u>This Application</u>		Amount Completed to Date
				Quantities	Amount	Quantities	Amount	

Subtotal or Total

CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION.

TO OWNER: **City of Shawnee**
16 W. 9th Street
Shawnee, OK 74822-1448

PROJECT: Sewer Pipe Bursting

CONTRACT DATED: _____

STATE OF: _____

COUNTY OF: _____

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered against any property of the Owner arising in any manner out of the performance of the Contract referenced above:

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

The following supporting documents should be attached hereto if required by Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens.

CONTRACTOR:
(Name and address)

BY: _____
(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn before me on this date:

Notary Public: _____

My Commission Expires: _____

CLAIM OR INVOICE AFFIDAVIT

State of _____ ss.
County of _____

The undersigned (engineer or supervisory official), of lawful age, being first duly sworn, on oath says that this (invoice, claim, or contract) is true and correct. Affiant further states that the (work, services, or materials) as shown by this invoice or claim have been (completed or supplied) in accordance with the plans, specifications, orders, or requests furnished to the affiant. Affiant further states that (s)he has made no payment, given, or donated or agreed to pay, give, or donate, either directly or indirectly, to any elected official, officer, or employee of the State of Oklahoma, of money or any other thing of value to obtain payment or the award of this contract.

Engineer/Supervisory Official signature

Subscribed and sworn to before me this ____ day of _____, 20 ____.

Notary Public signature

My Commission Expires: _____

NOTICE OF AWARD

Date: ____/____/____

Project: _____

Grant#: ARP-____-____-____

The _____ has considered the bid submitted by
Owner
_____ for the above referenced project in response to the
Contractor
Advertisement for Bids dated ____/____/____ and Information for Bidders. You are hereby notified
that your bid has been accepted for items in the amount of \$_____.

You are required per the Information for Bidders to execute the Agreement and furnish the required Contractor's Performance Bond, Statutory Bond, Maintenance Bond, and Certificate of Insurance within ____ calendar days from the date of this Notice. If you fail to provide these in the specified time, the Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

Owner's Authorized Representative signature

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged by _____,
Contractor's Representative name

Authorized Representative of _____
Contractor

Contractor's Authorized Representative signature

____/____/____
Date

AGREEMENT

This Agreement made this ____ day of _____, 20__ between _____
(hereinafter called the Owner) and _____ (hereinafter called the Contractor).

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The Contractor will commence and complete the work for:

_____.

2. The Contractor will furnish all of the materials, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the project described herein.

3. The Contractor will commence the work required by the Contract documents within ____ calendar days after the date of the Notice to Proceed and will complete the same within ____ calendar days unless the period for completion is extended otherwise.

4. The Contractor agrees to perform all the work described in the Contract documents and comply with the terms therein for the sum of \$ _____ or as shown in the Bid Schedule.

5. The term "Contract documents" means and includes the following:

- | | |
|---|-------------------------------------|
| (A) Advertisement for Bids | (I) Standard Requirements |
| (B) Information for Bidders | (J) Statutory Bond |
| (C) Bid Proposal | (K) Performance Bond |
| (D) Bid Schedule | (L) Maintenance Bond |
| (E) Business Relationships Affidavit | (M) Certificate of Insurance |
| (F) Non-collusion Affidavit | (N) Notice of Award |
| (G) Bid Bond | (O) Notice to Proceed |
| (H) Agreement | (P) Change Order |
| (Q) Drawings prepared by _____. | |
| Numbers ____ through ____ and dated ____ / ____ / ____. | |
| (R) Specifications prepared by _____, dated ____ / ____ / ____. | |
| (S) ADDENDA: | |
| No. _____, dated ____ / ____ / ____ | No. _____, dated ____ / ____ / ____ |
| No. _____, dated ____ / ____ / ____ | No. _____, dated ____ / ____ / ____ |

6. The Owner will pay to the Contractor in the manner and at such times as set forth in the Standard Requirements such amounts as required by the Contract documents.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

8. It is understood that the following are also required of the Contractor in performance of this contract:

- a. Liquidated damages for failure to complete the work within the time specified shall be assessed at the rate of \$_____ per day for each additional calendar day until the work is completed.
- b. Contractor shall comply with the Underground Facilities Damage Prevention Act (63 O.S. 42.1 et seq.).

IN WITNESS WHEREOF, the parties hereto have executed or caused to be executed by their duly authorized officials, this Agreement in _____ copies each of which shall be deemed an original on the date first above written.

Owner's Authorized Representative	Title	Signature	____/____/____ Date
Attested by	Title	Signature	____/____/____ Date
Contractor's Authorized Representative	Title	Signature	____/____/____ Date
Attested by	Title	Signature	____/____/____ Date

NOTICE TO PROCEED

Date: ____/____/____

Project: _____

Grant#: ARP-____-____-____

Notice is hereby given to _____ to commence work on the above
Contractor
referenced project on or before ____/____/____. In accordance with the Agreement dated
____/____/____, you are to complete the work within ____ consecutive calendar days. The date of
completion of all work is ____/____/____.

Owner's Authorized Representative signature

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by _____,
Contractor's Representative name

Authorized Representative of _____.
Contractor

Contractor's Authorized Representative signature

____/____/____
Date

**CERTIFICATE OF APPROVAL OF CONTRACTS AND BONDS BY LOCAL
ATTORNEY**

I, the undersigned _____,
the duly authorized and acting legal representative of the _____,
after careful examination of the Contract between this Entity and
_____, and the surety bonds given by the contractor in
connection with the performance of said contract, do hereby certify that:

1. Each of the aforesaid agreements has been duly executed by the proper parties thereto, acting through their duly authorized representatives.
2. Said representatives have full power and authority to execute said agreements on behalf of the respective parties named therein.
3. The foregoing contract and surety bonds, as applicable, constitute valid and legally binding obligations upon the parties executing the same in accordance with the terms, conditions, and provisions thereof.

Dated this ____ day of _____, 20 ____.

Attorney's signature

Disadvantaged Business Enterprise Program (DBE) Guidance (ARP-267)

Important note: All OWRB ARPA information can be found at: <https://www.owrb.ok.gov/financing/grant/arpa.php>

The OWRB is administering the State of Oklahoma's ARPA funding for various wastewater and water quality projects. The ARPA program is federally funded, and one of the conditions of federal grant awards is for recipients and sub-recipients (i.e., prime contractors and subcontractors) make a good-faith effort to award a fair share of work to DBEs who are small business enterprises (SBEs), minority business enterprises (MBEs) and women's business enterprises (WBEs).

To ensure compliance with federal DBE requirements, both Grant Recipients (Project Owners) and Prime Contractors must undertake the good faith efforts to provide opportunities for DBE firms to participate in contracts. Federal regulations require evidence of the demonstration of the six good faith efforts in trying to achieve the DBE participation goals. The Oklahoma Department of Transportation has a Directory of Certified DBE Firms. This directory can be accessed at <https://okdot.gob2g.com/Default.asp>

Good Faith Efforts: EPA's Good Faith Efforts for the Clean Water State Revolving Fund (CWSRF) will be used for the OWRB ARPA grant program. The following good faith efforts will apply to all procurement categories involving ARPA funds (See Appendices A& B).

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For state and local government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For state and local government recipients, this will include dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the Small Business Administration (SBE) and the Minority Business Development Agency of the Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the above steps.

Please submit all information to:
Financial Assistance Division, OWRB
3800 North Classen Blvd, Oklahoma City, OK 73118
Phone: 405.530.8800, FAX: 405.530.8900
<http://www.owrb.ok.gov>

Disadvantaged Business Enterprise Program (DBE) Guidance

Demonstration of the Six Good Faith Efforts. See Appendices A & B for additional bidding instructions and contract administrative provisions.

A: Project Owners are required to create and maintain a bidders list in accordance with Subpart E of Part 33 of EPA's Disadvantaged Business Enterprise Program rule, (§ 33.501(b)). This requirement will be adopted for projects funded through the OWRB ARPA program. The list must include all firms that bid or quote on prime contracts, or bid or quote subcontracts, on competitively bid ARPA funded projects. The bidders list must only be kept until the project period for the identified grant has ended. The following information must be obtained from all prime and subcontractors and can be provided on Bidders List (ARP-249):

1. Entity's name with point of contact
2. Entity's mailing address, telephone number, and e-mail address
3. The procurement on which the entity bid or quoted, and when; and
4. Entity's status as an MBE/WBE or non-MBE/WBE

B: Project Owners are required to undertake good faith efforts. Steps 1 through 5 can be utilized during the project planning, design and/or pre-bidding phase, to assure that qualified DBE firms have procurement opportunities in construction, equipment, services, and supplies.

To provide procurement opportunities to DBE Firms, the Project Owner should undertake the following:

- Conduct pre-bid meetings to inform potential bidders/contractors about DBE requirements and provide guidance in undertaking the required good faith efforts.
- Use listings of certified DBEs from the U.S. Small Business Administration (SBA), Oklahoma Department of Transportation (ODOT), etc., to solicit DBE firms as prime contractors whenever they are potential candidates. Project Owners should advertise in minority, local and regional newspapers.
- Invite DBE firms, where appropriate, to meetings, conferences etc., to inform them of procurement opportunities and develop, where possible, reasonable contract and delivery schedules that encourage and facilitate participation by DBE's. This includes, whenever possible, a minimum of 30 calendar days for bids or request for proposals.
- Determine if a project can be broken down into smaller components/contracts to allow opportunity for DBE firms to bid both as prime-contractors and as sub-contractors.
- For projects broken down into smaller components (e.g., painting, roofing, excavation, pipe laying, etc.) ensure that the delivery schedules are reasonable.
- Encourage DBE firms, where appropriate, to apply as a consortium of DBEs, when a contract is too large for one of these firms to handle individually.
- Require prime contractor to complete ARP Form 6100-3 & ARP Form 6100-4 and submit with bid proposal to Project Owner.

C: Project Owners must require the prime contractor to undertake steps 1 through 5 of the Good Faith Efforts in providing DBE firms opportunity for sub-contracts.

Project Owner must provide the DBE Guidance (ARP-267) and associated forms to Prime Contractors for utilization of DBEs in the bidding documents.

**APPENDIX A: Project Owner, Prime Contractor and
Sub-Contractor Responsibilities**

EPA's Disadvantaged Business Enterprise Program rule applies to contract procurement actions funded in part by EPA assistance agreements awarded after May 27, 2008. The rule is found at Federal regulation Title 40, Part 33. Specific responsibilities are highlighted below.

Project Owner Responsibilities:

- Include OWRB's DBE guidance (ARP-267) in each contract with a primary contractor.
- Employ the six Good Faith Efforts during prime contractor procurement (§33.301).
- Require prime contractor to comply with the following prime contractor requirements of Title 40 Part 33:
 - a) To employ the six Good Faith Efforts steps in paragraphs (a) through (e) of § 33.301 if the prime contractor awards subcontracts (§ 33.301(f)).
 - b) To provide **ARP form 6100-2 – DBE Subcontractor Participation Form** to all DBE subcontractors (Optional submittal by subcontractors) (§ 33.302(e)).
 - c) To submit **ARP form 6100-3 – DBE Program Subcontractor Performance Form** and **ARP form 6100-4 – DBE Program Subcontractor Utilization Form with bid package or proposal.** (§ 33.302 (f) and (g)).
 - d) To pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the recipient (§ 33.302(a)).
 - e) To notify recipient in writing by its prime contractor prior to any termination of a DBE subcontractor for convenience by the prime contractor (§ 33.302(b)).
 - f) To employ the six good faith efforts described in § 33.301 if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason. (§ 33.302(c)).
 - g) To employ the six good faith efforts described in § 33.301 even if the prime contractor has achieved its fair share objectives under subpart D of Part 33. (§33.302(d)).
 - h) Provide Project Owner DBE participation achievements with bid proposal – this includes all information necessary for the Owner to complete the Bidders List (ARP-249). The Owner may allow the prime contractor to complete the Bidders List (ARP-249); however, the Owner is responsible for review and submittal.
- Maintain records documenting compliance with the requirements of Title 40 Part 33, including Bidders List (ARP-249) and documentation of the good faith efforts (§ 33.301(a)) by the project owner and prime contractor.

Prime Contractor Responsibilities:

- Employ the six Good Faith Efforts steps in paragraphs (a) through (e) of § 33.301 if the prime contractor awards subcontracts (§ 33.301(f)).

- Provide **ARP form 6100-2 – DBE Program Subcontractor Participation Form** and **ARP form 6100-3 – DBE Program Subcontractor Performance Form** to each DBE subcontractor as part of the bid conference and prior to opening of the contractor's bid or proposal (§ 33.302(e) and (f)). Complete **ARP form 6100-4 – DBE Program Subcontractor Utilization Form** (§ 33.302(g)).
- Submit to recipient with bid package or proposal the completed **ARP form 6100-4**, plus an **ARP form 6100-3** for each DBE subcontractor used in the contractor's bid or proposal (§ 33.302(f) and (g)).
- Pay subcontractors for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the Project Owner (§ 33.302(a)).
- Notify the recipient in writing prior to prime contractor termination of a DBE subcontractor for convenience (§ 33.302(b)).
- Employ the six good faith efforts described in (§ 33.301) if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason. (§ 33.302(c)).
- Employ the six good faith efforts described in (§ 33.301) even if the prime contractor has achieved its fair share objectives under subpart D of Part 33. (§33.302(d)).
- Provide Project Owner DBE participation achievements with bid proposal. This includes information necessary for Owner's completion of the Bidders List (ARP-249).
- Maintain records documenting its compliance with the requirements of Title 40 Part 33, including Bidders List (ARP-249) and documentation of the good faith efforts (§ 33.301(a)) by the project owner and prime contractor.

Subcontractor Responsibilities:

- May submit **ARP form 6100-2 – DBE Subcontractor Participation Form** to Debra Bradford, EPA Region 6 DBE Coordinator (§ 33.302(e)). Submitted if concerns with EPA funded project (e.g., termination, late payment, etc.)
- Must complete **ARP form 6100-3 – DBE Program Subcontractor Performance Form** and submit it to the prime contractor soliciting services from the subcontractor prior to the opening of bids for the prime contract.

Summary of ARP Forms

ARP Form	Requirement	Provided By	Completed By	Submitted To
6100-2: DBE Subcontractor Participation Form	Project Owners required to have prime contractors provide form to Subcontractors	Prime Contractors to DBE Subcontractors	DBE Subcontractors if concerns with EPA funded project (e.g., termination, late payment, etc.)	EPA Region 6 DBE Coordinator, Debora Bradford
6100-3: DBE Subcontractor Performance Form	Project Owners required to have prime contractors provide form to Subcontractors	Prime Contractors to DBE Subcontractors	DBE Subcontractors with Prime Contractor's Signature. Completed when bidding on a job.	Project Owners as part of a bid or proposal package
6100-4: DBE Subcontractor Utilization Form	Project Owners required to have prime contractors complete the form	Project Owners to Prime Contractors	Prime Contractors to indicate the utilization of a DBE.	Project Owners as part of bid or proposal

APPENDIX B: TITLE 40 PART 33 SUBPART C—GOOD FAITH EFFORTS

§ 33.102 When do the requirements of this part apply?

The requirements of this part apply to procurement under ARPA Grant program agreements performed entirely within the United States, whether by a Project Owner or its prime contractor, for construction, equipment, services, and supplies.

§ 33.106 What assurances must ARPA Grant program recipients obtain from their contractors?

The recipient must ensure that each procurement contract it awards contains the term and condition specified in Appendix A to this part concerning compliance with the requirements of this part.

§ 33.206 Is there a list of certified MBEs and WBEs?

The Oklahoma Department of Transportation has a Directory of Certified DBE Firms. This database can be found at this website: <https://okdot.gob2g.com/Default.asp>.

§ 33.301 What does this subpart require?

A recipient, including one exempted from applying the fair share objective requirements by § 33.411, is required to make the following good faith efforts whenever procuring construction, equipment, services, and supplies under an ARPA Grant program agreement, even if it has achieved its fair share objectives under subpart D of this part:

- a) Ensure DBEs are made aware of contracting opportunities fully practicable through outreach and recruitment activities. For State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- b) Make information on forthcoming opportunities available to DBE's, arrange periods for contracts, and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- c) Consider in the contracting process whether firms competing for large contracts could subcontract with DBE's. For state and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
- d) Encourage contracting with a consortium of DBE's when a contract is too large for one of these firms to handle individually.
- e) Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
- f) If the prime contractor awards subcontracts, require the prime contractor to take the steps in paragraphs (a) through (e) of this section.

§ 33.302 Are there any additional contract administration requirements?

- a) Project Owners must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the recipient.
- b) Its prime contractor must notify Project Owner in writing prior to any termination of a DBE subcontractor for convenience by the prime contractor.
- c) If a DBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the six good faith efforts described in § 33.301 if soliciting a replacement subcontractor.
- d) A project owner must require its prime contractor to employ the six good faith efforts described in §33.301 even if the prime contractor has achieved its fair share objectives under §33.301 subpart D above.

- e) A recipient must require its prime contractor to provide ARP Form 6100-2—DBE Program Subcontractor Participation Form to all of its DBE subcontractors. ARP Form 6100-2 gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the prime contractor, how much the DBE subcontractor was paid and any other concerns the DBE subcontractor might have, for example reasons why the DBE subcontractor believes it was terminated by the prime contractor. DBE subcontractors may send completed copies of ARP Form 6100-2 directly to the appropriate EPA DBE Coordinator.
- f) A recipient must require its prime contractor to have its DBE subcontractors complete ARP Form 6100-3—DBE Program Subcontractor Performance Form. A recipient must then require its prime contractor to include all completed forms as part of the prime contractor's bid or proposal package.
- g) A recipient must require its prime contractor to complete and submit ARP Form 6100-4—DBE Program Subcontractor Utilization Form as part of the prime contractor's bid or proposal package.
- h) Copies of ARP Form 6100-2—DBE Program Subcontractor Participation Form, ARP Form 6100-3—DBE Program Subcontractor Performance Form and ARP Form 6100-4—DBE Program Subcontractor Utilization Form may be obtained from EPA OSDBU's Home Page on the Internet or directly from EPA OSDBU.
- i) A recipient must ensure that each procurement contract it awards contains the term and condition specified in the Appendix A concerning compliance with the requirements of this part. A recipient must also ensure that this term and condition is included in each procurement contract awarded by an entity receiving a grant under federal financial assistance agreement.

§ 33.410 Can a recipient be penalized for failing to meet its fair share objectives?

A recipient cannot be penalized or treated by EPA as being in noncompliance with this subpart, solely because its MBE or WBE participation does not meet its applicable fair share objective. However, EPA may take remedial action under § 33.105 for a recipient's failure to comply with other provisions of this part, including, but not limited to, the good faith efforts requirements described in subpart C of this part.

Source: Federal Requirements and Contract Provisions for Special Appropriation Act Projects, US Environmental Protection Agency, Region III, June 2008

**APPENDIX C: RESOURCE LISTING AND CONTACT INFORMATION
FOR UTILIZATION OF MINORITY AND WOMEN'S BUSINESS ENTERPRISES**

Resource Listing	Contact Information	Website if applicable
U.S. Small Business Administration (SBA) In addition to the national office, the SBA has local district and regional offices to assist small businesses in contracting with the public and private sector.	US Small Business Administration 409 3rd St, SW Washington DC 20416 Phone: 800-827-5722	https://www.sba.gov/
U. S. Small Business Administration (SBA) - OK. District Office	301 NW 6 th St. Oklahoma City, OK 73102 Phone: 405.609.8000	https://www.sba.gov/offices/district/ok/oklahoma-city
Minority Business Development Administration (MBDA): The MBDA is an agency within the U.S. Dept. of Commerce, created to foster the development and growth of minority businesses in the U.S. and coordinates resources in the public and private sectors to help MBEs.	1401 Constitution Ave NW Washington, D.C. 20230 Email: support@mbda.gov Phone: (202) 482-2000	http://www.mbda.gov/
Standard Industrial Classification Codes (SIC) or North American Industry Classification System (NAICS) codes visit the websites.	U.S. Bureau of Labor Statistics Postal Square Building, 2 Massachusetts Ave. NE Washington, DC 20212-0001 Phone: 1-202-691-5200	http://www.bls.gov/iag/tgs/iag_index_naics.htm
Oklahoma Department of Transportation (ODOT) and the <u>Minority/Disadvantaged Business Enterprise (ODOT – MBE/DBE)</u> . Project Owners and bidders may locate qualified M/WBE's through the MBE/WBE Directory	200 NE 21 st Street Oklahoma City, OK 73105 Phone: 405.521.2082	https://okdot.gob2g.com/Default.asp
US EPA Office of Small and Disadvantaged Business Utilization (OSDBU): advocates and advances the business, regulatory, and environmental compliance concerns of small and socio-economically disadvantaged businesses. The Small Business Vendor Profile System contains information of number of small and disadvantaged companies registered with OSDBU.	USEPA Office of Small Programs 1200 Pennsylvania Ave. NW Mail Code 1230T Washington, D.C. 20460 Phone: 202 566-2075	https://www.epa.gov/aboutepa/about-office-small-and-disadvantaged-business-utilization-osdbu Select "search the OSBP Registry" Click on the search criteria of interest (ethnicity, size, SIC, etc.)

National Black Chamber of Commerce	4400 Jenifer St NW #331, Washington, DC 20015 Phone: 202 466-6888 Fax: 202 466-4918 Email: info@nationalbcc.org	http://www.nationalbcc.org
U.S. Hispanic Chamber of Commerce	424 K St NW #401, Washington, DC 20005 Phone: (202) 842-1212	http://www.usbcc.com
National Association of Minority Contractors (NAMC)	910 17th Street, NW, Suite 413 Washington, DC 20006 Phone: 202.296.1600 info@namcnational.org	http://namcnational.org/
National Association of Women's Business Owners (NAWBO)	601 Pennsylvania Ave NW South Building, Ste 900 Washington, DC 20004 Phone: 800-556-2926 Fax: 202-403-3788	www.nawbo.org
National Minority Supplier Development Council, Inc. (NMSDC)	1359 Broadway, 10th Floor, Suite 1000 New York, NY 10018 Phone: (212) 944-2430 Fax: (212) 719-9611	http://www.nmsdc.org/
Native American Development Corporation (NADC) - provides technical assistance, financial lending opportunities, and champions small businesses	17 N. 26th St. Billings, MT 59101 Phone: (406) 259-3804 Fax: (406) 259-4569 Email: nadcptac@nadc-nabn.org	http://www.nadc-nabn.org/
City of Tulsa – Small Business Enterprise Program Maintains a list of Minority and Female business Enterprises that are certified through the “building Resources in Developing and Growing Enterprises	175 E. 2nd St. Tulsa, OK. 74103 Phone: (918) 596-7818	https://www.cityoftulsa.org/developmentbusiness/small-business-enterprise-program/ Click on the ‘member list”
Southwest Minority Supplier Development Council: Maintains lists of certified Minority Business Enterprises in Oklahoma	7301 Broadway Ext Ste 224, OKC, OK 73116 Phone: (405) 767-9900	http://www.smsdc.org/

National Association of Women in Construction (NAWIC)	327 S. Adams Street Fort Worth, TX 76104 Phone: 800-552-3506 817.877.5551 Fax: 817.877.0324	http://www.nawic.org/
Bureau of Indian Affairs - Maintains a list of Native American Contractors and Suppliers by Trade	P.O. Box 368 (1 Mile North on Hwy 281) Anadarko, OK 73005 Phone: (405) 247-6673 Fax: (405) 247-5611	https://www.bia.gov/as-ia/eed/division-economic-development/native-american-business-development
Oklahoma Department of Commerce Certification Programs and information	900 N Stiles Ave. Oklahoma City, OK 73104 Phone: (405) 815-6552 Toll-Free: (800) 879-6552	https://www.okcommerce.gov/doing-business/#business-services
Cherokee Nation Tribal Employment Rights Office - Maintains a directory of Indian-owned businesses	Cherokee Nation TERO Dept. P.O. Box 948 Tahlequah, OK 74465 Phone: (918) 453-5334 or Toll Free: 800-256-0671 ext. 5334	http://cherokeetero.com/

ARP-6100-2 DBE Subcontractor Participation Form

OWRB Financial Assistance Agreement Recipients must require prime contractors to provide this form to their DBE subcontractors. This form gives a DBE subcontractor the opportunity to describe work received and/or report any concerns regarding the project.

Subcontractor Name	Project Name	
Bid/Proposal No.		Point of Contact
Address		
Telephone No.	Email address	
Prime Contractor Name		Funding entity Oklahoma Water Resources Board

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Amount Received by Prime Contractor

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Subcontractor Signature	Print Name
Title	Date

ARP-6100-3 DBE Subcontractor Performance Form

This form is intended to capture the DBE₁ subcontractor's₂ description of work to be performed and the price of the work submitted to the prime contractor. OWRB Financial Assistance Agreement Recipients must require prime contractors to provide this form to their DBE subcontractors.

Subcontractor Name	Project Name
Bid/Proposal No.	Point of Contact
Address	
Telephone No.	Email Address
Prime Contractor Name	Funding Entity Oklahoma Water Resources Board

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: ____ DOT ____ SBA ____ Other: _____		Meets/ exceeds EPA certification standards? ____ YES ____ NO ____ Unknown

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

Subcontractor Signature	Print Name
Title	Date

ARP-6100-4 DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE₁ subcontractors₂ and the estimated dollar amount of each subcontract. OWRB Financial Assistance Agreement Recipients must require their prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name	Project Name
Bid/Proposal No.	Point of Contact
Address	
Telephone No.	Email address
Funding Entity Oklahoma Water Resources Board	

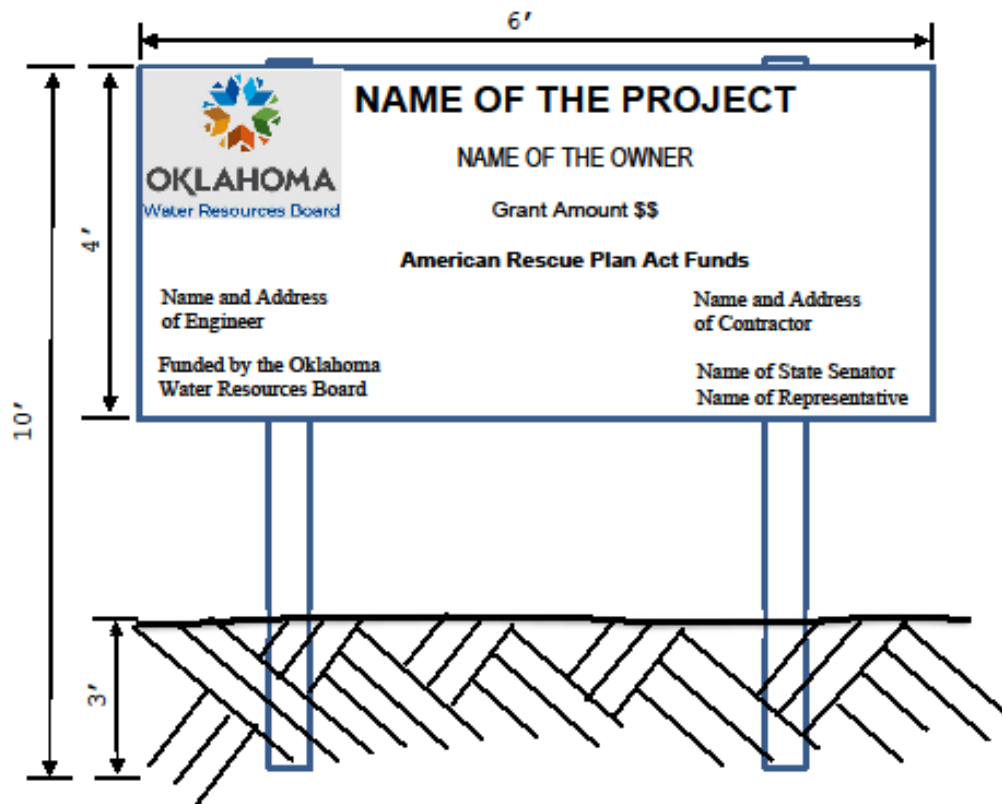
I have identified potential DBE certified Subcontractors	___ YES	___ NO	
If yes, please complete the table below. If no, please explain:			
Subcontractor Name/ Company Name	Company Address/ Phone/ Email	Est. Dollar Amt.	Currently DBE Certified?

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

PROJECT SIGN

- The general contractor shall erect and maintain for the life of the construction contract a suitable sign, 4' x 6' in size, and detailed hereon, lettered black on white background. Sign shall be professionally painted. Lettering to be appropriate size. No separate bid item. Sign shall be the general obligation of the Contractor.
- The OWRB logo is required on the project sign if the project is funded in part with OWRB Financial Assistance Program funds. The OWRB logo is available at <http://www.owrb.ok.gov/about/index.php> or may be provided directly by OWRB.
- Redwood Posts shall be 4" x 4" x 10' buried securely a minimum of 3 feet below ground.
- Sign face shall be constructed of 3/4" x 4' x 6' - 5 ply Dura-plywood board & mounted to Posts with four (4) 5/8" x 6" Carriage Bolts.



CONTRACT SPECIFICATIONS

A. General

1. This Contract is intended to, and hereby does, provide for complete in place, **Sewer Pipe Bursting (ARP-23-0092-G)**, including all necessary work and material for a total job, whether or not such work and material is shown or implied in the plans and specifications.
2. All construction and materials shall conform to the City of Shawnee Standard Specifications as contained herein. All work necessary to make for a complete and operable Independence Avenue Waterline as intended by these plans and specifications for which bid items are not provided, shall be considered incidental work and the cost thereof shall be included in other appropriate bid items.
3. The cost to include the furnishing and installation of all temporary sheeting, shoring, timbering and bracing required to maintain any excavation in a condition to furnish safe working conditions and to permit the safe and efficient installation of all items of contract work shall be included in other items of work. The CONTRACTOR shall further, at his own expense, shore up or otherwise protect all fences, buildings, walls, walks, curbs, or other property adjacent to any excavation which might be disturbed during the progress of the work. The CONTRACTOR will be held liable for any damage which may result to neighboring property from excavation or construction operations.
4. Whenever any excavation is carried beyond the lines and grades shown on the Contract Drawings, written in the Contract Documents, and/or given by the ENGINEER, the CONTRACTOR shall, at his own expense, refill all such excavated space with such materials and in such a manner as may be directed. Beneath and around concrete structures, space excavated without authority shall be thoroughly compacted when refilling, or if deemed necessary by the ENGINEER, shall be refilled with concrete at the CONTRACTOR'S expense.
5. If the materials encountered on any excavation are not suitable for structural foundations, or if necessary, to go an additional depth or width from that designated on the contract drawings to provide proper bearing for pipe and concrete, the CONTRACTOR shall make such additional excavations outside the regular limits of the work as may be directed by the ENGINEER. The cost of such additional excavation shall be merged into the appropriate unit price.
6. Excavated material shall be deposited so as to interfere as little as possible with the execution of the whole work or its several parts. Such material as cannot be placed in its final position in fills and embankment shall be removed to a temporary spoil bank, from which it shall later be taken and placed in embankment or fills.
7. Unsuitable and surplus excavated material not incorporated in the improvement shall be disposed of by the CONTRACTOR at his own expense unless otherwise designated in the project specifications, or on the contract drawings.
8. If private land is used by the CONTRACTOR as a spoil site, the CONTRACTOR shall obtain written permission from the OWNER or agent of the land agreeing to its use for this purpose and provide the project OWNER with a certified copy of such agreement.
9. The CONTRACTOR shall notify residents and business OWNERS of construction by distributing door hangers to each and every house, business, and /or occupied structure located

on the street or alley where the construction shall occur, at least 48 hours in advance of the commencement of construction.

B. Site Conditions

The CONTRACTOR shall be responsible for familiarizing himself with surface and subsurface conditions. The base bid as shown in the proposal shall include cost for unclassified excavating of earth, rock, dewatering, stabilizing unsuitable soils such as quicksand or other unsuitable materials, or any hazard that may be encountered. The cost for such work shall be included in the appropriate bid item. No additional compensation shall be given for such work. The CONTRACTOR shall satisfy himself as to the accuracy of all measurements before constructing any permanent structure.

C. Surveys

The CONTRACTOR shall develop and make all detailed surveys needed for construction such as slope stakes, batter boards, stakes for construction location and other working points, lines and elevations. The CONTRACTOR shall carefully preserve all benchmarks, reference points and stakes established by the ENGINEER and in case he causes damage or disturbance, he will be charged for the cost of replacement and shall be responsible for any mistakes that may be caused by their loss.

D. Utility Locations

The elevation and location of all utilities shown on the contract drawings were taken from public records. It shall be the duty of the CONTRACTOR to make final and exact determination of the location and extent of these utilities, and he will be liable for any expense resulting from damage to them. Unless otherwise indicated on the contract drawings or unless otherwise taken care of by the OWNER thereof, all utilities and all structures of any nature, whether below or above ground, that may be affected by the work shall be protected and maintained by the CONTRACTOR and shall not be disturbed or damaged by him during the progress of the work. Should the CONTRACTOR disturb, disconnect or damage any utility or any structure, all expenses of whatever nature arising from such disturbance or the replacement or repair thereof shall be borne by the CONTRACTOR. This provision shall apply whether or not said utility or structure is shown on the plans. All utility locations shown or not shown on these plans shall be the responsibility of the CONTRACTOR prior to excavation. Utility location telephone numbers are:

1-800-522-6543	Statewide
1-800-654-8349	Out of State

E. As-Built Records

The CONTRACTOR is required to keep a current record of all field changes on jobsite at all times. They shall be legibly marked on his plan and shall become property of the City of Shawnee prior to completion for purposes of constructing an as-built record of this project.

F. Arrangement and Charge for Water Furnished by the Town

If the CONTRACTOR desires to use Town water, he shall pay the rate established by Town Ordinance for such service and he shall make complete and satisfactory arrangements with the Town Utility Department for so doing. Flush meters will be used and the CONTRACTOR shall deposit the cost of the flush meter with the Utility Department and will pay for repairs and maintenance of the meter for the period which he has the meter in use in his possession.

CONTRACTOR shall be charged for the amount of water he uses, including any monthly minimum charge.

G. Use of Fire Hydrants

The CONTRACTOR or his employees shall not open, turn off, interfere with, attach pipe or hose to, or connect anything with any fire hydrant, stop valve or stop cock or tap any water-main belonging to the Town unless duly authorized to do so by the OWNER.

H. Protection and Opening to Pedestrians and Traffic

The CONTRACTOR is required to receive permission from the TOWN ENGINEER to close any traffic lanes or alleys or roads during construction. No road shall be permanently or temporarily closed without prior approval by the TOWN ENGINEER. The CONTRACTOR shall conduct his work so as to interfere as little as possible with public travel, whether vehicular or pedestrian; whenever it is necessary to cross, obstruct, or temporarily close roads, driveways and walks, whether public or private. The CONTRACTOR shall, at his own expense, provide and maintain suitable and safe bridges, detours, barricades, signing, lighting, striping and/or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to OWNERS of private drives before interfering with them; provided, however, that such maintenance of traffic will not be required at any point where the CONTRACTOR has obtained permission from the OWNER and/or tenant of private property, or from the authority having jurisdiction over public property involved to obstruct traffic at any designated point thereon and for the duration of whatever period of time as may be agreed upon. All work pertaining to traffic control shall be in accordance with the latest revision of "The Manual on Uniform Traffic Control Devices."

I. Materials and Construction

All materials and construction shall be in accordance with the City of Shawnee Standard Specifications for Construction (Standard Specifications) and Construction Standards as contained herein.

J. Testing and Acceptance Requirements

The CONTRACTOR shall be responsible for paying the cost of all testing outlined in the Standard Specifications. Testing shall be performed by a qualified testing laboratory approved by the OWNER.

K. Protection and Preservation of Property and Landscape

The CONTRACTOR will be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours. The CONTRACTOR shall furnish such watchmen, guards, fences, warning signs, lights and walkways, and shall take all other precautions as shall be necessary to prevent damage to persons or property. All structures and improvements damaged by the CONTRACTOR, his employees, SUBCONTRACTORS, or agents, shall be restored to a condition as good as when he entered upon the work. The duty of the ENGINEER to conduct construction inspection of the CONTRACTOR'S performance does not include any review of the adequacy of the CONTRACTOR'S safety measures in, on, or near the construction site or sites. The ENGINEER has not been retained or compensated to provide design and construction review services relating to the CONTRACTOR'S safety precautions or to means, methods, techniques, sequences, or procedures required for the CONTRACTOR to perform his work.

No trees shall be removed on the site of the work where outside of excavation limits, except where their removal is authorized by the ENGINEER. Where trees are on the line of the trench or adjacent thereto such trees and roots shall be removed and disposed of by and at the expense of the CONTRACTOR.

Trees remaining at the end of construction shall be adequately protected from permanent damage by reason of construction operations. Trimming of remaining trees where required shall be as directed by the ENGINEER.

All turf, shrubbery, and other landscaping, damaged or removed by the CONTRACTOR shall be replaced under the direction and to the satisfaction of the OWNER, by and at the expense of the CONTRACTOR.

Any traffic signal loop wire, pull box, or conduit that is damaged or destroyed shall be replaced under the direction and to the satisfaction of the OWNER, by and at the expense of the CONTRACTOR.

L Administrative Matters

All permits, fees, and licenses required under City Ordinance not regulated by state or federal law will be collected.

DIVISION 01 – GENERAL REQUIREMENTS**SECTION 01 00 00 – GENERAL CONDITIONS****PART 1 – GENERAL****1.1 DESCRIPTION**

The General Conditions shall govern and control all work to which they apply; however, since these specifications are of a general nature, they may refer to work not found in this project, in which case such non-applicable stipulations will have no meaning in this Contract. In case of conflict between the General Conditions and the Special Conditions, the Special Conditions shall govern. In case of conflict with either the General or Special Conditions by Supplemental Conditions of a funding agency such as EPA, FMHA, EDA or HUD, the Supplemental Conditions will govern.

PART 2 – DEFINITIONS**2.1 DEFINITIONS**

DEFINITIONS: Whenever the words defined below, or pronouns used in their stead occur hereinafter, they shall have the meanings given as follows:

- A. "OWNER" shall mean the City of Shawnee or Shawnee Public Works Authority.
- B. "ENGINEER" shall mean Cowan Group Engineering, LLC, who has been employed by the OWNER for this work, or his duly authorized agent.
- C. "Inspector" shall mean the engineering or technical inspector or inspectors duly authorized by the ENGINEER, limited to the particular duties entrusted to him or them.
- D. "CONTRACTOR" shall mean the person, persons, partnership, company, firm or corporation entering into this contract for the performance of the work, or the agent appointed to act for such party.
- E. "Specification" shall mean, collectively, all of the terms and stipulations contained in the written portion of information furnished.
- F. "Drawings or Plan Sheets" shall mean, collectively, all of the drawings pertaining to the contract and made a part thereof, and also such supplementary drawings as the ENGINEER may issue from time to time in order to clarify the drawings, or for the purpose of showing authorized changes in the work, or for showing details which are not shown thereon.
- G. The term "Grade" used in these Specification is understood to refer to and indicate the established elevations of the paving, flow line of waterlines and other appurtenances as shown on the drawings.
- H. Whenever in these CONTRACT DOCUMENTS the words "as ordered", "as directed", "as permitted", "as allowed", or words or phrases of like import are used, it shall

be understood that the order, direction, requirements, permission, or allowance of the OWNER and ENGINEER is intended.

- I. Similarly, the words "approved", "reasonable", "suitable", "acceptable", "properly", "satisfactory", or words of like effect and import, unless otherwise particularly specified herein, shall mean approved, reasonable, suitable, acceptable, proper, or satisfactory in the judgment of the OWNER and ENGINEER.
- J. Whenever the term "or equal" is used in the drawings and/or Specification it shall refer to a material which will adequately perform the same function, in the opinion of the ENGINEER, as the material specified or shown on the drawings.

PART 3 - SCOPE OF WORK

The work to be covered under these contracts in accordance with the drawings listed herein and, in these specifications, consists of the furnishing of all materials, equipment, tools, labor, transportation and services necessary to complete the construction as outlined herein and as shown on the drawings. The complete installation shall not lack any part which can be reasonably implied as necessary to its proper functioning nor any subsidiary which is customarily furnished.

PART 4 - EXAMINATION OF SITE OF WORK

It is the obligation of the bidder to examine carefully the site of the proposed work; to ascertain for himself all the facts concerning conditions therein, including all physical characteristics above, on and below the surface of the ground; to investigate the subsurface conditions and to determine for his information the character and proportionate quantities of soils, rock and other subsurface material which may be encountered in the work; to inform himself by independent research of the difficulties to be encountered and judge for himself the accessibility of the work and all other circumstances affecting the cost of doing the work or the time required for its completion; and the bidder agrees to this obligation in signing the proposal. When provided, the soils boring and testing report is attached to these Specification for the CONTRACTOR'S information and is not a part of the contract. No guarantee is made as to their accuracy or completeness. The OWNER assumes no responsibility whatsoever with respect to ascertaining for the bidder such facts covering physical characteristics at the site of the work. The bidder agrees that, if awarded the contract, he will make no claim for, and will have no right to, additional payment or extension of time for completion of the work or any other concession because of any failure on his part to fully acquaint himself with all conditions relating to the work. The bidder shall rely exclusively upon his own estimate, investigation and evaluation of site conditions.

PART 5 - SITE CONDITIONS

Where connections to existing utilities are shown on the drawings, the work may be required to be done at night or at a time which will least interfere with the operation of the existing facility.

The tie to existing utilities will be coordinated with personnel of the OWNER of the existing lines and will be done at a time to least inconvenience their operation. The work may be required to be done at night or weekends or both.

Where possible the existing utilities (water, gas, etc.) have been noted on the drawings. There may be additional buried lines that are not shown and if such is encountered, said lines will be left in service. CONTRACTOR shall take all precautions available prior to construction to locate, identify, and verify utilities. If said lines are broken by the CONTRACTOR, they shall be repaired as soon as possible.

The work along or across state highways shall be done in accordance with the permit from Division Engineer, Department of Transportation. The right-of-way shall be maintained in a satisfactory manner at all times. All roads, streets, drives, etc., cut during construction shall be properly protected by barricades, flashing lights, etc., and shall be made passable as soon as possible after laying of lines during the day and always at night. CONTRACTOR shall maintain the above cut roads in a passable condition until the wearing surface is replaced and then kept in a satisfactory condition for five (5) years after job is completed.

PART 6 - EXPLOSIVES

In handling explosives used during the construction of the project, the CONTRACTOR shall adhere to all Federal and State laws and City ordinances regulating the purchase, transportation, storage, handling, and use of such explosives. No blasting shall be done without 12-hour notification of the OWNER and ENGINEER, proof of insurance, and the presence of the Inspector. All equipment, tools, and materials used shall be of the correct type and in good condition for the operation. The CONTRACTOR shall take all necessary precautions to avoid damage to property resulting from the transportation, storage, handling and use of explosives. Before blasting, the CONTRACTOR shall take all necessary precautions to ensure that rock and debris will be confined to the excavation. Any blasting within 10 ft. of a water, sewer, gas or pipeline shall be done with very light charges, and utmost care shall be taken to avoid disturbance to these lines.

PART 7 - SUBMITTALS

Engineering data covering all equipment and fabricated materials to be furnished under this contract shall be submitted to the ENGINEER for review. This data shall include drawings and operation of component materials and devices; the external connections; anchorages and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment. Data submitted shall include drawings showing essential details of any changes proposed by CONTRACTOR and all required structural layout and wiring diagrams.

No work shall be performed in connection with the fabrication or manufacture of materials and equipment, nor shall any accessory or appurtenance be purchased until the drawings and data therefore have been reviewed, except at the CONTRACTOR'S own risk and responsibility.

At least five (5) copies of each drawing and necessary data with statement of approval by the CONTRACTOR, shall be submitted to the ENGINEER. Each drawing or data sheet shall be clearly marked with the name of the project, the ENGINEER'S name, CONTRACTOR'S name and references to applicable specification paragraphs and drawing sheets. When catalog pages are submitted, the applicable items shall be identified.

The ENGINEER'S review of drawings and data submitted by the CONTRACTOR will cover only general conformity to the drawings and specifications, external connections and

dimensions which affect the layout. The ENGINEER'S review of drawings returned marked NO EXCEPTIONS NOTED or EXCEPTIONS NOTED does not indicate a thorough review of all dimensions, quantities and details of the material, equipment, device or items shown and does not relieve the CONTRACTOR from any responsibility for errors, omissions, or deviations from the contract requirements.

All drawings and data, after final processing by the ENGINEER, shall become a part of the contract documents, and the work shown or described thereby shall be performed in conformance therewith unless otherwise authorized by the OWNER or the ENGINEER.

After drawings and data have been accepted by OWNER or ENGINEER, the CONTRACTOR shall submit three (3) additional copies of all data and one (1) set of reproducible of all drawings to OWNER for file records. Also, CONTRACTOR shall keep accurate "record drawings" records of the work and turn these records over to the OWNER at the completion of the work.

PART 8 - SURVEYS

The OWNER shall establish base lines or control points for the location of the principal component parts of the work together with benchmarks adjacent to the work as shown or indicated on the Drawings. The CONTRACTOR shall develop and make all detail surveys necessary for construction. The CONTRACTOR shall be responsible for the accuracy of all lines and grades for all parts of the work. He shall do all field work necessary to lay out and maintain the work and shall make available to the OWNER all facilities and information necessary for properly checking the accuracy of such field work. Such checking shall in no way relieve the CONTRACTOR of his responsibility of the correctness of all field work.

The OWNER will provide survey of property including reference points, property corners and benchmarks where necessary in the opinion of the ENGINEER. If necessary, the CONTRACTOR shall transfer these reference points and benchmarks to permanent locations where they will not be disturbed. If disturbed, the CONTRACTOR shall re-install them to OWNER'S satisfaction, at CONTRACTOR'S cost.

PART 9 - PERMITS AND REGULATIONS

The CONTRACTOR shall secure and pay for all construction permits required to carry out the work unless otherwise specified and shall produce same upon demand of the OWNER. The CONTRACTOR shall give all notices and pay all fees and shall, before starting work, ascertain whether the drawings and specification are at variance with any codes or regulations applying at the site. The CONTRACTOR shall obtain completion survey, certificate of completion or occupancy if required by local regulations.

All features of design and construction shall comply with the local building regulations and/or other lawful or public regulations which apply at the site. If any features of construction as shown on the OWNER'S plan, do not conform to the regulations, the CONTRACTOR shall notify the OWNER of such discrepancy, and shall base his quotation and work on features of construction which do conform to the regulations.

If the CONTRACTOR performs any work contrary to such laws, ordinances, rules and regulations and without such notice to the OWNER, he shall bear all costs arising therefrom.

PART 10 - INSPECTION

The CONTRACTOR will provide access to the work site and facilities for representatives of the Environmental Protection Agency, Oklahoma Department of Environmental Quality and other agencies, as well as, OWNER and ENGINEER, as required whenever the work is in progress.

PART 11 - SATURDAY, SUNDAY, HOLIDAY AND NIGHT WORK

No work shall be done between the hours of 7:00 p.m. and 7:00 a.m., nor on Saturday, Sunday or legal holidays without the written approval or permission of the ENGINEER in each case, except such work as may be necessary for the proper care, maintenance and protection of work already done, or of equipment, or in the case of an emergency.

PART 12 - PROTECTION OF PROPERTY

- A. The protection of City, State and Government monuments, street signs and other OWNER's property is of prime importance, and if the same be damaged, destroyed or removed, they shall be repaired, replaced or paid for by the CONTRACTOR. Disturbance to this property must first be approved by the agency which controls it.
- B. No valves or other control on any utility main or building service line shall be operated for any purpose by the CONTRACTOR.
- C. At places where the CONTRACTOR'S operations are adjacent to the plant of railway, telegraph, telephone, electric and gas companies, or water, sanitary sewers and storm sewers, damage to which might result in expense, loss or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.
- D. The OWNER has attempted to locate all storm sewers, culverts, buried telephone or electrical conduits, sanitary sewers and water mains that might interfere with the construction of this project. The CONTRACTOR shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner and duplication or rearrangement work may be reduced to a minimum and that services rendered by those parties will not be unnecessarily interrupted. The revision and crossings of the various types of lines shall be made as follows:
 - 1. Storm sewers and culverts may be removed at the time of crossing or may be adequately braced and held in position while the pipe is placed beneath them. If the storm sewer or culvert is removed, it shall be replaced with pipe of the same type and size as that removed and it shall be re-joined to the undisturbed line with a joint satisfactory to the ENGINEER. Backfill over the main up to and around the storm sewer shall be thoroughly compacted in order that no settlement will occur. The revision and crossing of said lines shall be at the expense of the CONTRACTOR.
 - 2. All overhead and buried telephone and electrical conduits, to be revised or crossed by the construction of this project shall be protected in accordance with the directions of the utility company owning the conduits and/or mains. The CONTRACTOR shall notify the companies and obtain their permission before

making any crossing or revisions. The revision and crossing of said lines shall be at the expense of the CONTRACTOR. Any overhead cables or buried cables or conduits damaged by the CONTRACTOR shall be repaired at his expense to the satisfaction of the ENGINEER and of the OWNER.

3. The CONTRACTOR shall not remove any water or sanitary sewer lines except as directed by the ENGINEER or as required by the Drawings and specifications and shall adequately brace and protect them from any damage during construction. Any existing water main or sewer main or lateral damage caused by the CONTRACTOR'S operations will be repaired by the CONTRACTOR. The repairs will be made at the CONTRACTOR'S expense.
- E. The location of utility service lines serving individual properties may or may not be shown on the Drawings, but the CONTRACTOR shall assume that such service lines exist whether or not they are shown on the Drawings, and it shall be the responsibility of the CONTRACTOR to make any necessary changes in the line and/or grade of such services, or to secure the necessary changes therein to be made by the particular utility company involved or other OWNER thereof, or by an agent or individual CONTRACTOR approved by such utility company or other OWNER. CONTRACTOR shall pay the cost of all such revisions whether performed by CONTRACTOR, the utility company or other OWNER, or an approved CONTRACTOR. In the event of interruption of a utility service as a result of accidental breakage, CONTRACTOR shall promptly notify the ENGINEER and the OWNER of the utility and shall repair or cause the same to be repaired, in the same manner as necessary changes above are provided for, the CONTRACTOR shall do all things necessary to see that the restoration of services is done as promptly as may be reasonably done. All sanitary sewer service lines damaged shall be replaced with cast iron pipe regardless of type or kind damaged.
- F. In the event the CONTRACTOR in any way fails to comply with the requirements of protecting, repairing and restoring of any utility or utility service, the OWNER may, upon forty-eight (48) hours written notice proceed to protect, repair, rebuild or otherwise restore such utility or utility service as may be deemed necessary, and the cost thereof will be deducted from any money due, or which may become due the CONTRACTOR pursuant to the terms of his contract.

PART 13 - FIELD OFFICE

Copies of the drawings, specification, and other contract documents shall be kept at the site of the work available for use at all times.

PART 14 - ALTERATION OF QUANTITIES

The CONTRACTOR agrees that the quantities of work as stated in the Bid Schedule or indicated on the drawings are only approximate, and that the OWNER shall have the right to omit portions of the work and to increase or decrease the quantities of any item of work. Final payment will be based on the actual quantities used and installed in accordance with the drawings and Specification.

PART 15 - QUALITY CONTROL

When required in writing by the ENGINEER, the CONTRACTOR shall make such tests as may be necessary to show that the requirements of the Specification have been fulfilled.

All tests shall be made under the supervision and direction of the ENGINEER, and the CONTRACTOR will provide all required materials, labor and apparatus, etc., or so directed, engage an approved testing laboratory for making same. Any work found defective shall be removed, replaced and retested until satisfactory to the ENGINEER, all at the CONTRACTOR'S expense.

Should tests required by the ENGINEER, except those specifically called for elsewhere in these General Requirements or in the Specification show that the requirements of the Specification have been fulfilled, then the costs of such tests shall be paid for by the OWNER.

PART 16 - MEASUREMENT AND FITTING OF PARTS

The CONTRACTOR, without extra charge, shall make such slight alterations as may be necessary to make adjustable parts fit the fixed parts, leaving all complete and in proper shape when done. The CONTRACTOR shall verify all dimensions given in the drawings and shall report any error or inconsistency to the ENGINEER before commencing work.

PART 17 - CONTRACTOR'S SUPERINTENDENT

The CONTRACTOR shall keep a competent Superintendent and any necessary assistants at the site throughout the progress of the work. All directions given to said Superintendent shall be as binding as if given to the CONTRACTOR. Upon request, such directions will be confirmed, in writing, to the CONTRACTOR.

The CONTRACTOR'S Superintendent and/or any of his assistants shall be promptly replaced in the event he or they shall prove to be incompetent and/or unsatisfactory to the ENGINEER.

PART 18 - ASSISTANCE BY ENGINEER

It is distinctly understood and agreed that such assistance as the ENGINEER may render to the CONTRACTOR in connection with the interpretation of drawings and specification shall not relieve the CONTRACTOR from any responsibility for the work. Any work which proves faulty shall be made right by the CONTRACTOR without delay. The failure of the ENGINEER, or his Inspectors to call the CONTRACTOR'S attention to faulty work or work done which is not in accordance with drawings and specification shall not prevent the OWNER from insisting that the CONTRACTOR make all work right.

PART 19 - INCIDENTAL WORK

Work called for on the drawings and/or specifications and are not set forth in the Bid Schedule as pay items, shall be considered as incidental work and will not be paid for directly, but shall be included in the price bid for the various pay items.

PART 20 - TERMINATION OF CONTRACT

If the CONTRACTOR shall be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse, or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workmen, equipment or proper materials, or if he should fail to make prompt payment to SUBCONTRACTOR or for material or labor, or persistently disregard laws, ordinances or the instructions of the ENGINEER, or otherwise be guilty of a substantial violation of any provision of the Contract, then the OWNER upon the certificate of the ENGINEER that sufficient cause exists to justify such action, may without prejudice to any other right or remedy and after giving the CONTRACTOR seven days written notice, terminate the employment of the CONTRACTOR and take possession of the premises and of all materials, tools and appliances thereon and finish the work by whatever method the OWNER may deem expedient. In such case, the CONTRACTOR shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract Price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the CONTRACTOR. If such expense shall exceed such unpaid balance, the CONTRACTOR shall pay the difference to the OWNER as herein provided, and the damage incurred through the CONTRACTOR's default shall be certified by the ENGINEER.

In the event of termination of Contract before completion of the work, due to abandonment of the project or discontinuance thereof, the CONTRACTOR will be paid in proportion to the work completed and in progress as per scope of work described in the drawings and specification and in accordance with the unit price schedule.

PART 21 – PROGRESS PAYMENTS, ACCEPTANCE AND FINAL PAYMENT

Basis for Progress Payments: The Schedule of Quantities as shown in the Plans will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period. The amount of retainage with respect to progress payments will be 5% until 50 percent completion after which retainage shall be 2.5%.

Upon receipt of written notice from the CONTRACTOR that the work is ready for final inspection and acceptance, the ENGINEER shall promptly make such inspection and when he finds the work acceptable under the Contract and the Contract fully performed, he shall promptly issue a final certificate over his own signature, stating that the work provided for in this Contract has been completed and is accepted by him under the terms and conditions thereof, and the entire balance found to be due the CONTRACTOR, including the retained percentage, shall be paid to the CONTRACTOR, as approved by the OWNER, at the office of the OWNER within 30 days after the date of said final certificate.

If, after receipt of written notice from CONTRACTOR requesting final inspection and the performance of said final inspection by ENGINEER, additional inspections are necessary in order for ENGINEER to issue a final certificate; the OWNER shall withhold the cost associated with said additional inspections from the final payment due the CONTRACTOR.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the ENGINEER that all payrolls, material bills, equipment rentals, and all other indebtedness connected with the work have been paid.

PART 22 - PLACING WORK IN SERVICE

If desired by the OWNER, portions of the work may be placed in service when completed and the CONTRACTOR shall give prior access to the work for this purpose, but such use and operation shall not constitute an acceptance of the work.

PART 23 - SCHEDULES

The CONTRACTOR shall furnish the ENGINEER with a tentative schedule, in a format approved by the ENGINEER, setting forth in detail the procedure he proposes to follow, and giving the dates on which he expects to start and to complete separate portions of the work. If at any time, in the opinion of the ENGINEER, proper progress is not being maintained, such changes shall be made in the schedule of operations which will satisfy the ENGINEER that the work will be completed within the period stated in the proposal, or extension thereof made as herein provided.

CONTRACTOR is to prepare list of proposed SUBCONTRACTORS including material suppliers; submit to ENGINEER for approval before subcontracts are awarded. No SUBCONTRACTOR is to be employed on work unless approved by OWNER and ENGINEER.

PART 24 - PROJECT SIGN

A project sign is required for this project. See Division 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS, page 45 for project sign requirements and an example.

PART 25 - INSURANCE

The CONTRACTOR shall protect, indemnify, save and hold harmless the OWNER, their officers, agents, and employees from all suits, actions or claims of any kind or character brought because of bodily injuries, sickness, disease or personal injury, or damages received or sustained by any person, persons, or property on account of any operations of the CONTRACTOR, his agents, employees, his subcontractors or any others authorized by the CONTRACTOR to perform work on the project.

Third Party Beneficiary Clause. It is specifically agreed by and between the parties executing this Contract, that it is not intended by any of the provisions of any part of the Contract to create in the public or any member thereof any third-party beneficiary provisions or to authorize anyone not a party to this Contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of this Contract.

The CONTRACTOR shall carry insurance of the following kinds and amounts on all City Contracts:

A. CONTRACTOR'S Public Liability, Auto Liability and Property Damage Liability

Insurance. The CONTRACTOR shall provide regular CONTRACTOR'S Public Liability Insurance for a combined amount of one million (\$1,000,000) dollars of coverage for all damages arising out of bodily injury, death, and property damage for each occurrence with an aggregate limit of two million (\$2,000,000) dollars.

The CONTRACTOR shall provide business auto liability coverage for an aggregate limit of one million (\$1,000,000) dollars of coverage for bodily injury and property damage arising out of the operation or maintenance of any vehicle including owned, non-owned and hired vehicles, and employee non-ownership use.

B. Insurance for SUBCONTRACTOR'S and CONTRACTOR'S Protective Public Liability and Property Damage Liability Insurance. In the event that any of the work to be performed by the CONTRACTOR on the project is sublet or assigned or is otherwise to be performed by anyone other than the CONTRACTOR'S own employees, then the insurance specified above shall extend to cover such work.

C. Workmen's Compensation Insurance and Employer's Liability Insurance. The CONTRACTOR shall furnish satisfactory evidence to the City that, with respect to the work to be performed by him on the project, he carries regular Workmen's Compensation and Employers Liability Insurance covering his liability under the "Workmen's Compensation Law of the State of Oklahoma". The CONTRACTOR shall maintain the aforementioned insurance in full force and effect for the duration of the Contract. Should the CONTRACTOR fail or neglect to maintain the aforementioned insurance, the City specifically reserves the right to withhold all funds due and owing the CONTRACTOR until such time as the required insurance is in effect.

In addition to the aforementioned insurance coverage, on any project in which the CONTRACTOR shall perform any Railway-Highway work, the CONTRACTOR shall also secure the following: "Railroads' Protective Liability and Property Damage Insurance".

D. Railroads' Protective Liability and Property Damage Insurance. In addition to the above, the CONTRACTOR shall furnish satisfactory evidence to the City that, with respect to the work to be performed by him under the Contract, he has provided for and on behalf of the Railway Company or Railway Companies involved, Protective Public Liability Insurance in an amount as may be required by the Railway Company, which amount shall be specified in the bid documents. Policies shall not include liability for negligence on the part of the Railway Company, its agents or employees, except as set out in Coverage A, B, or C of the form of policy, or amendments thereto, referred to under paragraph 6 below. This insurance applies to each and all Railway Companies involved in the work.

E. General. The insurance hereinbefore specified shall be carried in Insurance Companies approved by the City, and where applicable the Railway Company, during all times when work is being carried on under the terms of the Contract, until all work required to be performed under the Contract is satisfactorily completed as evidenced by the formal acceptance by the City.

F. Certificates of Insurance. Required insurance shall be documented by Certificates of Insurance which provide that the OWNER shall be notified at least thirty (30) days

in advance of cancellation, non-renewal or adverse change. The Certificate of Insurance shall show the OWNER as the named insured.

For general liability, the CONTRACTOR shall provide an indication of the amounts of claims, payments or reserves chargeable to the aggregate amount of liability coverage.

PART 26 - SAFETY STANDARDS AND ACCIDENT PREVENTION

With respect to all work performed under this Contract, the CONTRACTOR shall:

- A. Comply with the safety standards provisions of applicable laws, building and construction codes and the Manual of Accident Prevention in Construction published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1910 or 1926 as applicable.
- B. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
- C. Trench Excavation and Safety System: All work under this item shall be in accordance with the current edition of the OSHA Standard for Excavation and Trench Safety Systems, 29 CFR 1926 Subpart P.

The CONTRACTOR shall notify all utility companies and OWNERS in accordance with the OSHA requirements given in 29 CFR 1926.651 (b) (2) for the purpose of locating utilities and underground installations.

Where the trench or excavation endangers the stability of a building, wall, street, highway, utilities, or other facility, the CONTRACTOR shall provide support systems such as shoring, bracing, or underpinning to ensure the stability of such facility. The CONTRACTOR may elect to remove and replace or relocate such facilities with the written approval of the facility owner, the ENGINEER, and the OWNER.

Payment for the work required by this item shall be included in the lump sum price bid. With each periodic payment request, CONTRACTOR shall submit a certification that the CONTRACTOR has complied with the provisions of the OSHA standards.

PART 27 - WAGE RATES

NO SPECIFIC REQUIREMENTS FOR THIS PROJECT.

PART 28 - WORKMEN

The CONTRACTOR shall employ foreman and skilled laborers where necessary, and if any person employed on the work shall refuse or neglect to obey orders of the ENGINEER or Inspector when such orders are in keeping with the provisions of these specifications or shall appear to the ENGINEER or his Inspector to be incompetent, disorderly or unfaithful, he shall, upon order of the ENGINEER, be at once discharged and not again employed upon any part of the work. It shall be the responsibility of the superintendent representing the CONTRACTOR to transmit all necessary orders and instructions. If requested by the ENGINEER, the CONTRACTOR shall submit, in written form, qualifications including work experience of any workman used on the project.

PART 29 - NUMBER OF WORKING DRAWINGS AND SPECIFICATIONS

The ENGINEER will furnish to the CONTRACTOR not more than two (2) sets of drawings and specifications for construction. The CONTRACTOR may procure additional copies of drawings and specifications for construction at cost of reproduction. Such costs are reimbursable by the ENGINEER.

PART 30 - PRECONSTRUCTION CONFERENCE

Prior to the commencement of work at the site, a preconstruction conference will be held at a mutually agreed time and place. The conference shall be attended by:

- A. CONTRACTOR and his superintendent.
- B. Principal SUBCONTRACTORS.
- C. Representatives of principal suppliers and manufacturers as appropriate.
- D. ENGINEER and its Resident Project Representative.
- E. Representatives of OWNER.
- F. Government representatives as appropriate.
- G. Others as requested by CONTRACTOR, OWNER, or ENGINEER.
- H. Unless previously submitted to ENGINEER, CONTRACTOR shall bring to the conference a preliminary schedule for each of the following:
 - 1. Progress.
 - 2. Procurement.
 - 3. Values for progress payment purposes.
 - 4. Shop Drawings and other submittals.

The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include:

- A. CONTRACTOR'S preliminary schedules.

- B. Transmittal, review, and distribution of CONTRACTOR'S submittals.
- C. Processing applications for payment.
- D. Maintaining record documents.
- E. Critical work sequencing.
- F. Field decisions and change orders.
- G. Use of premises, office and storage areas, security, housekeeping, and OWNER'S needs.
- H. Major equipment deliveries and priorities.
- I. CONTRACTOR'S assignments for safety and first aid.

ENGINEER will preside at the conference and will arrange for keeping the minutes and distributing the minutes to all persons in attendance.

PART 31 - PROGRESS MEETINGS

CONTRACTOR shall schedule and hold regular progress meetings at least monthly and at other times as requested by ENGINEER or required by progress of the work. CONTRACTOR, ENGINEER, and all SUBCONTRACTORS active on the site shall be represented at each meeting. CONTRACTOR may at its discretion request attendance by representatives of its suppliers, manufacturers, and other SUBCONTRACTORS.

CONTRACTOR shall preside at the meetings. Meeting minutes will be prepared and distributed by CONTRACTOR. The purpose of the meetings will be to review the progress of the work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.

PART 32 - SUBSTANTIAL AND FINAL COMPLETION

All work including site restoration shall be finished within the time called out on the Bid Form for final completion.

PART 33 - EXCAVATION

All excavation shall be unclassified. No additional payment shall be made for rock, groundwater, or other natural formations encountered. Payment for excavation shall be included in other items of work.

PART 34 - SUBCONTRACTORS

CONTRACTOR is to prepare a list of proposed SUBCONTRACTORS including material suppliers and submit to ENGINEER for approval before SUBCONTRACTORS are awarded.

No SUBCONTRACTOR is to be employed on work unless approved by OWNER and ENGINEER.

PART 35 - RIGHT-OF-WAY/PROJECT VIDEO

CONTRACTOR shall video the complete right-of-way of the project prior to initiating construction and deliver video tape to the ENGINEER at the pre-construction conference. The video shall be taken in such a way to document pre- construction conditions for use in documenting satisfactory right-of-way restoration and other issues relative to initial conditions prior to construction.

PART 36 - RECORD DRAWINGS**36.1 GENERAL**

- A. The CONTRACTOR shall be responsible for accumulation and maintenance of a complete set of Project Record Documents and upon completion and acceptance of the project shall submit these documents to the ENGINEER, as the OWNER'S representative, for a permanent record.
- B. The Project Record Documents shall consist of:
 - 1. One complete set of drawings, with revisions.
 - 2. One complete Project Manual with all addenda, field bulletins and change orders.
 - 3. Complete set of all field test data.
 - 4. Complete set of approved shop drawings, product data brochures and samples.
 - 5. Six complete sets of maintenance and operating instructions, parts lists and supplier identification on all operating fixtures and equipment.

36.2 MAINTENANCE OF RECORD DOCUMENTS

- A. The CONTRACTOR shall maintain, on the site, one complete set of contract documents, other than those used for construction, throughout the life of the job.
 - 1. This set of documents shall be marked "Record Set" and shall be maintained up to date at all times and available to the ENGINEER for inspection.
 - 2. The only notations or other markings to be made on this set are notations of field variations made from the work shown on the drawings for purposes of "Record Drawings" revisions when the project is complete. Failure to record revisions by each CONTRACTOR, shall be considered a breach of contract.
 - 3. This set of Documents will be turned over to the ENGINEER for preparation of "Record Drawings" **prior to approval of final application for payment.**

36.3 MAINTENANCE AND OPERATING INSTRUCTIONS

- A. A complete set of maintenance and operating instructions on the project shall be prepared for the OWNER'S continual use.
 - 1. To be bound in booklet form, 8-1/2" x 11" in size, labeled "Operating Manual".
 - 2. To be indexed for quick reference use.
 - 3. To contain manufacturer's printed data, record forms, diagrams, parts lists,

maintenance procedures, start-up procedures, operating procedures, service requirements and schedules, and names, addresses and phone numbers of SUBCONTRACTOR, manufacturer and local service agent.

4. To contain all written warranties and guarantees.
- B. Each CONTRACTOR shall submit six complete copies of this "Operating Manual" material from his trade to the ENGINEER at the completion of the project.
- C. The ENGINEER shall assemble, bind, label and index this material for the OWNER as stated above. Failure to submit the data listed on the part of any CONTRACTOR may be considered cause to withhold final payment until all such information is received.

PART 37 - CHANGES IN THE WORK

ALL CHANGES SHALL BE MADE IN WRITING AND APPROVED BY THE OWNER OR ENGINEER. THIS INCLUDES CHANGES INVOLVING COST OR THOSE NOT INVOLVING COST. NO CHANGE WILL BE ACCEPTABLE UNLESS APPROVED IN WRITING.

The OWNER, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the work with the Contract Total being adjusted accordingly. All changes involving cost shall be made using a written modification order and shall be supported with necessary documentation as to the increase or decrease in cost and time. No increase or decrease in cost or time will be made without an approved modification order that is completed at or before the change is made. Increases in cost or time will not be allowed at the end of the job for work completed earlier without an approved change order. The OWNER shall have authority to make minor changes in the work which do not involve extra cost, and which do not significantly change the design. All such changes shall be made with a written field order.

END OF SECTION 01 00 00

SECTION 01 11 00 - SUMMARY OF WORK**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. The work covered by these specifications and drawings shall consist of all materials, transportation costs, equipment, and tools that are related to, or are to be incorporated in this contract and must be received, unloaded, stored, installed, erected, service connections provided, and coordinated with the construction by the CONTRACTOR under this contract. Installation of equipment and materials shall mean furnishing of all labor and materials as required to place the improvements in successful operation. The CONTRACTOR shall be responsible for all equipment and materials and shall replace at his own expense all such equipment and materials found defective in manufacture or damaged in handling after delivery by the manufacturer. The improvements are as listed:

CITY OF SHAWNEE / SHAWNEE PUBLIC WORKS AUTHORITY
SEWER PIPE BURSTING

- B. This contract shall include minor items not specifically mentioned herein but shown on the accompanying plans or obviously necessary to provide a complete job.
- C. The following description, while not intended to cover all details, outlines some items of the work to be accomplished under this Contract:
1. Construction of approximately 2,766 LF of 8" HDPE Sewer Line via bursting.
 2. Construction of approximately 2,222 LF of 10" HDPE Sewer Line via bursting.
 3. Construction of approximately 1,440 LF of 12" HDPE Sewer Line via bursting.
 4. Construction of approximately 17 manholes.
 5. Pre and post video inspection.

Note: The Sanitary Sewer Collection System plant must stay in operation throughout construction. Temporary pumping, piping, plugs, shut offs, etc. shall be considered incidental and included in the cost of other bid items.

- D. The price named in the Proposal shall include the furnishing of all labor, material, transportation costs, equipment rental, etc., necessary to construct the project as herein specified and as shown on the accompanying plans.
- E. The CONTRACTOR shall cooperate with the OWNER during construction so as to place the improvements in operation at minimum inconvenience and without significant disruption of the OWNER. The CONTRACTOR shall minimize his area of operation. Any areas disturbed will be restored to the OWNER'S satisfaction.

END OF SECTION 01 11 00

SECTION 01 11 50 – MEASUREMENTS AND PAYMENTS**PART 1 – PAY REQUESTS****1.1 CONTRACTOR TO SUBMIT DETAILED BREAKDOWN OF CONTRACT AMOUNT**

- A. Except in the cases where the unit prices form the basis for payment under the contract, the CONTRACTOR shall, within ten (10) days of receipt of the Notice to Proceed, submit a complete breakdown of the contract amount showing the value assigned to each part of the work, including an allowance for profit and overhead. Upon approval of the breakdown of the contract amount by the ENGINEER, it shall be used as the basis for all requests for payment.

1.2 CONTRACTOR MONTHLY PAY REQUESTS

- A. The CONTRACTOR may submit periodically, but not more than once each month, a request for payment for work done and materials delivered and stored on the site. The CONTRACTOR shall furnish the ENGINEER all reasonable facilities required for obtaining the necessary information relative to the progress and execution of the work. Payment for materials stored on the site will be conditioned upon evidence submitted to establish the OWNER'S title to such materials. Each request for payment shall be computed from the work completed on all items listed in the detailed breakdown of contract amount, less five (5) percent to be retained until 50 percent completion and acceptance of the work, and less previous payments, provided that any after 50 percent of the work has been satisfactorily completed, the OWNER shall reduce the percentage retainage to two and one-half (2 ½) percent where unit prices are specified. The request for payment shall be based on the quantities completed.

1.3 MATERIAL STORED ON SITE

- A. The following items will be required if the CONTRACTOR requests payment for material stored on the site.
1. CONTRACTOR must furnish invoices showing quantity, size, costs, etc. of the material.
 2. The invoices must be approved by the OWNER, PROJECT INSPECTOR and/or ENGINEER.
 3. Payment will be made only for material stored in a location approved by the ENGINEER and the OWNER. The storage area must provide adequate protection from the weather and vandalism.
 4. The 5 percent retainer which applies to materials installed will also apply to materials stored.
 5. Payment for materials stored on the site for this project will be made as follows: The above items must be furnished with the current pay estimate, and the CONTRACTOR will be paid as per invoice. In order for the CONTRACTOR to receive payment for the next pay estimate, he must furnish a notarized statement of payment in full from the suppliers for materials invoiced in preceding pay estimate. The procedure shall hold true for all successive materials payments until all materials have been acquired by the CONTRACTOR.

1.4 ENGINEER'S ACTIONS TO PENDING PAY REQUESTS

- A. Within ten (10) days of submission of any request for payment by the CONTRACTOR, the ENGINEER shall:
1. Approve the request for payment as submitted.
 2. Approve such other amount as he shall decide is due the CONTRACTOR, informing the CONTRACTOR in writing of his reasons for approving the amended amount.
 3. Withhold the request for payment, informing the CONTRACTOR in writing for his reasons for withholding it.

1.5 OWNER'S ACTIONS TO APPROVED PAYMENT REQUEST

- A. Within thirty (30) days from the date of approval of a request for payment by the ENGINEER, the OWNER shall:
1. Pay the request of payment as approved.
 2. Pay such other amount in accordance as herein provided as he shall decide is due the CONTRACTOR, informing the CONTRACTOR and the ENGINEER in writing of his reasons for paying the amended amount.
 3. Withhold payment in accordance as herein provided informing the CONTRACTOR and the ENGINEER of his reasons for withholding payment in writing.

1.6 OWNER'S RIGHT TO WITHHOLD PAYMENT ON APPROVED REQUESTS

- A. The OWNER may withhold payment in whole or in part on an approved request for payment to the extent necessary to protect himself from loss on account of any of the following causes discovered subsequent to approval of a request for payment by the ENGINEER:
1. Defective work.
 2. Evidence indicating the probable filing of claims by other parties against the CONTRACTOR.
 3. Failure of the CONTRACTOR to make payments to SUBCONTRACTORS, material suppliers or labor.
 4. Damage to another CONTRACTOR.

1.7 PAYMENT FOR UNCORRECTED WORK

- A. If, in the opinion of the ENGINEER, it is undesirable to replace any defective or damaged material or to reconstruct or correct any portion of the work injured or not performed in accordance with the contract documents, the compensation to be paid the CONTRACTOR hereunder shall be reduced by such amount as in the judgment of the ENGINEER shall be equitable.

1.8 PAYMENT FOR REJECTED WORK AND MATERIALS

- A. The removal of work and materials rejected by the OWNER and the re-execution of acceptable work by the CONTRACTOR shall be at the expense of the CONTRACTOR, and he shall pay the cost of replacing the work of other CONTRACTORS destroyed or damaged by the removal of the rejected work or materials and the subsequent replacement of acceptable work.
- B. Removal of rejected work or materials and storage of materials by the OWNER shall be paid by THE CONTRACTOR within thirty (30) days after written notice to pay is given by the OWNER. If the CONTRACTOR does not pay expenses of such removal and after ten (10) days written notice being given by the OWNER of his intent to sell the materials, the OWNER may sell the materials at auction or at private sale and shall pay to the CONTRACTOR the net proceeds therefrom after deducting all the costs and expenses that should have been borne by the CONTRACTOR.

1.9 ACCEPTANCE AND FINAL PAYMENT

- A. When the CONTRACTOR shall have completed the work in accordance with the terms of the contract documents, the ENGINEER shall certify his acceptance to the OWNER and his approval of the CONTRACTOR'S final request for payment, which shall be the contract amount plus all approved additions less all approved deductions and less previous payments made. The CONTRACTOR shall furnish evidence that he has fully paid all debts for labor, materials, and equipment incurred in connection with the work, following which the OWNER shall accept the work and release the CONTRACTOR except as to the conditions of the Performance Bond, any legal rights of the OWNER, required guarantee and correction of faulty work after final payment, and shall authorize payment of the CONTRACTOR'S final request for payment. The CONTRACTOR must allow sufficient time between the time of completion of the work and approval of the final request for payment for the ENGINEER to assemble and check the necessary data.

1.10 CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT

- A. The approval of the final request for payment by the ENGINEER and the making of the final payment by the OWNER to the CONTRACTOR shall not relieve the CONTRACTOR of responsibility for faulty materials or workmanship. The OWNER shall promptly give notice of faulty materials or workmanship and the CONTRACTOR shall promptly replace any such defects discovered within one year from the date of written acceptance of the work. The ENGINEER shall decide all questions arising under this paragraph.

END OF SECTION 01 11 50

SECTION 01 21 19 - TESTING LABORATORY-SERVICES (CONTRACTOR-Employed Lab)

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. CONTRACTOR shall employ and pay for the services of an independent testing laboratory to perform specified services and testing.

1.2 RELATED REQUIREMENTS

- A. Conditions of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders, or approvals of public authorities.
- B. Respective sections of specifications: Certification of products.
- C. Respective sections of specifications, laboratory tests required, and standards for testing.

1.3 QUALIFICATION OF LABORATORY

- A. Meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
- B. Meet basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction."
- C. Authorized to operate in the state in which the project is located.
- D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.
- E. Testing Equipment
 - 1. Calibrated at reasonable intervals by devices of accuracy traceable to either
 - a. National Bureau of Standards.
 - b. Accepted values of natural physical constants.

1.4 LABORATORY DUTIES

- A. Cooperate with OWNER'S REPRESENTATIVE and CONTRACTOR; provide qualified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1. Comply with specified standards.
 - 2. Ascertain compliance of materials with requirements of Contract Documents.

- C. Promptly notify OWNER'S REPRESENTATIVE and CONTRACTOR of observed irregularities or deficiencies of work or products.
- D. Promptly submit written report of each test and inspection; one copy each to OWNER'S REPRESENTATIVE, OWNER, CONTRACTOR, and one copy to Record Document File. Each report shall include:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Testing laboratory name, address, telephone number.
 - 4. Name and signature of laboratory inspector.
 - 5. Date and time of sampling or inspection.
 - 6. Record of temperature and weather conditions.
 - 7. Date of test.
 - 8. Identification of product and specification section.
 - 9. Location of sample or test in the project.
 - 10. Type of inspection or test.
 - 11. Results of tests & compliance with Contract Documents.
 - 12. Interpretation of test results, when requested by OWNER'S REPRESENTATIVE.
- E. Perform additional tests as required by OWNER'S REPRESENTATIVE or the OWNER.

1.5 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
 - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
- B. Approve or accept any portion of the work.
- C. Perform any duties of the CONTRACTOR.

1.6 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel, provide access to work, to manufacturer's operations.
- B. Secure and deliver to the laboratory adequate quantities of representation samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.

- D. Furnish copies of products test reports as required.
- E. Furnish incidental labor and facilities:
 - 1. To provide access to work to be tested.
 - 2. To obtain and handle samples at the project site or at the source of the product to be tested.
 - 3. To facilitate inspections and tests.
 - 4. For storage and curing of test samples.
- F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
 - 1. When tests or inspections cannot be performed after such notice, reimburse OWNER for laboratory personnel and travel expenses incurred due to CONTRACTOR'S negligence.
- G. Employ and pay for the services of a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required:
 - 1. For the CONTRACTOR'S convenience.
 - 2. When initial tests indicate work does not comply with Contract Documents.

1.7 CONTRACTOR'S GENERAL RESPONSIBILITIES

- A. No failure of test agencies to perform adequate inspections or tests or to properly analyze or report results shall relieve CONTRACTOR of responsibility for fulfillment of requirements of contract documents. It is recognized that required inspection and testing program is intended to assist the CONTRACTOR, OWNER, ARCHITECT, ENGINEER, and governing authorities in nominal determination of probable compliances with requirements for certain elements of work. The program is not intended to limit the CONTRACTOR'S regular quality control program, as needed for general assurance of compliances.

END OF SECTION 01 21 19

SECTION 01 33 00 - SUBMITTALS AND SUBSTITUTIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included

1. Wherever possible throughout the contract documents, the minimum acceptable quality of workmanship and materials has been defined by manufacturer's name and catalog number, reference to recognized industry and government standards, or description of required attributes and performance.
2. To ensure that the specified products are furnished and installed in accordance with design intent, procedures have been established for advance submittal of design data and for their review by the ENGINEER.
3. Make all submittals required by the contract documents, and revise and resubmit as necessary to establish compliance with the specified requirements.

B. Related Work Described Elsewhere: Individual requirements for submittals are described in pertinent other Sections of these specifications.

1.2 QUALITY ASSURANCE

A. Coordination of Submittals: Prior to each submittal, carefully review and coordinate all aspects of each item being submitted and verify that each item and the submittal for it conforms in all respects with the requirements of the contract documents. By affixing the CONTRACTOR'S signature to each submittal, certify that this coordination has been performed.

B. Certificates of Compliance

1. When requested, certify that materials used in the work comply with specified provisions thereof. Certification shall not be construed as relieving the CONTRACTOR from furnishing satisfactory materials if, after tests are performed on selected samples, the material is found to not meet specified requirements.
2. Show on each certification the name and location of the work, name and address of CONTRACTOR, quantity and date or dates of shipment or delivery to which the certificate applies, and name of the manufacturing or fabricating company. Certification shall be in the form of letter or company-standard forms containing all required data. Certificates shall be signed by an officer of the manufacturing or fabricating company.
3. In addition to the above information, all laboratory test reports submitted with certificates of compliance shall show the date or dates of testing, the specified requirements for which testing was performed, and results of the test or tests.

1.3 SUBMITTALS

- A. Submittal Schedule: Within 10 days after award of Contract, and before any items are submitted for approval, submit to the ENGINEER two copies of the schedule described in Article 2.1 of this Section.
- B. Certificates of Compliance: Upon completion of the work, and as a condition of its acceptance, submit to the ENGINEER all Certificates of Compliance.
- C. Procedures: Make submittals in strict accordance with the provisions of this Section.
- D. Schedule of Values: Within 10 days of the Pre-Construction Conference, submit a schedule of values for lump sum bid items indicating the cost breakdown of lump sum bid items for use in progress payment preparation. Submit to the ENGINEER two copies of the schedule described in Article 2.2 of this Section.

PART 2 - PRODUCTS

2.1 SUBMITTAL SCHEDULE

- A. General: Compile a complete and comprehensive schedule of all submittals anticipated to be made during progress of the work. Include a list of each type of item for which CONTRACTOR'S drawings, Shop Drawings, Certificates of Compliance, material samples, guarantees, Operations and Maintenance manuals or other types of submittals are required. Upon approval by the ENGINEER this schedule will become part of the Contract and the CONTRACTOR will be required to adhere to the schedule except when specifically otherwise permitted.
- B. Coordination: Coordinate the schedule with all necessary subcontractors and materials suppliers to ensure their understanding of the importance of adhering to the approved schedule and their ability to so adhere. Coordinate as required to ensure the grouping of submittals as described in Article 1.3.
- C. Revisions: Revise and update the schedule on a monthly basis as necessary to reflect conditions and sequences. Promptly submit revised schedules to the ENGINEER for review and comment.

2.2 SCHEDULE OF VALUES

- A. The ENGINEER will review the tentative schedule of values to determine whether, in his judgment, the schedule of values is of sufficient detail and if the prices included are "unbalanced" or "front-end loaded", in an effort to inflate the prices of those items of work to be completed in the early stages of the work.
- B. Breakdown cost to list major products or operations for each line item which has an installed value of more than \$5,000.00. The sum of the items listed on the schedule of values shall equal the contract lump sum price.

- C. The ENGINEER will provide the CONTRACTOR with his comments and/or may request additional information from the CONTRACTOR to justify certain item quantities and prices, therefore. On the basis of the ENGINEER'S comments, the CONTRACTOR shall revise and resubmit the tentative schedule for further review and/or approval.
- D. Once the ENGINEER accepts the tentative schedule, it shall become the schedule of values to be used in determining partial payment estimates. Two (2) copies of this schedule shall be submitted to the ENGINEER for distribution and his use. No modifications will be made to the schedule of values, except as required by approved change orders.
- E. No partial payment request (including the first) shall be approved until the schedule of values has been approved by the OWNER and ENGINEER.

2.3 SHOP DRAWINGS AND COORDINATION DRAWINGS

A. Shop Drawings

- 1. Scale and Measurements: Make all Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the work.
- 2. Type of Prints Required: Submit all Shop Drawings in the form of electronic (.pdf) or hardcopy, minimum of 8 ½" by 11".

2.4 MANUFACTURERS' LITERATURE

- A. General: Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly indicate which portion of the contents is being submitted for review.
- B. Number of Copies Required: Submit the number of copies which are required to be returned plus two copies which will be retained by the ENGINEER. Under no circumstances shall less than five copies be submitted.

2.5 SAMPLES

- A. Accuracy of Samples: Samples shall be of the precise article proposed to be furnished. Samples shall have stickers or tags which bear identification of the project, the subcontractor, the vendor or manufacturer, the product color name or number, model, style or series, and the size and thickness of components.
- B. Number of Samples Required: Unless otherwise specified, submit all Samples in the quantity which is required to be returned plus one which will be retained by the ENGINEER.
- C. Reuse of Samples: In situations specifically so approved by the ENGINEER, the ENGINEER'S retained sample may be used in the construction as one of the installed items.

- D. Match Existing Materials: Brick or other materials that are to match existing materials shall require a "test panel" to be erected adjacent to the existing material to allow the OWNER to approve the match in size, color, and texture.

2.6 COLORS AND PATTERNS

- A. Unless the precise color and pattern is specifically described in the contract documents, and whenever a choice of color or pattern is available in a specified product, submit accurate color and pattern charts to the ENGINEER for review and selection.

2.7 SUBSTITUTIONS

A. Approval Required

1. The Contract is based on the standards of quality established in the contract documents.
2. All products proposed for use, including those specified by required attributes and performance, shall require approval by the ENGINEER before being incorporated into the work.
3. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved for this work by the ENGINEER.

B. "Or Equal":

1. Where the phrase "or equal" or "approved or equal" occurs in the contract documents, do not assume that materials, equipment, or methods will be approved as equal unless the item has been specifically approved for this work by the ENGINEER.
2. The decision of the ENGINEER shall be final.

PART 3 - EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

- A. General: Bind submittals with cover label that identifies project, division of work, subcontractor, and vendor/manufacturer. Consecutively number all submittals. Accompany each submittal with a letter of transmittal containing all pertinent information required for identification and checking of submittals.
- B. Internal Identification: On at least the first page of each copy of each submittal, and elsewhere as required for positive identification, clearly indicate the submittal number in which the item was included.
- C. Resubmittals: When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new submittal number.

3.2 COORDINATION OF SUBMITTALS

- A. General: Prior to submittal for approval, use all means necessary to fully coordinate all material including, but not necessarily limited to:
 - 1. Determine and verify all interface conditions, catalog numbers, and similar data.
 - 2. Coordinate with other trades as required.
 - 3. Clearly indicate all deviations from requirements of the contract documents.
- B. Grouping of Submittals: Unless otherwise specified, make all submittals in groups containing all associated items to ensure that information is available for checking each item when it is received. Partial submittals may be rejected as not complying with the provisions of the contract documents and the CONTRACTOR shall be strictly liable for all delays so occasioned.

3.3 TIMING OF SUBMITTALS

- A. General: Make all submittals far enough in advance of scheduled dates for installation to provide all time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.
- B. ENGINEER'S Review Time: In scheduling, allow at least 21 calendar days for review by the ENGINEER following his receipt of the submittal. Should unanticipated circumstances prevent the normal review time, a minimum of 10 working days review time must be allowed for reviews.
- C. Delays: Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the contract completion date.

3.4 ENGINEER'S REVIEW

- A. CONTRACTOR'S approval: Prior to submission to the ENGINEER, all submittals shall have been reviewed and approved by the CONTRACTOR.
- B. General: Review by the ENGINEER shall not be construed as a complete check, but only that the general method of construction and detailing is satisfactory. Review shall not relieve the CONTRACTOR from responsibility for errors which may exist.
- C. Authority to Proceed: The notations "Reviewed, No Exceptions Noted" or "Reviewed, Exceptions Noted" authorize the CONTRACTOR to proceed with fabrication, purchase, or both, of the items so noted, subject to the revisions, if any, required by the ENGINEER'S review comments.
- D. Revisions: Make all revisions required by the ENGINEER. If the CONTRACTOR considers any required revision to be a change, he shall so notify the ENGINEER as provided for under "Changes" in the General Considerations. Show each drawing revision by number, date, and subject in a revision block on the drawing. Make only those revisions directed or approved by the ENGINEER.

- E. Revisions After Approval: When a submittal has been reviewed by the ENGINEER, resubmittal for substitution of materials or equipment will not be considered unless accompanied by an acceptable explanation as to why the substitution is necessary.

END OF SECTION 01 33 00

SECTION 01 45 00 - QUALITY CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Section Includes

1. Quality assurance - control of installation.
2. Tolerances
3. References and standards.
4. Mock-up.
5. Testing laboratory services.
6. Inspection services.
7. Manufacturers' field services.
8. Subcontracting.

B. Related Sections

1. Section 01 33 00 – Submittals and Substitutions: Submission of manufacturers' instructions and certificates.

1.2 QUALITY ASSURANCE

- A. The CONTRACTOR will be held strictly to the intent of the contract documents in regard to the quality of materials, workmanship, and execution of the work. Inspections may be made at the factory or fabrication plant of the source of material supply.
- B. The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedure, or construction safety.
- C. The CONTRACTOR shall monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- D. The CONTRACTOR will supervise and direct the work. He will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The CONTRACTOR will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervisor and coordination of the work.
- E. The CONTRACTOR shall comply with manufacturers' instructions, including each step in sequence.

- F. Should the manufacturers' instructions conflict with Contract Documents, the CONTRACTOR shall request clarification from ENGINEER before proceeding.
- G. The CONTRACTOR shall comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- H. The CONTRACTOR shall perform work by persons qualified to produce required and specified quality.
- I. The CONTRACTOR shall verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- J. The CONTRACTOR shall secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 IMPROPER COVERAGE OF BURIED CONSTRUCTION

- A. If any work is covered contrary to the written instructions of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for the ENGINEER'S observation, and replaced at the CONTRACTOR'S expense.
- B. If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction; if, however, such work is not found to be defective, the CONTRACTOR will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate change order shall be issued.
- C. Defect Assessment
 - 1. Replace the work, or portions of the work, not conforming to specified requirements.
 - 2. If, in the opinion of the ENGINEER it is not practical to remove and replace the work, the ENGINEER will direct an appropriate remedy or adjust payment.
- D. Tolerances
 - 1. The CONTRACTOR shall monitor fabrication and installation tolerance control of all products to produce acceptable work. Do not permit products and installation outside of allowable tolerances to accumulate.
 - 2. The CONTRACTOR shall comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from ENGINEER before proceeding.

3. The CONTRACTOR shall adjust products to appropriate dimension and position before securing products in place.

E. References and Standards

1. For products or workmanship specified by association, trade, or other consensus standards, the CONTRACTOR shall comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
2. The CONTRACTOR shall conform to reference standard by date of issue current date for receiving bids, except where a specific date is established by code.
3. The CONTRACTOR shall obtain copies of standards where required by product specification sections.
4. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the ENGINEER shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

F. Mock-Up

1. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
2. The CONTRACTOR shall assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
3. Accepted mock-ups shall be a comparison standard for the remaining work.
4. Where mock-up has been accepted by ENGINEER and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

G. Testing Services

1. The OWNER will appoint and employ services of an independent firm to perform testing. OWNER shall pay for services.
2. The independent firm will perform tests and other services specified in individual specification sections and as required by the ENGINEER.
3. Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the ENGINEER or the OWNER.
4. Reports will be submitted by the independent firm to the ENGINEER and CONTRACTOR, in duplicate indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
5. The CONTRACTOR shall cooperate with the independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

- a. Notify ENGINEER and independent firm 24 hours prior to expected time for operations requiring services.
 - b. Make arrangements with independent firm and pay for additional samples and tests required for CONTRACTOR'S use.
 6. Testing does not relieve CONTRACTOR to perform work to contract requirements.
 7. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the ENGINEER. Payment for re-testing will be charged to the CONTRACTOR or by deducting testing charges from the Contract Sum/Price.
- J. Removal of Defective and Unauthorized Work
1. All work which has been rejected or condemned shall be repaired, or, if it cannot be satisfactorily repaired it shall be removed and replaced at the CONTRACTOR'S expense. Defective materials shall be removed immediately from the site of the work.
 2. Work done without lines and grades having been given, work done beyond the lines or not in conformity with the grades shown on the plans or as given, save as herein provided, work done without proper inspection will be done at the contractor's risk and will be considered unauthorized and at the option of the ENGINEER may not be accepted and may be ordered removed at the CONTRACTOR'S expense.
 3. If any work is covered contrary to the written instructions of the ENGINEER it must, if requested by the ENGINEER, be uncovered for the ENGINEER'S observation, and replaced at the CONTRACTOR'S expense.
 4. If the ENGINEER considers it necessary or advisable that covered work be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction; if, however, such work is not found to be defective, the CONTRACTOR will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate change order shall be issued.
- K. Inspection Services
1. Owner will appoint, employ, and pay for specified services of an independent firm to perform inspection.
- L. Manufacturers' Field Services
1. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of

equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

2. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
3. Refer to Section 01 33 00 – Submittals and Substitutions, Manufacturers' Field Reports article.
4. Coordination of Plans, Specifications, and Special General Conditions: The plans, these specifications, Special General Conditions, and all supplementary documents are intended to describe a complete work and are essential parts of the contract. A requirement occurring in any of them is binding. In case of discrepancies, figured dimensions shall govern over scaled dimensions; plans shall govern over specifications. Special General Conditions shall govern over both General and Standard Specifications, and the plans and quantities shown on the plans shall govern over those shown on the proposal. The CONTRACTOR shall take no advance of any apparent error or omission in the plans and specifications, and the ENGINEER shall be permitted to make such corrections or interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specification.

In the event the CONTRACTOR discovers any apparent error or discrepancy, he shall immediately call such error or discrepancy to the attention of the ENGINEER, and request in writing an interpretation thereof by the ENGINEER.

M. Subcontracting

1. The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the work which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.
2. The CONTRACTOR shall not award work to SUBCONTRACTOR(S) in excess of fifty (50) percent of contract price, or in excess of fifty (50) percent of the labor and equipment required to install the project, without prior written approval of the OWNER.
3. The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of its SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as the CONTRACTOR is for the acts and omissions of persons directly employed by the CONTRACTOR.
4. The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the contract documents insofar as applicable to the work of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.
5. Nothing contained in this CONTRACT shall create any contractual relationship between the SUBCONTRACTOR and the OWNER.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Beginning new work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION 01 45 00

SECTION 01 54 00 – TEMPORARY BYPASS PUMPING SYSTEMS

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

NOT USED.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and other specifications apply to this section.
- B. Related Sections
 - 1. Section 01 11 00 – Summary of Work

1.3 SUBMITTALS

- A. The CONTRACTOR shall submit to the ENGINEER detailed plans and a description outlining all provisions and precautions to be taken by the CONTRACTOR regarding the handling of existing wastewater flows. This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials and all other incidental items necessary and/or required to insure proper protection of the facilities, including protection of the access and bypass pumping locations from damage due to the discharge flows, and compliance with the requirements and permit conditions specified in these Contract Documents. No construction shall begin until all provisions and requirements have been reviewed by the ENGINEER.
- B. The plan shall include, but not be limited to, details of the following:
 - 1. Staging areas for pumps;
 - 2. Sewer plugging method and types of plugs;
 - 3. Number, size, material, location and method of installation of suction piping;
 - 4. Number, size, material, method of installation and location of installation of discharge piping;
 - 5. Bypass pump sizes, capacity, number of each size to be on site and power requirements;
 - 6. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted);
 - 7. Standby power generator size, location;
 - 8. Downstream discharge plan;
 - 9. Method of protecting discharge manholes or structures from erosion and damage;
 - 10. Thrust and restraint block sizes and locations;

11. Sections showing suction and discharge pip depth, embedment, select fill and special backfill;
12. Method of noise control for each pump and/or generator;
13. Any temporary pipe supports and anchoring required;
14. Design plans and computation for access to bypass pumping locations indicated on the drawings;
15. Calculations for selection of bypass pumping pipe size;
16. Schedule for installation of and maintenance of bypass pumping lines;
17. Plan indication of proposed bypass pumping lines showing accepting and receiving locations.

1.4 EQUIPMENT

- A. All pumps used shall be fully automatic self-priming units that do not require the use of foot valves or vacuum pumps in the priming system. The pumps may be electric or diesel powered. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows.
- B. The CONTRACTOR shall provide the necessary stop/start controls for each pump.
- C. The CONTRACTOR shall include one stand-by pump of each size to be maintained on site. Back-up pumps shall be on-line, isolated from the primary system by a valve.
- D. Discharge Piping – In order to prevent the accidental spillage of flows, all discharge systems shall be temporarily constructed of rigid pipe with positive, restrained joints. Under no circumstances will aluminum “irrigation” type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the ENGINEER.

1.5 SYSTEM DESCRIPTION

- A. Design Requirements
 1. Bypass pumping systems shall have sufficient capacity to pump a peak flow of 3.0 MGD. The CONTRACTOR shall provide all pipeline plugs, pumps of adequate size to handle peak flow, and temporary discharge piping to ensure that the total flow can be safely diverted around the section to be repaired. Bypass pumping system will be required to be operated 24 hours per day.
 2. The CONTRACTOR shall have adequate stand-by equipment available and ready for immediate operation and use in the event of an emergency or breakdown. One stand-by pump for each size pump utilized shall be installed at the mainline flow bypassing locations, ready for use in the event of primary pump failure.
 3. Bypass pumping system shall be capable of bypassing the flow around the work area and of releasing any amount of flow up to full available flow into the work area as necessary for satisfactory performances of work.

4. Bypass pump system must overcome any existing force main pressure on discharge.

B. Performance Requirements

1. It is essential to the operation of the existing system that there be no interruption in the flow of sewage throughout the duration of the project. To this end, the CONTRACTOR shall provide, maintain and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the flow before it reaches the point where it would interfere with work, carry it past the work and return it downstream of the work.
2. The design, installation and operation of the temporary pumping system shall be the CONTRACTOR'S responsibility. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.
3. The CONTRACTOR shall provide all necessary means to safely convey the flow past the work area. The CONTRACTOR will not be permitted to stop or impede the flows under any circumstances.
4. The CONTRACTOR shall maintain flow around the work area in a manner than will not cause surcharging of sewers, damage to downstream facilities and that will protect public and private property from damage and flooding.
5. The CONTRACTOR shall protect water resources, wetlands and other natural resources.

1.6 FIELD QUALITY CONTROL AND MAINTENANCE

A. Test

1. The CONTRACTOR shall perform leakage and pressure tests of the bypass pumping discharge piping using clean water prior to actual operation. The ENGINEER will be given 24-hours' notice prior to testing.

B. Inspection

1. CONTRACTOR shall inspect bypass pumping system every two hours to ensure that the system is working correctly.

C. Maintenance Service

1. The CONTRACTOR shall insure that the temporary pumping system is properly maintained, and a responsible operator shall be on hand at all times when pumps are operating.

D. Extra Materials

1. Spare parts for pumps and piping shall be kept on site as required.
2. Adequate hoisting equipment for each pump and accessories shall be maintained on the site.

1.7 PREPARATION

A. Precautions

1. CONTRACTOR is responsible for locating any existing utilities in the area the CONTRACTOR selects to locate the bypass pipelines. The CONTRACTOR shall locate bypass pipelines to minimize any disturbance to existing utilities and shall obtain approval of the pipeline locations from the pipeline owner and the ENGINEER. All costs associated with relocating utilities and obtaining all approvals shall be paid by the CONTRACTOR.
2. During all bypass pumping operation, the CONTRACTOR shall protect all effected facilities and all downstream facilities from damage inflicted by any equipment. The CONTRACTOR shall be responsible for all physical damage caused by human or mechanical failure.

1.8 INSTALLATION AND REMOVAL

- A. The CONTRACTOR shall modify or make connections to existing facilities and construct temporary bypass pumping structures only at the access location indicated on the Drawings and as may be required to provide adequate suction conduit.
- B. Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, it is to be removed in a manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.
- C. When working inside manhole or force main, the CONTRACTOR shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.
- D. The installation of the bypass pipelines is prohibited in all saltmarsh/wetland areas. The pipeline must be located off streets and sidewalks and on shoulders of the roads. When the bypass pipeline crosses local streets and private driveways, the CONTRACTOR must place the bypass pipelines in trenches and cover with temporary pavement. Upon completion of the bypass pumping operations, and after the receipt of written permission from the ENGINEER, the CONTRACTOR shall remove all the piping, restore all property to pre-construction condition and restore all pavement. The CONTRACTOR is responsible for obtaining any approvals for placement of the temporary pipeline within public ways.

PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION 01 54 00

SECTION 01 60 00 – PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Section Includes

1. Products.
2. Transportation and handling.
3. Storage and protection.
4. Product options.
5. Substitutions.

B. Related Sections

1. Section 01 45 00 - Quality Control: Product quality monitoring.

C. Products

1. The CONTRACTOR shall not use materials and equipment removed from existing premises, except as specifically permitted by the contract documents.
2. The CONTRACTOR shall provide interchangeable components of the same manufacture for components being replaced.

D. Transportation and Handling

1. The CONTRACTOR shall:
 - a. Transport and handle products in accordance with manufacturer's instructions.
 - b. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
 - c. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

E. Storage and Protection

1. The CONTRACTOR shall:
 - a. Store and protect products in accordance with manufacturers' instructions.
 - b. Store with seals and labels intact and legible.
 - c. Store sensitive products in weathertight, climate controlled enclosures in an environment favorable to product.
 - d. Provide for exterior storage of fabricated products, which shall be placed on sloped supports above ground.

- e. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- f. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- g. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- h. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- i. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

F. Product Options

- 1. The CONTRACTOR shall provide products specified by reference standards or by description only: any product meeting those standards or description.
- 2. The CONTRACTOR shall provide products specified by naming one or more manufacturers with a provision for substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

G. Substitutions

- 1. ARCHITECT / ENGINEER will consider requests for substitutions only within 15 days after date established in Notice to Proceed.
- 2. Substitutions may be considered when a product becomes unavailable through no fault of the CONTRACTOR.
- 3. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

A request constitutes a representation that the BIDDER or CONTRACTOR:

- a. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - b. Will provide the same warranty for the substitution as for the specified product.
 - c. Will coordinate installation and make changes to other work which may be required for the work to be completed with no additional cost to OWNER.
 - d. Waives claims for additional costs or time extension which may subsequently become apparent.
 - e. Will reimburse OWNER and ARCHITECT / ENGINEER for review or redesign services associated with re-approval by authorities.
- 4. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the contract documents.

5. Substitution Submittal Procedure:
 - a. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - b. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - c. The ARCHITECT / ENGINEER will notify CONTRACTOR in writing of decision to accept or reject request.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION 01 60 00

SECTION 01 70 00 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures
- B. Final cleaning
- C. Adjusting
- D. Project record documents
- E. Operation and maintenance data
- F. Spare parts and maintenance products
- G. Maintenance service

1.2 CLOSEOUT PROCEDURES

- A. The CONTRACTOR shall:
 - 1. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for ENGINEER'S review.
 - 2. Provide submittals to ENGINEER that are required by governing or other authorities.
 - 3. Submit final Application for Payment identifying total adjusted contract sum, previous payments, and sum remaining due.

1.3 FINAL CLEANING

- A. The CONTRACTOR shall:
 - 1. Execute final cleaning prior to final project assessment.
 - a. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
 - b. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
 - c. Replace filters of operating equipment.
 - d. Clean debris from roofs, gutters, downspouts, and drainage systems.
 - e. Clean site, sweep paved areas, rake clean landscaped surfaces.
 - f. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.4 ADJUSTING

- A. The CONTRACTOR shall adjust operating products and equipment to ensure smooth and unhindered operation.

1.5 PROJECT RECORD DOCUMENTS

- A. The CONTRACTOR shall maintain on site one set of the following record documents and record actual revisions to the work:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other modifications to the Contract
 - 5. Reviewed Shop Drawings, Product Data, and Samples
 - 6. Manufacturer's instruction for assembly, installation, and adjusting
- B. The CONTRACTOR shall ensure entries are complete and accurate, enabling future reference by OWNER.
- C. The CONTRACTOR shall store record documents separate from documents used for construction.
- D. The CONTRACTOR shall record information concurrent with construction progress.
- E. Specifications: The CONTRACTOR shall legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 1. Product substitutions or alternates utilized.
 - 2. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: The CONTRACTOR shall legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original contract drawings.

1.6 OPERATION AND MAINTENANCE DATA

A. The CONTRACTOR shall:

1. Submit data bound in 8 ½ x 11-inch text pages, three D side ring binders with durable plastic or cloth covers.
2. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
3. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
4. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, typed on 20-pound white paper, in three parts as follows:
 - a. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, CONTRACTOR, SUBCONTRACTORS, and major equipment suppliers.
 - b. Part 2: Operation and maintenance instructions, arranged by system. For each category, identify names, addresses, and telephone numbers of SUBCONTRACTORS and suppliers. Identify the following:
 - 1) Significant design criteria
 - 2) List of equipment
 - 3) Parts list for each component
 - 4) Operating instructions
 - 5) Maintenance instructions for equipment and systems
 - 6) Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents
 - c. Part 3: Project documents and certificates, including the following:
 - 1) Shop drawings and product data
 - 2) Air and water balance reports
 - 3) Certificates
 - 4) Photocopies of warranties and bonds
5. Submit one (1) draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with ENGINEER'S comments. Revise content of all document sets as required prior to final submission.
6. Submit five sets of revised final volumes, prior to final payment.

1.7 SPARE PARTS AND MAINTENANCE PRODUCTS

A. The CONTRACTOR shall:

1. Provide spare parts, maintenance, and extra products in quantities specified in individual specification sections.
2. Deliver to project site and place in location as directed and obtain a receipt prior to final payment.

1.8 MAINTENANCE SERVICE

A. The CONTRACTOR shall:

1. Furnish service and maintenance of components indicated in specification sections during the warranty period.
2. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
3. Maintenance service shall not be assigned or transferred to any agent or SUBCONTRACTOR without prior written consent of the OWNER.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION 01 70 00

DIVISION 02 – EXISTING CONDITIONS

SECTION 02 10 00 – SITE REMEDIATION

PART 1 - GENERAL

1.1 SCOPE

Work under this heading shall include all items of demolition and clearing necessary to prepare the site for construction.

PART 2 - PRODUCTS

2.1 MATERIALS

All salvage materials from demolition or other clearing shall remain the property of the OWNER, unless specifically noted otherwise.

PART 3 - EXECUTION

- A. Protection of trees and improvements: CONTRACTOR shall exercise extreme care in the protection of all existing trees and other improvements on the site designated by the OWNER'S REPRESENTATIVE to remain.
- B. Topsoil shall be stripped from the area to be occupied by building, walks, drives, parking etc., and stockpiled in area designated by OWNER'S REPRESENTATIVE where it will not interfere with building or utility operations. Use topsoil for finish grading.
- C. Remove from site all brush, rubbish and miscellaneous debris resulting from demolition and clearing ahead of construction to meet all safety standards on the site. All wood, vegetation and non-vegetable matter to be removed from topsoil as it is being stockpiled and hauled off with other debris.
- D. Care must be taken to confine clearing operation to the building site with no encroachments on adjacent foliage or possible damage to adjacent areas.
- E. OWNER shall designate area to be cleared for parking, storage of materials and other workspace in addition to building site. This area shall not be cleared of trees and no soil to be stripped or disturbed. Fill and level holes and depressions, prior to final acceptance of project.

END OF SECTION 02 10 00

SECTION 02 42 00 - REMOVALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General Supplementary Conditions and Division 01 Specification Sections, apply to this section.

1.2 WORK INCLUDED

- A. The work required under this section consists of operations, methods, labor, and materials for partial interior, exterior, and/or site underground removals with all related items necessary to complete the Work indicated on the contract drawings.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 CONDITION OF SITE AND BUILDINGS

- A. The condition of site and buildings shall be accepted as found. The OWNER will not assume responsibility for conditions found or continuation of conditions existing at time of Proposal Invitation or thereafter. Any damage or loss, whether by reason of fire, theft, or other casualty or happening on the site, will not relieve the CONTRACTOR'S obligations to complete the work.

3.2 PROTECTION OF LIFE, STRUCTURES AND PROPERTY

- A. Execute work to insure against damages to remaining property. Do not interfere with property or portions of building without permission from authorized persons approved by the OWNER. Maintain free and safe passages in and around work areas. Do not seal off required exits without permission from authorities having jurisdiction.
- B. Provide, erect, and maintain lights, barriers, barricades as necessary to protect life, meeting all Federal, OSHA, State and local laws and regulations.

3.3 UTILITY SERVICES

- A. Remove all utility services as required and/or indicated on the drawings. Provide temporary utilities and services into areas requiring continued services before and after removal work.
- B. All electrical equipment and circuits shall be restored to original condition that are damaged or destroyed during removals and are not called out to be removed on the contract drawings.

3.4 REMOVALS

- A. Before starting demolition work, review all requirements for final remodeling work so that useable existing system components as required for completion of the new work is not destroyed. Coordinate all work with other CONTRACTORS.
- B. Remove any personal property, equipment, machinery, or other fixtures and turn them over to the OWNER as called for on the contract drawings.

3.5 DEBRIS

- A. Remove from the areas of removals, all debris as it accumulates. Do not store or permit debris to accumulate on the site. If the CONTRACTOR fails to remove excess debris promptly, the ENGINEER shall reserve the right to have debris removed by others at CONTRACTOR'S expense.
- B. Upon work completion, remove all tools, materials, equipment, apparatus, temporary toilets, and rubbish of every sort. Leave all existing building surfaces, not scheduled to be removed, swept clean condition at completion of work within any given area. Leave buildings and site clean, neat, and orderly.

3.6 REMOVAL OF PAVEMENT, SIDEWALKS, CURBS, ETC.

- A. Break concrete pavement, base course, and other similar materials designated for removal into pieces no heavier than 150 lbs. [68 kg]. Stockpile at locations shown on the plans.
- B. If the contract documents require the removal of asphalt concrete or Portland cement concrete pavement, saw the joint to the line and depth, as approved by the ENGINEER, to prevent under-break or shatter of adjacent areas.

3.7 REMOVAL AND DISPOSAL OF SALVAGED MATERIALS, STRUCTURES, AND OBSTRUCTIONS

- A. Unless otherwise required by the contract documents, all salvaged material shall become the property of the CONTRACTOR. Ownership of salvaged materials implies the responsibility to dispose of the salvaged material in accordance with all applicable local, state, and federal rules and regulations. CONTRACTOR is not allowed to bury or otherwise dispose of material within the project's boundaries or on any publicly owned property without the ENGINEER'S prior written approval.

END OF SECTION 02 42 00

SECTION 02 44 00 - ADJUSTMENT OF EXISTING STRUCTURES**PART 1 - GENERAL REQUIREMENTS****1.1 SCOPE**

This work shall consist of the necessary adjustments, alterations, relocating, or resetting to the required grade and alignment of existing structures, equipment or appurtenances which are not to be removed or abandoned and which are not the property of a private company, firm, or corporation required to move their own property, in accordance with these specifications and in reasonably close conformity with the lines, grades, elevations and dimensions shown on the drawings or established by the ENGINEER.

PART 2 - PRODUCTS**2.1 MATERIALS**

Materials for use in this work shall be as set out on the drawings, or if not specified, shall be of the same grade of material as specified elsewhere in these specifications for a similar type of work or of a material equivalent to that in the structure being adjusted.

PART 3 - EXECUTION**3.1 CONSTRUCTION METHODS****A. General**

1. The materials and workmanship necessary in raising, lowering, or otherwise adjusting or resetting existing structures shall conform to the requirements of the drawings and specifications for the class of work involved, or as directed by the ENGINEER. Whole bricks salvaged in good condition from structures may be used in rebuilding such structures provided the bricks are cleaned satisfactorily and approved by OWNER. Existing structures shall be rebuilt in accordance with the drawings and specifications. The final adjustment to grade shall be completed after the final surface course has been placed if the structure is in the pavement.
2. The CONTRACTOR shall guard against damage or breakage to any portion of the structure or appurtenance to be altered, removed, or reset. Any damage or breakage due to the CONTRACTOR'S negligence or failure to properly protect such structure or appurtenances, shall be repaired or replaced at the CONTRACTOR'S expense.

B. Manholes

1. Where the tops of the manholes are to be lowered to a new grade, the walls shall be removed and rebuilt to an elevation far enough below the new grade so that the maximum batter of the walls does not exceed 4 in. (10.1 cm) per foot (30.5 cm).
2. Where manholes are to be built up a distance of one foot (0.305 m) or less to a new grade, the walls may be carried up vertically and one new standard step shall

be set. Where the walls are to be built up a distance exceeding one foot (0.305 m), the existing walls shall first be removed to the bottom of the batter section of the walls, or to such elevation that the inside diameter of the manhole is not less than 3.5 ft. (1.1 m). The manhole shall then be rebuilt in conformity with the size and shape requirements for new manholes.

C. Catch Basins, Inlets, Manholes

1. Where inlets, catch basins, manholes or similar structures are to be revised to grade or rebuilt, the work shall be done in conformity with the requirements for new construction of this class of work as provided elsewhere in these specifications.

D. Valve Boxes, Meter Boxes, Lampholes

1. Care shall be taken in removing and resetting to grade, valve boxes, meter boxes, etc., to avoid breaking and any breakage shall be replaced by the CONTRACTOR at his expense.

E. Fire Hydrants, Valves, Water Meters, Water Line, etc.

1. Where adjustment or relocation of water lines and appurtenances is to be done by the OWNER, the CONTRACTOR shall be responsible for coordinating the arrangements with the OWNER for lowering or relocating of all water lines and the resetting of water valves, meters, manholes, and fire hydrants. When the alteration is part of the work to be performed by the CONTRACTOR as a part of his contract, such work shall be done in conformity with the requirements of the OWNER and in accordance with the requirements of these specifications for new work of this type.

F. Electric Traffic Signals or Right-of-Way Systems

1. Where the adjustment or relocation of electric traffic signals, highway lighting standard or conduits, cables, or appurtenances is to be done by the OWNER where the work is located, the CONTRACTOR shall make complete arrangements with the proper City or ODOT officials for the work to be done. When the alteration is part of the work to be performed by the CONTRACTOR as a part of his contract, such work shall be done in conformity with requirements of the OWNER, or as specified on the Drawings or in the Proposal and as directed by the ENGINEER.

G. Sewer Pipe

1. Sewer pipe removed to be re-laid shall be re-laid in conformity with the requirements of new sewers.

3.2 METHOD OF MEASUREMENT

Unless otherwise shown on bid form, the cost for various items, listed in Part 3.3, but not limited to, shall be included in other items of work.

3.3 BASIS OF PAYMENT

A. Accepted items, measured as provided above, will be paid for at the contract unit price for:

1. MANHOLES ADJUST TO GRADE	EA.
2. MANHOLES REBUILT	EA.
3. CATCH BASINS ADJUST TO GRADE	EA.
4. CATCH BASINS REBUILT	EA.
5. INLETS ADJUST TO GRADE	EA.
6. INLETS REBUILT	EA.
7. VALVE BOXES ADJUST TO GRADE	EA.
8. METER BOXES ADJUST TO GRADE	EA.
9. LAMPHOLES ADJUST TO GRADE	EA.
10. FIRE HYDRANT RESET	EA.
11. VALVES RESET	EA.
12. WATER METERS RESET	EA.
13. WATER LINE LOWERED	L.F.
14. WATER LINE REMOVED AND RELAID	L.F.
15. ELECTRIC TRAFFIC SIGNALS RESET	EA.
16. HIGHWAY LIGHTING STANDARDS RESET	EA.
17. ELECTRIC CABLE RELAID	L.F.
18. ELECTRIC CABLE CONDUIT RELAID	L.F.
19. PIPE SEWER REMOVED AND RELAID	L.F.
20. REMOVE AND RESET MANHOLE FRAME AND COVER	EA.

B. Valve boxes, meter boxes, etc., in conjunction with valves or meters to be reset will be considered as part of the valve or meter and will not be paid for as a separate item.

C. Valves in water lines or fire hydrant leads will not be considered as a separate pay item, but the cost of resetting same, and shall be included in the price bid for the water line or lead.

D. When the valve is under pavement, adjustment of valve box will be a separate pay item.

END OF SECTION 02 44 00

DIVISION 03 - CONCRETE

SECTION 03 10 00 - FORMWORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish, install all labor, materials, equipment, and services as required to complete all formwork for all cast-in-place concrete as shown on drawings, and/or specified herein.

1.2 SHOP DRAWINGS

- A. Per Division 01 General Conditions, submit Shop Drawings showing location, layout of construction joints, form joints, locations of tie holes or plugs, and procedure for pouring into formwork.

1.3 COORDINATION

- A. Secure all pipe sleeves, anchors, bolts, including those for angle frames, inserts, supports, ties, other materials in connection with concrete construction, in position before concrete is placed.
- B. Obtain information, instructions from other trades, suppliers in ample time to schedule, coordinate installation of items furnished by them to be embedded in concrete so provisions for their work can be made without delaying project.
- C. Make cutting and/or patching made necessary by failure or delay in complying with these requirements at no cost to OWNER.

1.4 GENERAL REQUIREMENTS

- A. Furnish formwork and formwork accessories according to ACI SPEC-301.
- B. Provide complete forms of such strength and construction as to prevent any spread, shifting, or settling when concrete is deposited, tight enough to avoid any leakage or washing out of cement mortar.
- C. Design forms, false-work supports so stresses indifferent members can be determined, including details. They shall have sufficient rigidity to resist deflection more than 1/8" between supports after concrete has been placed, to assure smooth, even appearance of surfaces.
- D. Plywood or lined forms will not be required for surfaces which are normally submerged or not ordinarily exposed to view. Other types of forms, such as steel or unlined wooden forms, may be used for surfaces which are not restricted to plywood and may be used as backing for form linings. Concrete forms are required above all extended footings.

- E. Where concrete is placed against a gravel or crushed rock which does not contain at least 25% material passing a No. 4 sieve, such surfaces shall be covered with polyethylene film 6 mil thick to protect the concrete from loss of water. Joints in the film shall be lapped at least 4".
- F. Use bolts, rods, other approved devices for internal ties, spreaders; of such construction that when forms are removed, no metal is within 1" of an exterior nor within 1/2" of an interior concrete surface.
- G. Take special care that forms are true to required lines, grades, surfaces so as to give uniform, neat, workmanlike finish to all concrete surfaces, and to make form supports of sufficient strength, well braced, on adequate foundations so there is no settling or distortion when weight of concrete is added.
- H. Remove all dirt, chips, sawdust, rubbish, water, etc., from forms by water hosing and air pressure before any concrete is deposited. Leave no wooden ties or blocking in concrete except where indicated for attachment of other work.
- I. ENGINEER will cooperate with CONTRACTOR in matter of removing forms and shoring as early as possible. Length of time forms must remain in place depends on rate of time required for concrete to obtain proper strength and on construction loads that will be placed on concrete. Forms shall not be removed until authorized by the ENGINEER.
- J. Forms shall not be removed or disturbed for at least seven (7) days from date of last pouring unless approved by the ENGINEER.
- K. On removal of forms, all bolts, wires for anchoring, etc., shall be either removed, cut off to lengths as directed, or left in place for anchorage of other work as specified.
- L. Forms to be reused shall be in good condition, thoroughly cleaned before being reused.
- M. Provide 3/4" chamfer at any wall, column and vertical corners unless otherwise shown.

1.5 CONSTRUCTION JOINTS

- A. Make and locate generally as indicated on drawings all construction joints so as not to impair strength of structure and only at locations approved by the ENGINEER. Form keys used in any cold joints shown or required.

PART 2 - MATERIALS

2.1 SLABS, WALLS AND EXPOSED CONCRETE:

- A. Forms for flat exposed surfaces shall be 5-ply Exterior B-B (Concrete Form) panels. Panels with raised or separate face veneers shall not be used for exposed concrete.

2.2 SURFACE TREATMENT

- A. Surface Treatment: Plywood panels shall have smooth surface treatment to prevent any development of bond or adhesion to concrete and to seal plywood surfaces against moisture. Master Finish RL Series as manufactured by Master Builder Solutions; Burke Form Sealer as manufactured by W. J. Burke Company, or approved equal, shall be used, applied in strict accordance with manufacturer's directions.

2.3 FORM TIES AND SPREADERS

- A. Form Ties and Spreaders: Shall be metal, cone nut type. No wood spreaders will be permitted.

2.4 ROUGH HARDWARE

- A. Rough Hardware: Nails, bolts, screws, anchors, etc., as shown or needed shall be furnished and set.

END OF SECTION 03 10 00

SECTION 03 20 00 - REINFORCEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Furnish all labor, materials, equipment, and services as required to complete all reinforcing steel work as shown on drawings, and/or specified herein.

1.2 SHOP DRAWINGS

- A. Per Division 01, General Conditions, submit Shop drawings showing bending and placing of all reinforcing. Drawings shall include diagrammatic elevations of all walls at a scale sufficiently large to clearly show the position, erection marks of marginal bars and their dowels and splices.

1.3 COORDINATION

- A. Coordinate with other trades so as not to interfere. Bring interferences between trades to ENGINEER'S attention; resolve before any concrete is poured.

1.4 STORAGE

- A. Store reinforcement to avoid rusting or coating with grease, oil, dirt, or other objectionable materials. Reinforcement coated with such materials will be rejected.

1.5 STANDARDS

- A. Comply with requirements set forth in the "Manual of Standard Practice for Detailing Reinforced Concrete Structures", published by the American Concrete Institute except where more exacting requirements are specified in Contract Documents.

PART 2 - MATERIALS

2.1 REINFORCEMENT

- A. Reinforcing bars shall be deformed bars conforming to ASTM A-615 Grade 60.
- B. Welded wire fabric shall conform to requirements of ASTM A-1064 using bright steel wire meeting ASTM A-1064. Gauges, dimensions shall be as noted on the drawings.
- C. All steel for reinforcement shall be new, non-rusted stock, free from mill scale, delivered without rust other than may have accumulated in prompt transportation to the work.
- D. Tie wire shall be No. 16 American Wire Gauge or heavier, black annealed.
- E. Supports for reinforcing bars in slabs shall be metal, of sufficient strength to adequately support bars, of a type approved by ENGINEER. Supports or spacers for

bars in walls shall be such that exterior face of wall will not be marred when forms are stripped, and final finish has been completed.

- F. Dowels from footings to walls shall be same size, spacing as wall reinforcement, unless otherwise shown. Dowels shall project 12 inches into wall, 12 inches into footing unless detailed or noted otherwise.

PART 3 - REINFORCING BARS TO BE FURNISHED TO OTHER TRADES

3.1 VERTICAL REINFORCING

- A. All vertical reinforcing bars required for vertically reinforcing masonry work shall be furnished by REINFORCING CONTRACTOR, properly cut, shaped as indicated on drawings. Masons shall install in place all reinforcements supplied them as required by Drawing details.

3.2 HORIZONTAL REINFORCING

- A. Horizontal mesh type masonry reinforcing shall be furnished.

PART 4 –REINFORCING STEEL

4.1 REQUIREMENTS FOR PLACEMENT OF REINFORCING STEEL

- A. Reinforcement shall be accurately placed, securely tied at intersections with 16-gauge black annealed wire; shall be maintained in proper position by chair, bars, supports, or approved devices.
- B. Bars shall lap 18 inches at splices, except as otherwise indicated. Splices in adjoining horizontal bars shall be staggered at least 6'. Where this is not feasible, submit suggestions for ENGINEER'S consideration. Horizontal bars shall be hooked around corners not less than 9 inches, with minimum of 12 inches as per typical details.

4.2 CONCRETE PROTECTION OF REINFORCING

- A. Shall be not less than the following:
 1. 3" where concrete is poured against ground.
 2. 2" where concrete is poured against forms but may be in contact with ground.
 3. 1-1/2" minimum in exterior face of exterior walls (exposed to weather but not in contact with ground).
 4. 3/4" minimum in interior walls and interior face of exterior walls.
 5. 1-1/2" in beams, girders, and columns.
 6. Clear distance between bars shall be not less than 1-1/2", 1-1/2 bar diameters, nor less than 1-1/3 times the maximum size of coarse aggregate. See details for any specific variations to these requirements. Where conduits, piping, inserts, sleeves, etc., interfere with placing of reinforcing steel as shown or called for,

CONTRACTOR must consult with ENGINEER, secure method of procedure from him before pouring any concrete. Bending or field cutting of bars around openings or sleeves will not be permitted.

END OF SECTION 03 20 00

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE**PART 1 - GENERAL****1.1 SCOPE**

- A. This section covers all cast-in-place concrete, including reinforcing steel, forms, finishing, curing and other appurtenant work.
- B. Transit mix concrete will be permitted if it meets the requirements of this section and is mixed and delivered in accordance with ASTM C94.

1.2 SUBMITTALS

- A. Submittals shall be made in accordance with all the requirements of the General Conditions and the Contract Documents.
- B. Submit for review a proposed design mix for each concrete strength and class required by these Specifications. Failure to include any items of information noted in this paragraph for a given concrete strength or type will be cause for requirement of a resubmittal. Information to be submitted for each strength and class shall include the following items:
 - 1. Concrete mix design
 - a. Constituent quantities per cubic yard.
 - b. Sources of all concrete mix components including coarse aggregate, fine aggregate, cement, water, admixtures, and pozzolans where included.
 - c. Cement type and manufacturer, include chemical analysis (mill test report) for each cement type to be used.
 - d. Pozzolan type and source; include chemical analysis for each pozzolan type to be used.
 - e. Water/cement ratio, by weight.
 - f. Air content
 - g. Mix design slump.
 - h. Average compressive strengths conforming to the requirements of ACI 318 at 28 days. Provide both average strengths and sample standard deviation. Provide results at 7 and 14 days if available.
 - i. Laboratory shrinkage test results for concrete mix designs, where specified.
 - 2. Aggregate:
 - a. Laboratory sieve analysis, conforming to ASTM C33.
 - b. Verification that aggregate is not "deleterious," or "potentially deleterious." Provide documentation or other certification that aggregate does not contain deleterious substances and has been used without issues on previous projects.

3. Admixtures. Submit Manufacturer's data brochures on all admixtures proposed for use and provide certification of compliance with specified ASTM standards for each admixture.
- C. Submit concrete placement drawings showing pour sequence, lift numbers, locations of all joints, concrete mix being placed, concrete finishes, and all pertinent embedments including embedded plates, sleeves, pipes, conduits, anchors, etc., where applicable. Where the Drawings permit the CONTRACTOR to select joint locations, show the selected dimensions on the placement drawings. Approval of the placement drawings shall not relieve the CONTRACTOR of the responsibility of placing all concrete and embedments as specified.
- D. If cold weather or hot weather concrete conditions are anticipated on the Project, submit a work plan for cold weather concreting and/or for hot weather concreting, describing proposed methods and procedures for mixing, delivering, placing, finishing, and curing concrete. Submit plans well in advance of cold or hot weather job conditions. Include procedures to be implemented upon abrupt changes in weather conditions or due to equipment failures. If a plan for either is not submitted and cold or hot weather concrete conditions are present, the CONTRACTOR will not be allowed to pour concrete until a plan is received and reviewed as long as cold or hot weather conditions are present on the Project.
- E. Furnish a delivery ticket for ready mixed concrete to the OWNER'S REPRESENTATIVE as each truck arrives. Each ticket shall provide a printed record of the weight of cement batched and each separate aggregate individually batched. Use the type of indicator that returns for zero punch or returns to zero after a batch is discharged. Clearly indicate the weight of fine and coarse aggregate, cement, and water in each batch, the quantity delivered, the time any water is added, and the numerical sequence of the delivery. Show the time of day batched and time of discharge from the truck. Indicate the number of revolutions of mix trucks.
- F. Submit Manufacturer's data sheets and product specifications for curing compounds and items specified in other Sections including form release agents, bonding agents, etc. Identify the locations where each will be used in the Work as a part of the submittal.
- G. Submitted data shall demonstrate compliance with all requirements of this Specification or deviations shall be clearly noted.

1.3 QUALITY ASSURANCE

A. Concrete Consistency

1. Test for slump shall be performed at the job site immediately prior to placing in accordance with ASTM C143. Slump tests shall be performed for every 35 CY separately for each construction item to indicate workability and consistency throughout the entire project.
2. If the slump is outside the allowed limits, the concrete shall be rejected. Concrete showing either poor cohesion or poor coating of the coarse

aggregate with paste shall be remixed or rejected.

3. If the slump is within the allowable limit, but excessive bleeding, poor workability, or poor finishability are observed, the concrete shall be rejected and changes in the concrete mix shall be made only by an adjustment of one or more of the following:
 - a. The gradation of aggregate.
 - b. The proportion of fine and coarse aggregate.
 - c. The percentage of entrained air, within the allowable limits.

B. Concrete Temperature

1. Concrete temperature shall be taken immediately before placement with the point of measurement being in the chute or bucket.
2. Perform temperature test for each batch and record result on batch ticket.
3. If fresh concrete temperature does not meet requirements in this section the concrete shall be rejected.

C. Concrete Air

1. Test for air content shall be made on a fresh concrete sample for every 35 CY separately for each construction item prior to placing in forms.
2. Air content for concrete made of ordinary aggregates having low absorption shall be made in accordance with either ASTM C231, or ASTM C173. If light weight aggregates or aggregates with high absorptions are used, use ASTM C173.
3. If air content of fresh concrete does not meet requirements specified in this Section, the concrete shall be rejected. Do not place concrete that does not meet the air entrainment requirements of this Section.

D. Compression Testing

1. Compression test specimens shall be made, cured and tested in accordance with ASTM C31 and ASTM C39.
2. Compressive strength tests shall be made on cylinders at 7 and 28 days. The value of each test result shall be the average compressive strength of a minimum of 2 cylinders taken at the same time from the same batch of concrete.
3. Compressive test specimens shall be 6" x 12" cylinders or 4" x 8" cylinders. Sets of concrete test cylinders shall be cast for each day's concrete pour as follows.
 - a. A "set" of test cylinders consists of a minimum of six cylinders, one to be broken and strengths recorded at seven days; and three broken and strengths averaged at 28 days. Two hold cylinders will remain unbroken so that they will be available to be broken upon unforeseen circumstances or upon the option of the Engineer to break cylinders at different times.

- b. A minimum of one “set” of cylinders will be made for each concrete pour up to 25 CY in volume. For pours larger than 25 CY, additional “sets” of cylinders will be made for each additional 50 CY of concrete poured.
- 4. Evaluation of compressive strength for compliance with design requirements will be conducted by the ENGINEER per ACI 318 – Section 26.12 based on the results of the 28-day test.
- 5. All test specimens shall be kept as near to the point of sampling as possible and yet receive the same protection from the elements as is given to the portions of the structure being built. Specimens shall be protected from injury. They shall be sent to a testing laboratory approved by the ENGINEER after a minimum of three days of field curing and while in the laboratory shall be kept in the ordinary air at the temperature of approximately 70°F until tested.

E. Failure to Meet Requirements

- 1. The OWNER may withhold payment for any section of concrete which does not meet the requirements of the plans and specifications. Withheld payment shall be based upon unit prices established for concrete, if available. Payment shall be withheld until the unacceptable concrete has been repaired or removed and replaced or otherwise brought into conformance with the plans and specifications.
- 2. Concrete Strength
 - a. If the 28-day strength test results fall below required values, additional curing may be performed and test cores may be obtained in accordance with ASTM C42 with approval of the ENGINEER. Additional curing, core removal and testing, if allowed by the ENGINEER, shall be at the CONTRACTOR'S expense.
 - b. If the strength results from test cores do not exhibit the required strength, the ENGINEER or OWNER'S REPRESENTATIVE reserve the right to require strengthening, replacement of substandard materials and/or additional testing at the CONTRACTOR'S expense. The choice of remedy is at the sole discretion of the ENGINEER or OWNER'S REPRESENTATIVE.
 - c. Other Concrete Properties
 - 1) If concrete properties besides strength do not meet required values, the ENGINEER may require concrete samples to be obtained in accordance with ASTM C42 and evaluated in accordance with ASTM C856 at the CONTRACTOR'S expense.
 - 2) If concrete properties besides strength do not meet required values, and the results of additional examination per ASTM C856 are deemed unsatisfactory at the sole discretion of the ENGINEER, the OWNER reserves the right to require strengthening, replacement of substandard materials and/or additional testing at the CONTRACTOR'S expense.

PART 2 - PRODUCTS**2.1 GENERAL**

Cement	ASTM C150, Type II or I/II
Coarse Aggregate	Crushed rock, washed gravel or other inert material conforming to ASTM C33
Fine Aggregate	Shall conform to ASTM C33
Crushed Water	Clean and free from deleterious substances
Reinforcing Steel	Per specification 03 20 00 "Reinforcement"
Welded Wire Fabric	Per specification 03 10 00 "Form Work"
Expansion Joints	Preformed, bituminous type ASTM D994
Joint Sealer	Per specification 03 31 00 "Construction Joint Sealing"

2.2 DESIGN CRITERIA

- A. Use ACI 211.1 as the basis for selecting the proportions of ingredients to produce concrete having proper durability, strength, workability appearance and other required properties. Proportion ingredients to produce a homogenous mixture, which will work readily into corners and angles of forms and around reinforcement by methods of placing and consolidation employed on the work, but without permitting materials to segregate or allowing excessive free water to collect on the surface.
- B. Strength:
 - 1. All concrete is required to have an average 28-day compressive strength equal to or greater than specified strength in section 2.2(F) unless otherwise specified.
- C. Entrained Air:
 - 1. Air-entrain all concrete, unless otherwise specified.
 - 2. Drilled shafts do not require air entrainment unless placed underwater.
 - 3. Provide for not less than three percent (3.0%) nor more than six percent (6.0%) by volume of total entrapped and entrained air for normal weight concrete.
 - 4. Do not air entrain finished floors that call for a troweled finish.
- D. Slump:
 - 1. Provide adequate slump to produce acceptable workability, do not exceed maximum specified slump.
- E. Admixtures:
 - 1. Proportion admixtures according to the Manufacturer's recommendations. All admixtures shall be batched at the batch plant only.

F. Concrete Classification

Class	Min. 28-Day Compressive Strength (psi)	Coarse Aggregate Size (in.)	Max. Water Cement Ratio	Max. Slump (in.)	Min. Cement Content (lb. per CY)
A	4000	1.5 (No. 467)	0.45	5	517
B	3000	1.5 (No. 467)	0.50	4	470
C	4000	1.0 (No. 57)	0.45	4	564
D	5000	0.75 (No. 67)	0.45	5	611
E	1500	1.5 (No. 467)	0.70	4	376
F	4000	0.375 (No. 8)	0.45	8	611

G. Concrete Usage

Class	Usage
A	All reinforced concrete unless otherwise specified
B	Concrete Encasement; Sidewalks, Curbs, Driveways
C	Drilled Shafts; Pumped Concrete; Thin Wall Sections
D	Precast Concrete and Panels
E	Lean Concrete Backfill; Foundation Seal; Blocking/Cradling
F	Underground Duct Banks

2.3 ADMIXTURES

A. Air-Entraining Admixture: ASTM C260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing intentionally added chlorides.

1. Water-Reducing Admixture: ASTM C494/C 494M, Type A. Products.
2. Retarding Admixture: ASTM C 494/C 494M, Type B. Products.
3. Water-Reducing and Retarding Admixture: ASTM C494 / C494M, Type D.
4. Accelerating Admixture: ASTM C494/C494M, Type C.
5. Water-reducing and Accelerating Admixture: ASTM C494/C494M, Type E.
6. High-Range, Water-Reducing Admixture: ASTM C494 / C494M, Type F.

7. High-Range, Water-Reducing and Retarding Admixture: ASTM C494 / C494M, Type G.
8. Plasticizing and Retarding Admixture: ASTM C1017 / C1017M, Type II.
9. Workability-Retaining Admixture: ASTM C494/C494M, Type S.
10. Other admixtures shall be as specified in Section 03 30 00.

2.4 FIBERS

A. Synthetic Microfibers

1. Shall be manufactured from a proprietary blend of polypropylene resins in compliance with ASTM D7508/D7508M for micro-chopped strands, for use in fiber-reinforced concrete meeting the requirements of ASTM C1116/C1116M, Type III.
2. Shall provide a minimum cracking reduction ratio (CRR) of 40 percent when tested in accordance with ASTM C1579.
3. Dosage shall be as recommended by the manufacturer.

B. Synthetic Macrofibers

1. Shall be manufactured from a proprietary blend of polypropylene resins in compliance with ASTM D7508/D7508M for macro-chopped strands or hybrids chopped strands for use in fiber-reinforced concrete meeting the requirements of ASTM C1116/C1116M, Type III.
2. Shall provide a minimum average residual strength (f_{150}^D) [minimum average equivalent flexural strength ($f_{e,3}$)] of [] psi when tested in accordance with ASTM C1609/C1609M, using the roller support system in ASTM C1812/C1812M.
3. Dosage shall be as recommended by the manufacturer.

2.5 VAPOR RETARDER

- A. Plastic sheet, ASTM E1745, Class A or B.
- B. Polyethylene sheet, ASTM D4397, not less than 10 mils (0.25 mm) thick; or plastic sheet, ASTM E1745, Class C.

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.

- C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B.
- F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

2.7 STORAGE OF MATERIALS

- C. Cement shall be stored in suitable moisture-proof enclosures. Cement which has become caked or lumpy shall not be used.
- D. Aggregates shall be stored so that segregation and the inclusion of foreign materials is prevented. The bottom 6" of aggregate piles in contact with the ground shall not be used.
- E. Reinforcing steel shall be carefully handled and shall be stored on supports which will keep the steel from contact with the ground.

2.8 FORMS

- A. All forms shall be in accordance with Specification 03 10 00 "Form Work".

2.9 EMBEDMENTS

- A. Anchor bolts, castings, steel shapes, conduit, sleeves, masonry anchorage and other materials that are to be embedded in the concrete shall be accurately positioned in the forms and securely anchored. Conduits shall be installed between the reinforcing steel in walls or slabs which have reinforcements in both faces. In slabs which have only a single layer of reinforcing steel, conduits shall be placed under the reinforcement.
- B. Unless installed pipe sleeves, anchor bolts shall have sufficient threads to permit a nut to be installed on the concrete side of the form or template. A second nut shall be installed on the other side of the form or template and the two nuts shall be adjusted so that the bolt will be held rigidly to proper position.
- C. Embedments shall be clean when installed. After concrete placement, surfaces not in contact with concrete shall be cleaned of concrete spatter and other foreign substances.

2.10 BATCHING AND MIXING

- A. Concrete shall be furnished by an acceptable ready-mixed concrete supplier and shall conform to ASTM C94 and furnish batch ticket information.
 - 1. When air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- B. The consistency of concrete shall be suitable for the placement conditions. Aggregates shall float uniformly throughout the mass and the concrete shall flow sluggishly when vibrated or spaded. The slump shall be kept uniform.

PART 3 - EXECUTION**3.1 GENERAL**

- A. The limits of each concrete pour shall be predetermined by the CONTRACTOR and shall be acceptable to the ENGINEER. All concrete within such limits shall be placed in one continuous operation.
- B. Before test sampling and placing concrete, water may be added at project site at the direction and approval of the ENGINEER.
- C. Before concrete is placed, forms, reinforcements, water stops, anchor bolts and embedments shall be rigidly secured in proper position; all dirt, mud, water, and debris shall be removed from the space to be occupied by concrete; all surfaces incrustated with dried concrete from previous placement operations shall be cleaned; and the entire installation shall be acceptable to the ENGINEER.
- D. Concrete shall be conveyed to the point of final deposit by methods which will prevent separation or loss of ingredients. Concrete shall be placed in final position without being moved laterally in the forms more than 6 feet. Lateral placement beyond 6 feet shall require the use of tremie pipe to meet the lateral limit.
- E. Concrete for piers shall be carefully deposited to avoid contact with forms, reinforcing and earth sides until completion of the drop. Necessary precautions shall be taken to prevent earth or other material from falling into excavations and to prevent dislocation of reinforcing during concrete placement. Concrete shall be placed continuously to the top of each pier at a rate of vertical rise of not less than 2' per hour. Forms above grade, if required, shall be cylindrical steel or fiber forms acceptable to the ENGINEER.
- F. During and immediately after placement, concrete shall be thoroughly compacted and worked around all reinforcements and embedments and into the corners of the forms. Mechanical vibrators shall be used which will maintain at least 9000 cycles per minute when immersed in the concrete. Each vibrator shall be driven by not smaller than a 1-1/2 hp motor. The number and type of vibrators shall be acceptable to the ENGINEER.

3.2 HOT WEATHER CONCRETING

- A. Except as modified herein, hot weather concreting shall comply with ACI 305. At air temperatures of 90° F or above, concrete shall be kept as cool as possible during placement and curing. The temperature of the concrete when placed in the work shall not exceed 90° F.
- B. Plastic shrinkage cracking, due to rapid evaporation of moisture, shall be prevented. Concrete shall not be placed when the evaporation rate (actual or anticipated) equals or exceeds 0.2 lbs. per sq. ft. per hour, as determined in ACI 305.

3.3 COLD WEATHER CONCRETING

- A. Except as modified herein, cold weather concreting shall comply with ACI 306. The temperature of concrete at the time of mixing shall be not less than that shown in the following table for corresponding outdoor temperature (in shade) existing at the time of placement.

<u>Outdoor Temperature</u>	<u>Concrete Temperature</u>
Below 10° F	70° F
Between 10° F and 45° F	60° F
Above 45° F	45° F

- B. When placed, heated concrete shall not be warmer than 80° F.
- C. When freezing temperatures may be expected during the curing period, the concrete shall be maintained at a temperature of at least 50° F for five days or 70° F for three days after placement. Concrete and adjacent form surfaces shall be kept continuously moist. Sudden cooling of concrete shall not be permitted.

3.4 FINISHING

- A. All exposed surfaces shall be given a steel float finish.
- B. No Finish: A finish is not required on surfaces which are not visible from the inside or outside of the structure or more than 12 inches below finished grade.
- C. Screened surfaces shall be given an initial float finish as soon as the concrete has stiffened sufficiently for proper working. Any piece of coarse aggregate which is disturbed by the float or which causes a surface irregularity shall be removed and replaced with mortar. Initial floating shall produce a surface of uniform texture and appearance with no unnecessary working of the surface.
- D. Initial floating shall be followed by a second floating at the time of initial set. The second floating shall produce a finish of uniform texture and color. Unless additional finishing is specifically required, the completed finish for unformed surfaces shall be the float finish produced by the second floating.
- E. Floating shall be performed with hand floats or suitable mechanical compactor floats.

F. Smooth Form Finish:

1. Unless otherwise specified, all surfaces not meeting the requirements for “no finish” shall receive a smooth form finish. Use a smooth form finish on all surfaces exposed to view and liquid.
2. Provide a smooth, hard uniform texture on the concrete surface. Use plywood or fiberboard linings or forms in as large sheets as practicable and with smooth, even edges and close joints.
3. Patch tie holes and defects.
4. Provide a smooth, uniform, rubbed surface texture. Rub fins and joint marks and other irregularities with carborundum stone immediately after forms are stripped to leave a smooth, unmarred finish surface. If rubbing of surface is delayed to the point where the concrete surface is dry and cannot be rubbed to produce a smooth, uniform surface Contractor shall provide a blast finish to achieve a smooth uniform surface at no additional cost to the Owner.

G. Related Unformed Surfaces: Tops of piers, walls, bent caps and similar unformed surfaces occurring adjacent to formed surfaces shall be struck smooth after concrete is placed. Float unformed surfaces to a texture reasonably consistent with that of the formed surfaces. Final treatment on formed surfaces shall continue uniformly across the unformed surfaces.

3.5 FINISHING SLABS AND SIMILAR FLAT SURFACES

- A. Comply with the recommendations in ACI 302.1R for screeding, re-straightening and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Finish slabs and similar flat surfaces monolithically and apply as indicated in the Plans and as follows:
 1. Rough Finish.
 - a. Tank floors and slabs that receive grout or additional concrete toppings.
 - b. Provide a rough surface by screeding only without further finish.
 2. Trowel Finish
 - a. Slab surfaces exposed to view, liquids or to be covered with a coating system, flooring coverings or membranes.
 - b. After apply float finish, apply trowel finish and consolidate by hand or power driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 3. Broom Finish
 - a. Sidewalks, walkways and platforms.
 - b. Immediately after float finishing, slightly roughen trafficked surface by

brooming with fiber-bristle broom perpendicular to main traffic route.

3.6 CONCRETE CURING

A. All concrete shall be cured in accordance with the specifications. The curing methods shall be wet curing, sheet materials or membrane curing compound. Unless the curing method is specified otherwise, select one of the appropriate curing methods below.

1. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI SPEC-306.1 for cold-weather protection and with ACI SPEC-301 for hot-weather protection during curing.
2. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb./sq. ft. / h (1 kg/sq. m / h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
3. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
4. Length of Curing Period
 - a. A "curing day" shall be any day on which the atmospheric temperature taken in the shade, or the air temperature adjacent to the concrete, remains above 50° F for at least 18 hours.
 - b. Continuously cure concrete for a period until 7 curing days have been reached. In cold weather, curing may be terminated after a period of 14 consecutive days.

B. Wet Curing

1. Immediately after the finishing operations are completed or forms are stripped, the concrete shall be covered with wet cotton mats or with a temporary covering of canvas or burlap, thoroughly saturated with water before placement. A temporary covering shall be used when factors dictate that cotton mats cannot be placed immediately after finishing operations without marring the finishing of the concrete surface.
2. When temporary coverings are used keep them in place only until the surface has sufficiently hardened so that a cotton mat can be substituted without marring or disturbing the concrete finish.
3. The coverings shall remain in contact with the concrete for the duration of the curing period.
4. The coverings shall be kept saturated with water for the entire curing period.
5. Water used for curing shall be potable and free from any injurious materials or deleterious substances.

C. Sheet Curing

1. Immediately after the finishing operations are completed or forms are stripped, install sheet curing materials in accordance with all Manufacturer's recommendations.
2. Sheet curing shall be in contact with the entire concrete surface so as to prevent drying for the duration of the curing period.
3. When pedestrian traffic is unavoidable, provide suitable walkways to protect the sheet material.

D. Membrane Curing

1. Membrane curing compound is not permitted on surfaces to be rubbed or on surfaces to receive additional concrete, grout, plaster or coatings.
 2. Immediately after the finishing operations are completed or forms are stripped, apply membrane curing compound solution under pressure with a spray nozzle so the entire exposed surface is completely covered with a uniform film. The rate of application shall insure complete coverage but shall not exceed 150 square feet per gallon of curing compound.
 3. After application and under normal conditions, the curing compound shall be dry to the touch within 1 hour and shall be dry thoroughly and completely within 4 hours. When thoroughly dry it shall provide a continuous flexible membrane free from cracks and pinholes and shall remain intact during the required curing period.
 4. If the membrane seal is broken during the curing period, immediately repair it with additional curing compound.
- E. After the curing period, the temperature of the exposed surface shall not be permitted to drop faster than 30 degrees F in 24 hours.

3.7 JOINTS

- A. Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Contraction Joints in Slabs-on-Grade: Form weakened-plane sawed contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness.
- C. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

3.8 CONCRETE SURFACE REPAIRS

- A. Repair defective areas immediately after the removal of forms in accordance with this Section 02 42 00 "Removals" and Section 03 10 00 "Form Work". Repair of defective areas shall be at no additional cost to the OWNER.
- B. If the concrete surface is bulged, uneven or exhibits defects which in the ENGINEER'S opinion cannot be satisfactorily repaired, remove and replace the entire concrete section as directed at no additional cost to the OWNER.
- C. Patch tie holes immediately after removal of forms. After cleaning and thoroughly dampening the tie hole, fill solid with non-shrink, non-metallic grout.

3.9 MISCELLANEOUS ON-SITE MIXED BATCH

- A. The concrete shall be mixed in the approximate proportion of 1:2-1/2:4-1/4 and shall contain not less than one and one quarter barrels of cement per cubic yard of finished concrete. With the approval of the ENGINEER, admixtures may be added in order to increase workability.
- B. The onsite mixed batch will be subject to all testing requirements listed in this specification. The concrete shall meet or exceed strength requirements as required in this specification unless otherwise noted in the plans.

3.10 RESPONSIBILITY OF CONTRACTOR FOR STRENGTH

- C. It is the intent of these specifications that the CONTRACTOR shall guarantee that concrete of the specified compressive strength is incorporated in the structures and that the responsibility for producing the required grades of concrete is assumed by the CONTRACTOR.
- D. Should the average strengths shown by test cylinders fall below the strengths required, the ENGINEER will require any or all of the following changes: amount of cement, grading of aggregate, or ratio of the water to the cement used. If the tests disclosed that the strength of the concrete is insufficient for the structure as built, the ENGINEER may condemn the part of any structure in which concrete of insufficient strength has been placed and the CONTRACTOR, at his cost, shall remove and replace such concrete meeting these specifications.

3.11 EXPERIMENTAL CONCRETE MIXES

- A. The CONTRACTOR shall make experimental mixes prior to the placing of the concrete and at any time during the progress of the work when necessary to demonstrate that the concrete will meet these specifications. Materials for making experimental mixes shall be furnished by the CONTRACTOR and these materials shall be identical with those intended for use in the work. The cost of the materials shall be borne by the CONTRACTOR and shall be included in the price bid for concrete.

3.12 PAYMENT

- A. No separate measurement and payment will be made for the work covered under this section unless specified in the Bid Schedule. All costs in connection with this work shall be included in the applicable contract unit price for which the work pertains. Concrete encasement for underground piped utilities shall be paid for separately. Refer to the Standard Drawings for computation of encasement quantities.

END OF SECTION 03 30 00

SECTION 03 31 00 - CONSTRUCTION JOINT SEALING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work under this section shall include furnishing all labor, materials, and equipment necessary to clean and seal existing construction joints in concrete structures.

1.2 DELIVERY, STORAGE, AND HANDLING

- A. All materials shall be delivered to the site in the manufacturer's original unopened containers, with all labels and other markings intact.
- B. All materials shall be stored off the ground and protected from vandalism, the environment, and possible contamination in accordance with the manufacturer's recommendations.
- C. Materials not meeting the above shall be unacceptable and removed from the site.

1.3 SUBMITTALS

- A. All proposed materials and methods shall be submitted in accordance with Division 01.

PART 2 - PRODUCTS

2.1 GENERAL

- A. The joints shall be sealed by a one-part gun grade polyurethane sealant preceded by a primer receptive to urethane sealants. Modified amine epoxy or polyurethane grout with backer rod.

2.2 ACCEPTABLE PRODUCTS

- A. Primer:
 - 1. "Vulkem® Sealant Primer 171" as manufactured by Tremco.'
 - 2. "MasterSeal P 173" as manufactured by Master Builders Solutions.
- B. Sealant:
 - 1. "Vulkem® 116 Polyurethane Sealant" as manufactured by Tremco.
 - 2. "MasterSeal NP 1" as manufactured by Master Builders Solutions.

PART 3 - EXECUTION**3.1 ROUTING**

- A. All construction joints shall be routed or sawed to provide the correct joint shape. That shape shall be 3/4" wide by 2" deep. The joint width shall be made with one pass of the saw or router.

3.2 CLEANING

- A. After routing, the joint shall be sandblast cleaned to remove all latent material and provide a good blast profile for sealant adhesion. After sandblasting, the joint shall be blown clean.
- B. After cleaning, install a bond breaker/backing rod in the bottom of the routed joint. The rod shall be installed by roller to ensure constant depth of the joint to be sealed. Backing rod materials are to be recommended by the sealant manufacturer; however, no low melting point or bituminous products are to be used.
- C. Apply one coat of the primer to the prepared joint, exercising care to avoid excessive coverage of the adjacent surface.
- D. After the primer has cured, in accordance with the manufacturer's recommendations, apply the joint sealer to within 1/4" of the top of the joint. The sealant shall then be tooled to provide a uniform concave finish.

3.3 GENERAL INSTALLATION NOTES

- A. All joints to be sealed shall be dry.
- B. Any leaking joints shall be pressure grouted as described elsewhere.
- C. Prior to sealing, all loose or spalled concrete adjacent to the joints shall be removed and replaced as described elsewhere.
- D. No joints are to be sealed which contain new concrete which has not cured for a minimum of 28 days.

END OF SECTION 03 31 00

DIVISION 31 – EARTHWORK**SECTION 31 00 00 – GENERAL EARTHWORK****PART 1 - GENERAL****1.1 DESCRIPTION**

This section covers the requirements and procedures for excavation and backfill for structures.

1.2 STANDARD SPECIFICATIONS

- A. The following is a list of standard specifications with the accompanying abbreviations used in this specification section:
 - 1. American Association of State Highway and Transportation Officials Standard Specifications - AASHTO.

1.3 QUALITY ASSURANCE

- A. Compaction shall be in accordance with Section 31 23 33 - Trenching, Backfilling and Compaction.
- B. The OWNER shall be the sole and final judge of suitability of all materials.
- C. Materials in question, pending test results, shall not be used in the work. The CONTRACTOR shall remove all materials that fail to meet the requirements of the specifications, whether in stockpiles or in place.
- D. Fills, embankments, backfills or subgrades which do not meet the specification requirements shall be removed or recompacted until the requirements are satisfied.

1.4 PROTECTION

- A. Protection of Existing Improvements
 - 1. Protection shall be provided to prevent damage to existing improvements indicated to remain in place on the OWNER'S property and adjoining properties.
 - 2. Damaged improvements shall be restored to their original condition, as acceptable to parties having jurisdiction.
 - 3. Land areas outside the limits of permanent work performed under this contract shall be preserved in their present condition. The CONTRACTOR shall confine his construction activities to areas defined for work on the Drawings.
- B. Protection of Existing Utilities
 - 1. The CONTRACTOR shall verify all existing utility locations either shown or not shown on the drawings.

2. The CONTRACTOR shall immediately notify the OWNER and applicable utility company of any damages to existing utilities.
 3. Repairs to damaged utilities shall be made in accordance with the requirements of the OWNER and applicable utility company at no extra cost to the OWNER.
 4. The CONTRACTOR shall coordinate with the OWNER and the applicable utility company for shutoff of or connection to active utilities. Existing utility services shall not be interrupted except as authorized in writing by the OWNER.
- C. Protection of Work Site: Barricades or other type protectors shall be provided to prevent unauthorized personnel from entering work sites.

1.5 JOB CONDITIONS

A. Classification of Excavation

1. No classification shall be made to differentiate the various surface and subsurface conditions the CONTRACTOR may encounter during his performance under this contract.
2. It is the CONTRACTOR'S sole responsibility to verify the site surface and subsurface conditions.

B. Dewatering

1. Excavation and embankment shall be performed in such manner that the area of the site and the area immediately surrounding the site will be continually and effectively drained by gravity or temporary pumps.
2. Water shall not be permitted to accumulate in excavations or other areas of the site.
3. The excavation shall be drained by methods which prevent the softening of subgrades and embankments.

C. Blasting shall not be allowed.

1. Shoring, including sheet piling, shall be furnished and installed as necessary to protect workmen, banks, adjacent paving, structures, and utilities.
2. Shoring, bracing, and sheeting shall be removed as excavations are backfilled, in a manner to prevent caving.

PART 2 - PRODUCTS

2.1 SUITABLE MATERIALS

- A. Suitable materials for fill and, backfill include materials that are free of debris, roots, organic or frozen materials, stones having a maximum dimension of four (4) inches in the upper six (6) inches of fill or six (6) inches in the remainder of fill.

- B. Otherwise, suitable material which is unsuitable due to excess moisture content will not be classified as unsuitable material unless it cannot be dried by manipulation, aeration or blending with other materials to the satisfaction of the OWNER.
- C. Unsuitable materials shall include those materials that are determined by the OWNER to be inadequate for providing a stable slope, fill, subgrade, or foundation for structure.
- D. Expansive clay soils shall be classified as unsuitable unless treated or mixed in a manner approved by the OWNER.

2.2 CAPILLARY WATER BARRIER

A. Coarse Aggregate (Gravel) Capillary Water Barrier.

- 1. Coarse aggregate shall meet the requirements of AASHTO M80.
- 2. Coarse aggregate shall consist of gravel, crushed gravel, or crushed stone.
- 3. Gradation of coarse aggregate shall conform to the requirements of AASHTO M 43, Size Number 57:

Sieve	Mass-Percent Passing
1 ½ inches	(38 mm) 100
1 inch	95 – 100
½ inch (13 mm)	25 – 60
No. 4	0 – 10
No. 8	0 - 5

- 4. Maximum allowable percent of deleterious substances shall meet the requirements of AASHTO M 80, Class B.

B. Fine Aggregate (Sand) Capillary Water Barrier:

- 1. Fine aggregate shall meet the requirements of AASHTO M6.
- 2. In general, fine aggregate shall consist of natural sand having hard, strong, durable particles free from deleterious substances and meeting the following gradation requirements:

Sieve	Mass-Percent Passing
3/8 inch (9.5 mm)	100
No. 4	95 – 100
No. 16	45 – 80
No. 50	10 - 30
No. 100	2 - 10

2.3 FINE AGGREGATE (SAND) BACKFILL

- A. Fine aggregate backfill shall meet the requirements of Paragraph 2.2.B.

2.4 SELECTION OF BORROW MATERIAL

- A. Borrow material, if required, shall be selected to meet requirements and conditions of the particular fill for which it is to be used.
- B. For borrow material obtained outside the limits of the project site, the CONTRACTOR shall obtain the right to procure material and shall pay all royalties and other charges involved.

PART 3 - EXECUTION

3.1 EXCAVATION

- A. Excavation, regardless of material encountered, shall conform to the dimensions and elevations indicated on the Drawings for each building and structure, and shall include trenching for utility and foundation drainage systems to a point five (5) feet beyond the building line of each building and structure.
- B. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms, installation of services, and for inspection, except where the concrete for walls and footings is authorized by the OWNER to be deposited directly against excavated surfaces.
- C. Suitable excavated material shall be transported to and placed to fill areas within the limits of the work.
- D. Unsuitable materials encountered within the limits of the work shall be excavated below grade and replaced with suitable materials as directed by the OWNER, except that concrete footings shall be increased in thickness to the bottom of the over-depth excavations and over-break in rock excavation.
- E. No excavated material shall be wasted without the authorization of the OWNER.
 - 1. Surplus excavated material and unsuitable material shall be disposed of by the CONTRACTOR at his own expense and responsibility.
 - 2. Material authorized to be wasted shall be disposed of in such manner as not to obstruct the flow characteristics of any stream or to impair the efficiency or appearance of any structure.
- F. No excavated material shall be deposited in a manner that may endanger a partly finished structure by direct pressure or by overloading banks contiguous to the operations or that may otherwise be detrimental to the completed work.
- G. Blasting shall not be allowed.

3.2 PREPARATION OF GROUND SURFACE FOR FILL

- A. Areas upon which fills are to be placed shall be cleared and grubbed before the fill is started.

- B. Sloped ground surfaces steeper than one (1) vertical to four (4) horizontal on which fill is to be placed shall be plowed, stepped, or benched, or broken up as directed by the OWNER, in such a manner that the fill material will bond with the existing surface.
- C. When surfaces on which fills are to be placed do not meet the specified density requirements, the ground surface shall be broken up, pulverized, and compacted to the specified density.
- D. When surfaces on which fills are to be placed do not meet the specified moisture content requirements, the ground shall be wetted, aerated, or dried to the specified density.
- E. When the subgrade is part fill and part excavation, the excavated portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill.

3.3 FILL AND BACKFILL

- A. Fills and backfills shall conform to the dimensions and elevations indicated on the Drawings for each building and structure.
- B. Placing Fill and Backfill
 - 1. Suitable material shall be placed in successive horizontal uniformly spread layers of loose material not more than six (6) inches thick, except that in areas not accessible or permitted for the use of self-propelled rollers or vibrators, the loose layer shall be four (4) inches thick.
 - 2. Fills and backfills shall not be placed in wet or frozen areas.
- C. Backfill
 - 1. Backfill shall not begin until construction below finish grade has been completed, underground utility systems have been inspected and tested, form removed, and the excavation cleaned of trash and debris.
 - 2. Fine aggregate backfill shall be placed to the dimensions and elevations indicated on the Drawings.
 - 3. Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation or retaining walls than a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted by power-driven hand tampers suitable for the material being compacted.
 - 4. Backfill shall be placed carefully around pipes to avoid damage to coatings.
 - 5. Backfill shall not be placed against foundation walls prior to 7 days after placement of the walls.
 - 6. As far as practical, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall.

7. Where fill or backfill is to be placed and compacted against structure walls, the walls shall be supported laterally as necessary to prevent damaging or displacing the walls. Any wall so damaged as a result of the CONTRACTOR'S operation shall be completely and promptly replaced.

3.4 COMPACTION

- A. For fill and backfill compaction densities and moisture contents, see Section 31 23 33.
- B. Compaction shall be accomplished by those methods listed in Section 31 23 33. Material shall be aerated or moistened to maintain the required moisture content.
- C. Fine aggregate backfill shall be compacted with a minimum of two (2) passes of a power-driven hand tamper.

3.5 CAPILLARY WATER BARRIER

- A. Either coarse aggregate (gravel) or fine aggregate (sand) capillary water barriers shall be installed under slabs-on-grade as indicated on the Drawings.
- B. The capillary water barrier shall be placed directly on the subgrade after the subgrade has been compacted to the required density and placed to the elevation indicated on the Drawings.
- C. The barrier shall be constructed to the thickness shown in layers not exceeding six (6) inches in compacted thickness.
- D. Each layer shall be compacted to the required density, with a minimum of two passes of a plate-type vibratory compactor.

3.6 FINISH GRADING

- A. Excavated and filled sections, and adjacent transition areas, shall be uniformly smoothly graded. The finished surface shall be reasonably smooth, compacted, and free from irregular surface changes.
- B. The degree of finish shall be that ordinarily obtainable from blade-grader operations, except as otherwise specified.
- C. The surface of fills or excavated areas for slabs-on-grade shall not vary more than 0.05 foot from the established grade.
- D. Other finished surfaces shall not vary more than 0.15 foot from the established grade and cross section and shall be free of depressed areas where water would pond.

END OF SECTION 31 00 00

SECTION 31 22 00 – SITE GRADING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work covered under this item includes all supervision, labor, equipment, and materials required for rough and final site grading. Included in this item are any stripping, filling, excavating, backfilling and compaction required to complete the grading as shown on the plans or as specified herein.

1.2 DUST AND BLOWING MATERIAL CONTROL

- A. The CONTRACTOR shall use all means necessary to control dust on and near the site and on and near all off-site borrow areas if such dust is caused by the CONTRACTOR'S operations during performance of the work or if resulting from the condition in which the CONTRACTOR leaves the site.
- B. All surfaces shall be thoroughly moistened as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of other work on the site.
- C. Any landfilled material which is uncovered during any construction operation will immediately be covered with a minimum of 12 inches of soil and compacted to 90% Standard Proctor Density. The CONTRACTOR will be responsible for ensuring that existing landfilled material is not allowed to be blown or carried off the site and will clean up any material uncovered by his operations which is blown from the site.
- D. Protection of Existing Utilities
 - 1. The CONTRACTOR shall verify all existing utility locations either shown or not shown on the Drawings.
 - 2. The CONTRACTOR shall immediately notify the OWNER and applicable utility company of any damages to existing utilities.
 - 3. Repairs to damaged utilities shall be made in accordance with the requirements of the OWNER and applicable utility company at no extra cost to the OWNER.
 - 4. The CONTRACTOR shall coordinate with the OWNER and the applicable utility company for shutoff of or connection to active utilities. Existing utility services shall not be interrupted except as authorized in writing by the OWNER.
- E. Protection of Work Site: Barricades or other type protectors shall be provided to prevent unauthorized personnel from entering work sites.

PART 2 - PRODUCTS

2.1 FILL MATERIAL, GENERAL

- A. All fill material shall be subject to the approval of the ENGINEER.

2.2 ON-SITE FILL MATERIAL

- A. All on-site fill material used shall be soil or soil-rock mixture which is free from organic matter and other deleterious substance. It shall contain no rocks or lumps over 6 inches in greatest dimension, and not more than 15 percent of the rocks or lumps shall be larger than 2-1/2 inches in greatest dimension.

2.3 IMPORTED FILL MATERIAL (BORROW)

- A. All imported fill material shall meet the requirements stated in Section 31 00 00 and, in addition, shall be predominantly granular with a maximum particle size of 2 inches and a plasticity index of 12 or less.
- B. Any fill material, including topsoil, must be approved by the ENGINEER prior to placement. The CONTRACTOR shall notify the ENGINEER at least four working days in advance of intention to import material, designating the location of proposed borrow material. The CONTRACTOR shall be responsible for obtaining any permits or permission required for ENGINEER to sample, as necessary, from the borrow area for the purpose of making acceptance tests to prove the quality of proposed borrow material.

2.4 OTHER MATERIALS

- A. All other materials, not specifically described but required for a complete and proper installation, shall be as selected by the CONTRACTOR subject to the approval of the ENGINEER.

PART 3 – EXECUTION**3.1 FINISH ELEVATIONS AND LINES**

- A. Grade stakes will be set by the CONTRACTOR and approved by OWNER'S REPRESENTATIVE establishing rough and finish elevations and lines. The CONTRACTOR shall take care to preserve all survey control data and monuments set by the ENGINEER and, if displaced or lost, immediately replace to the approval of the ENGINEER and at no additional cost to the OWNER.

3.2 GRADING**A. General Requirements**

- 1. The CONTRACTOR will perform all rough and finish grading required to obtain the elevations shown in the Drawings.

B. Grading Tolerances

- 1. All rough and finished grading shall be performed with approved equipment to a tolerance of plus or minus 0.1 ft.

C. Compaction

1. Existing cover material will be compacted prior to the placement of any additional fill material. Two passes, at right angles to each other, will be made on existing cover with a sheep's foot roller, to obtain this compaction.
2. New fill material and material disturbed by grading will be compacted to a minimum of 90% Standard Proctor Density using approved compaction equipment.

D. Treatment after Completion of Grading

1. After grading is completed and the ENGINEER has finished his inspection, no further excavating, filling, or grading except with the approval of an inspection of the ENGINEER will be allowed.
2. The CONTRACTOR shall use all means necessary to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

END OF SECTION 31 22 00

SECTION 31 23 33 - TRENCHING, BACKFILLING & COMPACTION**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. The work under this item shall include all earth, shale, gravel, loose rock, solid rock, debris, junk and/or other material excavated or otherwise removed in the preparation of the trench, all work in connection with the excavation, removal and subsequent handling and disposal of such material regardless of its type, character, composition or condition; subgrade preparation, all sheeting, piling, shoring, bracing; and dewatering of trenches; protection of adjacent property; backfilling; sand cushion; grade base stabilization; all specified backfill consolidation; and other work necessary or required. The CONTRACTOR shall fully inform himself of the conditions to be encountered and shall include all payment for same in his bid prices stated in the proposal. No payment will be made for extra work caused by unusual conditions not anticipated by the CONTRACTOR.

PART 2 - PRODUCTS**2.1 STANDARD BEDDING MATERIAL**

- A. Standard Bedding Material (SBM) shall meet the requirements of ASTM D-2321 for the class of materials described in this subsection.
1. Class I shall be an angular, 1/4 in. to 1-1/2 in. graded crushed stone.
 2. Class II shall include coarse sands and gravels with maximum particle size of 1-1/2 inch. These materials may have small percentages of fines but shall be generally granular and non-cohesive, either wet or dry. Class II materials shall include Unified Soil Classification System (USCS) Soil Types GW, GP, SW and SP.
 3. Class III shall include fine sands, sand-clay mixtures and gravel-clay mixtures. USCS Soil Types GM, GC, SM and SC are included in this class.

2.2 BACKFILL

- A. Initial Backfill material used shall be as described below and/or as shown on the standard details.
1. Paved area: SBM material in accordance with section 2.1 of this specification.
 2. Non-Paved area:
 - a. For flexible pipe, SBM material used shall be in accordance with section 2.1 of this specifications at depths greater than 10-feet. Select Fill shall be used from depth 0-10 feet.
 - b. For rigid pipe, Select Fill shall be used.
 - i. Select Fill consists of excavated materials free of rocks larger than 2-1/2 inches, organic material, rubbish, debris, and all other objectionable material.

- B. Final Backfill material used shall be as described below and/or as shown on the standard details.
 - 1. Paved area: SBM material in accordance with section 2.1 of this specification.
 - 2. Non-Paved area: Excavated material shall be used.

PART 3 - EXECUTION

3.1 TRENCH EXCAVATION

- A. The trench shall be excavated so that the pipe can be laid to the alignment and grades shown on the drawings, or as directed by the OWNER'S REPRESENTATIVE. It shall be excavated a maximum of 150 feet in advance of pipe laying, or less, as permitted by the OWNER'S REPRESENTATIVE. Opening of trenches in excess of the maximum requires specific approval of the ENGINEER.
- B. Trenches shall be dry when the trench bottom is prepared. The trench bottom shall be shaped so that even bearing is obtained for the barrel of the pipe, with the bells unsupported. Any required dewatering shall be incidental to the trenching.
- C. From 12-inches above the pipe and below, the standard trench width as shown on the standard drawings shall not be exceeded. If, for any reason this portion of the trench exceeds the permitted width and if the OWNER'S REPRESENTATIVE shall determine that cradling or encasement then is required, said concrete cradle or encasement shall be installed.
- D. Any part of the bottom of the trench excavated more than 4 inches below the specified grade shall be considered incidental and shall be corrected with approved material as directed by the OWNER'S REPRESENTATIVE. In the event suitable material is not available, standard bedding material shall be used. When rock is encountered and concrete cradle is required, it shall be excavated 4 inches below the bottom of the pipe and the trench refilled to grade with standard bedding material.
- E. When quicksand or other unstable earth is encountered, the CONTRACTOR shall excavate to sufficient depth to permit backfilling with crushed stone to provide a stable base for the pipe and shall be considered incidental.

3.2 STANDARD BEDDING MATERIAL

- A. Standard Bedding Material (SBM) shall be used for embedding all pipe as shown on the Standard Details. SBM shall be carefully placed, compacted and tested along the entire length of the pipe to be installed to the limits of trench excavation until the thickness specified in the Standard Details is obtained. This layer of bedding material shall be smoothed by flat bottomed shovel or other appropriate means prior to the placement of pipe.
 - 1. Gravity Pipelines: SBM shall be placed simultaneously on each side of pipe and shall be carefully compacted in accordance with the SPECIFICATIONS for the type of pipe to be installed.

- a. Class I SBM requires little or no compaction due to the nature of the angular particles.
 - b. Class II SBM shall be compacted to a minimum 85% Standard Proctor Density using hand or mechanical tamping methods. Slightly damp material will generally result in maximum compaction with minimum effort. Avoid saturation of Class II SBM.
 - c. Class III SBM shall be compacted to a minimum 90% Standard Proctor Density using hand or mechanical methods. Take care to avoid excessive moisture in using Class III SBM.
2. Pressure Pipelines (except Rural Water): SBM shall be placed simultaneously on each side of pipe and compacted by hand sufficiently to maintain proper grade and alignment.

3.3 BACKFILL

- A. When the type of backfill material to be placed above the standard bedding material is not indicated on the drawings or specified, the backfill may be made with the excavated material, provided that such material, in the opinion of the OWNER'S REPRESENTATIVE, is suitable for backfilling. In the event the excavated material is not suitable, standard bedding material or other approved material shall be used.
- B. The trench shall be backfilled 12" above the pipe by hand or by other methods approved by the OWNER'S REPRESENTATIVE. Special care shall be used in placing this portion of the backfill to avoid damaging or moving the pipe. The remainder of the trench may be backfilled by mechanical methods. Backfilling operation shall be completed within 100 feet or less of the finished line at all times as directed by the OWNER'S REPRESENTATIVE.
- C. ALL clearing requiring proposed underground sewer line trench backfill materials and its placement must meet referenced ASTM D 2321, in accordance with OAC 252:656-5-3(b).

3.4 COMPACTION

- A. All trenching and backfill shall be tested every on every 8-inch lift, every 400 lineal feet for sanitary sewer, every 800 lineal feet for waterlines and all other applications. The trenching and backfill shall meet the specification listed in section 3.2 of this specification or otherwise the required standards below:
 - 1. Paved area: 95% Standard Proctor Density (SPD)
 - 2. Non-Paved area: 90% SPD if cover is less than 10-feet and 95% SPD if cover is greater than 10-feet
- B. If the backfilling has been completed and the backfill material does not meet the requirements for compaction, all the material shall be removed and hauled from the job site and the trenches refilled with material as specified above. Boring will be required at all paved street crossings unless otherwise specified or approved by the ENGINEER.

END OF SECTION 31 23 33

SECTION 31 25 00 - EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary and permanent erosion control systems.
2. Slope protection systems.

1.2 REFERENCES

A. United States Environmental Protection Agency (EPA):

1. NPDES - National Pollutant Discharge Elimination System.

B. Oklahoma Department of Environmental Quality (ODEQ):

1. DEQ General Storm Water Permit (OKR10 and OKR05)

C. Oklahoma Department of Transportation (ODOT):

1. ODOT - State of Oklahoma Department of Transportation Standard Specifications for Highway Construction, Section 735 - Material for Roadside Development and Erosion Control.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the following ODOT standards:

1. Section 220 – Management of Erosion Sedimentation, and Storm Water Pollution Prevention and Control
2. Section 221 - Temporary Sediment
3. Section 230 - Sodding and Sprigging.

B. Regulatory Requirements: Conform to requirements of local Authority Having Jurisdiction for prevention of erosion and sediment control.

1. Conform to NPDES and ODEQ requirements, where required.

1.4 PROJECT CONDITIONS

A. Environmental Requirements: Protect adjacent properties and water resources from erosion and sediment damage throughout work. Take all necessary measures to prevent sedimentation from construction operations to enter adjacent property. Offsite discharge of sedimentation is not permitted.

B. Storm Water Pollution Prevention Plan: Maintain plan at project site at all times available for inspection during contract duration.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Quick Growing Grasses: Wheat, rye, or oats.
- B. Straw Bales: Free of weed seed.
- C. Fencing for Siltation Control: UV resistant geotextile fabric.
- D. Slab Sod: Rectangular slabs of Bermuda grass.
- E. Temporary Mulches: Loose straw, netting, wood cellulose, or agricultural silage free of seed.
- F. Bale Stakes:
 - 1. Minimum 3 feet length.
 - 2. 2 No. 4 steel reinforcing bars or,
 - 3. 2 steel pickets or,
 - 4. 2 - 2x2 inch hardwood stakes driven 18 inches to 24 inches into ground.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive work.
- B. Report in writing to ENGINEER prevailing conditions that will adversely affect satisfactory execution of the work of this section. Do not proceed with work until unsatisfactory conditions have been corrected.
- C. By beginning work, CONTRACTOR accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the OWNER.

3.2 EROSION CONTROL AND SLOPE PROTECTION

- A. Provide erosion control and slope protection measures to prevent sediment from site entering adjacent property or public right-of-way to include but not be limited to:
 - 1. Temporary silt fences.
 - 2. Straw bales placed around culvert openings or inlets.
 - 3. Diked area with earth berm and silt trap for draining dredged material.
- B. Install erosion control and slope protection in accordance with ODOT standards.
- C. Place all erosion and siltation control measures before start of earthwork and grading construction operations.

- D. Mulch and seed all storm and sanitary sewer trenches not in streets no later than 10 days after backfill. Do not permit more than 500 feet of trench to be open at any one time.
- E. Place all excavated material on uphill side of trenches where possible. Do not place materials in stream beds. Seed any stockpiled material which remains in place longer than 30 days with temporary vegetation and mulch.
- F. Mulch and seed all temporary earth berms, diversions, erosion barriers and temporary stockpiles with temporary vegetative cover with 10 days after grading.
- G. Do not stockpile or otherwise place dredged, excavated or other material, at any time, in or near stream bed which may increase turbidity of water. If turbidity producing materials are present, hold surface drainage from cuts and fills within construction area and from borrow and waste disposal areas in suitable sedimentation ponds or grade surface drainage to control erosion within acceptable limits. Provide and maintain temporary erosion and sediment control measures such as berms, dikes, drains, or sedimentation basins, if required, until permanent damage and erosion control facilities are completed and operative. Hold to minimum area of bare soil exposed at any one time by construction operations.
- H. Drain dredged material minimum 7 days. Store material for drainage to a maximum height of 4 feet.
- I. OWNER'S REPRESENTATIVE may direct CONTRACTOR to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and may direct CONTRACTOR to provide immediate permanent or temporary erosion control measures.
- J. Maintain temporary erosion control systems as directed by OWNER'S Representative to control siltation during construction. Provide maintenance or additional work directed by OWNER'S REPRESENTATIVE immediately upon notification by OWNER'S REPRESENTATIVE.

END OF SECTION 31 25 00

SECTION 32 12 16.39 – PLANT MIX BITUMINOUS BASES AND SURFACES**PART 1 – MATERIALS****1.1 MATERIAL APPROVAL**

- A. ENGINEER must approve aggregate sources and blend percentages on a project basis before use.
- B. Stockpile the aggregate in accordance with Section 1.2. The ENGINEER may accept aggregates in stockpiles and plant mixed materials after blending and mixing at the plant. Obtain asphalt from an approved source in accordance with Subsection 4.1B.

1.2 STORAGE AND HANDLING OF MATERIAL**A. General**

- 1. Store and handle materials to preserve their quality and fitness for the work. Transport bulk materials in vehicles constructed to prevent loss or segregation after loading and measuring. Store materials to facilitate prompt inspection. Materials will be subject to inspection and retesting before incorporation in the work in accordance with Subsection 1.3, "Samples, Tests, and Cited Specifications."
- 2. At the CONTRACTOR'S request, the ENGINEER may allow the use of approved portions of the right- of-way for storing materials and the CONTRACTOR'S plant and equipment. As part of the request for use of the site, provide the ENGINEER with written documentation of the location of the proposed site, access and egress points, a proposed erosion control plan, a proposed traffic control plan, and any other information required by the ENGINEER relevant to use of the site for materials and equipment storage and plant set up. Provide additional storage space as necessary at no additional cost to the OWNER.
- 3. For controlled access facilities, the CONTRACTOR must obtain approval from the ENGINEER, subject to the approval of FHWA, prior to altering, severing or removing any right-of-way fences. Do not use private property for storage without prior written permission of the OWNER or lessee. If requested, provide copies of such written permission to the ENGINEER.
- 4. When allowed use of approved portions of the right-of-way for establishing asphalt or concrete plants, such plants must be established for the sole purpose of providing material for the respective project. Material production for other projects will not be allowed.
- 5. Restore storage and plant sites on the right-of-way to their original condition at no additional cost to the OWNER.

1.3 SAMPLES, TESTS, AND CITED SPECIFICATIONS

- A. The ENGINEER will inspect, test, and approve material before its incorporation in the work. Unless otherwise specified, tests will be performed using the most recent cited standard methods or specifications, AASHTO, ASTM, or other referenced authority.

For differing test procedures, the ENGINEER will use the following order of precedence:

1. AASHTO, and
 2. ASTM.
- B. For acceptance testing, samples will be taken and tested by certified technicians.
- C. The ENGINEER may inspect, test, or reject material before or during its incorporation into the work. The ENGINEER will address unacceptable material in accordance with Section 01 45 00, "Quality Control." The ENGINEER may retest material and reject material that does not meet the requirements of the contract documents, even if the material was previously tested and conditionally approved at the source of supply. The ENGINEER will provide copies of test results to the CONTRACTOR upon request.

1.4 MINERAL AGGREGATE

- A. Provide mineral aggregate composed of coarse aggregate, fine aggregate, and mineral filler in accordance with these specifications. If crushing natural gravel for mixes, the ENGINEER may require a washing operation to separate fines from the gravel. Different materials are not allowed to be blended in the same storage or feeder. Provide aggregates in accordance with Table 1 below.

Table 1 Physical Properties of Aggregates								
Test	Aggregates to be used in:							
	Superpave, Rich Intermediate Layer ⁱ			Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Surface Course	Open Graded Bituminous Base
	PG 64	PG 70	PG 76	PG76	PG76	PG64	PG76	PG64
L.A. Abrasion ^a , % wear	≤ 40	≤ 40	≤ 40	≤ 30	≤ 30	≤ 40	≤ 30	≤ 40
Micro-Deval ^a , % wear	—	—	≤2 5	≤25	≤25	—	≤ 25	—
Sand equivalent ^b	≥ 40	≥ 45	≥ 50	—	—	≥ 40	—	—
Mechani cally Fracture d Faces ^{b, c, h} , %	≥ 85/ 80	≥ 95/ 90	≥ 98/ 95	≥ 98/95	≥ 98/95	≥ 85/80	≥ 98/95	≥ 85/80
Aggregate Durability Index ^a	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40
Insoluble Residue ^d , ^e , %	≥ 30	≥ 40	≥ 40	≥ 40	≥ 40	—	≥ 40	—
Flat and Elongated ^{b, c, f} , %	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
Natural Sand and Gravel ^b , %	≤ 15	≤ 15	≤ 15	0	0	≤ 15	0	0
Clay Balls and Friable Particles ^g , %	≤ 1.0	≤ 1.0	≤ 1.0	0	0	≤ 1.0	0	0

Table 1 Continued Physical Properties of Aggregates								
Test	Aggregates to be used in:							
	Superpave, Rich Intermediate Layer ⁱ			Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Surface Course	Open Graded Bituminous Base
	PG 64	PG 70	PG 76	PG76	PG76	PG64	PG76	PG64
Soft Particles ^a , %	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Sticks or Roots ^a , %	≤ 0.5	≤ 0.5	≤ 0.5	0	0	≤ 0.5	0	0
Note: For this table: PG64, PG70, and PG76 refer to the high temperature grade of the binder. Unless otherwise noted, specifications for PG binder grades higher than PG76 will use PG76 specifications. ^a Applies to each source. ^b Applies to the combined aggregate. Assume 10% natural sand in coarse RAP and 20% in fine RAP for mix design purposes. ^c Applies to the aggregate retained on the No. 4 [4.75 mm] sieve. ^d Applies to the combined coarse aggregate. ^e Applies to the coarse aggregate in the surface course. Does not apply to shoulders, driveways, and temporary detours. ^f A flat and elongated piece has a length greater than five times the thickness. ^g Applies to combined aggregate. If the maximum for the combined aggregate is not exceeded, the ENGINEER will allow 1.5% for one source. ^h In the mechanically fractured faces requirement format “xx/yy,” “xx” is the minimum percentage of coarse aggregate requiring one fractured face, and “yy” is the percentage requiring two fractured faces. ⁱ Only applies to PG 76E-28.								

- B. Ensure a crusher run or similarly graded aggregate is not the only source of crushed coarse aggregate in asphalt concrete.

1.5 COARSE AGGREGATE

- A. Coarse aggregate is defined as that part of the aggregate retained on the No. 8 [2.36 mm] sieve. Provide coarse aggregate consisting of clean, tough and durable particles that are free of soft and disintegrated pieces, shale, clay, organic, or other deleterious material.
- B. Natural gravel is not allowed as a source of insoluble material unless it is crushed so that at least 75 percent of the material retained on the No. 4 (4.75 mm) sieve has at least two mechanically fractured faces.

1.6 FINE AGGREGATE

- A. Fine aggregate is defined as that part of the aggregate that passes the No. 8 (2.36 mm) sieve and consists of hard, durable natural sand grains, crushed stone, stone dust, crushed gravel, mine chat, jig sand or any combination of these. Produce crushed materials from a source that meets the requirements for coarse aggregate in Table 1.

1.7 MINERAL FILLER

- A. If required by the contract documents, provide mineral filler in accordance with AASHTO M 17.

PART 2 – ASPHALT MATERIALS**2.1 ASPHALT REQUIREMENTS**

- A. Provide asphalt cement in accordance with AASHTO M 320 and Table 2.

Table 2			
Additional Requirements to AASHTO M 320 for Asphalt Cement			
Test	PG 64-22 OK	PG 70-28 OK	PG 76-28 OK
Elastic recovery at 77°F (25°C), %	-----	≥65	≥75
Separation ^a , %	-----	≤10	≤10
Original DSR G*/sin(δ), kPa	≤2.50	≤2.50	≤2.50
RTFO DSR G*/sin(δ), kPa	≤5.50	≤5.50	≤5.50
PAV DSR change in testing temperature, °F (°C)	-----	77 [25]	77 [25]
Spot test ^b	Negative	-----	-----
Flash point, °F (°C)	≥500 [260]	≥500 [260]	≥500 [260]
Solubility in trichloroethylene, %	≥99	≥99	≥99
Note: Asphalt binder suppliers will provide handling requirements and recommended field mixing and compaction temperatures for their product to the hot-mix producer. ^a Separation test samples are prepared in accordance with ASTM D 5976 but are reported as the difference in G* between the top and bottom samples. ^b Spot test using solvent blend of 65 percent heptane and 35 percent xylene by volume.			

- B. Provide medium-curing cutback asphalt in accordance with AASHTO M 82 for the asphalt type and grade required by the contract documents. The spot test is required

using a solvent blend of 65 percent heptane and 35 percent xylene by volume. Residue may also be obtained by evaporation.

- C. Provide emulsified asphalt in accordance with AASHTO M 140 for the asphalt type and grade required by the contract documents with the following exception:
1. The minimum Saybolt Furol Viscosity for RS-2 at 122°F (50°C) is 150.
 2. Residue may also be obtained by evaporation.
- D. Provide cationic emulsified asphalt in accordance with AASHTO M 208 for the asphalt type and grade required by the contract documents with the following exception:
1. The minimum Saybolt Furol Viscosity for CRS-2 at 122°F (50°C) is 150.
 2. Perform the demulsibility test within 30 days of shipment. If the particle charge test is inconclusive, the ENGINEER will approve material with a maximum pH of 6.7. Residue may also be obtained by evaporation.
 3. Provide polymer modified cationic emulsified asphalt in accordance with Table 3 for the asphalt type and grade required by the contract documents.

Table 3 Requirements for Polymer Modified Cationic Emulsified Asphalt			
Test	Rapid-Setting	Rapid-Setting	Slow-Setting
	PMCRS-1s	PMCRS-2s ^a	PMCSS-1h
Viscosity, Saybolt Furol, 122°F [50°C], s	25 – 125	125 – 400	—
Storage stability test 24 hr, %	≤1	—	≤1
Settlement test ^b , 5 day, %	—	≤5%	—
Particle charge test	—	positive	positive
Sieve test, %	≤0.05	≤0.10	≤0.10
Demulsibility, %	≥60	≥60	—
Distillation ^e			
Oil distillate, by volume of emulsion, %	≤2	≤2	≤0.5
Residue, %	≥63	≥65	≥62
Tests on residue from distillation test ^{c,d, e}			
Penetration, 77°F, [25°C], 100 g, 5 s	90 – 150	100 – 200	40 – 90
Ductility, 77°F, [25°C], 5cm/min, cm	—	—	≥70
Ductility, 40°F, [4°C], 5 cm/min, cm	—	≥30	—
Softening point, ring, and ball, °F[°C]	—	≥112 [44]	≥135 [57]
Elastic recovery, 50°F [10°C], %	≥60	≥58	—

Table 3, Continued Requirements for Polymer Modified Cationic Emulsified Asphalt			
Test	Rapid-Setting	Rapid-Setting	Slow-Setting
	PMCRS-1s	PMCRS-2s ^a	PMCSS-1h
Tensile stress at 800% elongation, 40°F [4°C], 50 cm/min, kPa	—	≥196	—
Solubility in trichloroethylene ^f , %	≥97.5	—	≥97
Ash content, %	—	≤1.0	—
^a Provide a Type B certification for each polymer modified asphalt lot. Type B defined as manufacturer prepared certification showing the limits of test values as determined by manufacturer's laboratory, a qualified commercial laboratory, or another approved laboratory. ^b After the test cylinder stands undisturbed for 5 days, ensure that there is no milky colored substance and there is a homogenous brown color throughout the cylinder. ^c Modify the distillation procedure as follows: Maintain a temperature from 345°F [174°C] to 355°F [180°C] on the lower thermometer for the last 20 min of the test. Maintain a test duration from 50 min to 70 min from the first application of heat. ^d Ensure the distillation residue of the modified emulsion contains at least 3 percent polymer solids by asphalt mass as determined by an analytical method approved by the ENGINEER. ^e Residue may also be obtained by evaporation. ^f An organic solvent may be used.			

Table 4 Requirements for NT Tack Material			
Test	Emulsion		
	CBC-1H	NTSS-1HM	NTQS-1HH
Saybolt Furol Viscosity, SFS @ 77°F [25°C]	10 – 100	15 – 100	15 – 100
Storage stability test, 24 hours, %	≤ 1	≤ 1	≤ 1
Particle Charge	Positive	–	–
Sieve test, %	≤ 0.1	≤ 0.3	≤ 0.3
Tests on residue from distillation ^a			
Residue, %	≥ 50	≥ 50	≥ 50
Penetration, 77°F [25°C], 100 g, 5 s	40 - 90	≤ 20	≤ 15
Softening point, ring, and ball, °F [°C]	–	≥ 149 [65]	≥ 149 [65]
Flash point, °F [°C]	–	–	–
Original DSR $G^*/\sin(\delta)$ @ 180°F [82°C], kPa	–	≥ 1.00	≥ 1.00
Solubility in trichloroethylene, %	≥ 97.5	≥ 97.5	≥ 97.5
^a Modify the distillation procedure as follows: Maintain a temperature from 345°F [174°C] to 355°F [180°C] on the lower thermometer for the last 20 minutes of the test. Residue may also be obtained by evaporation.			

Table 5 Requirements for 1 NT Tack Material	
Test	Asphalt Cement
	NTHAP
Rotational viscosity ^a @ 300°F [149°C], PaAs	≤ 3
Penetration, 77°F [25°C], 100 g, 5 s	≤ 25
Softening point, ring, and ball, °F [°C]	≥ 158 [70]
Flash point, °F [°C]	≥ 500 [260]
Original DSR $G^*/\sin(\delta)$ @ 180°F [82°C], kPa	≥ 1.00
Solubility in trichloroethylene, %	–
^a Limit may be waived if no application problems are present in the field and material can be pumped.	

E. Handling

1. Handle, load, haul, and transfer bituminous materials in accordance with the following:
 - a. Each transport shall be equipped with a sampling device with a gate valve or petcock located in the discharge line in such a way as to allow a sample to be drawn during the unloading of transport. The device shall be maintained in an operating condition at all times.
 - b. Each hauler shall maintain a "log" or record with each transport showing the type, grade, source, destination and date of the last previous delivery made using the hauling tank as identified therein.
 - c. Each transport to be equipped with an observation hatch so located as to be suitable for inspection and direct measurement of the depth of the material at the lowest point in the tank. (An approximate six inch diameter opening with cover located at the top and near the discharge end of the transport is considered suitable.)
 - d. Before loading, the producer's representative shall inspect the transport to assure that it is empty and check the hauler's "log" to assure that no contamination will result from the previous load.
 - e. When bituminous materials are received for storage at the mixing plant or project site, separate tanks shall be provided for each type and grade material. Storage tanks shall be cleaned before being used for a different material except that cleaning is not required when the material to be stored is compatible with the material last contained in the tank and the tank has been completely emptied.
2. The ENGINEER will reject further shipments if materials fail to produce the results required by the contract documents. The ENGINEER will not accept further work until satisfied that the material has been corrected so that it produces the results required by the contract documents.

F. Application Temperature

1. Heat asphalt materials in accordance with Table 6 below unless otherwise required by the contract documents.

Table 6 Temperature Ranges for Use of Asphalt Materials			
Type or Grade	Mixture, °F [°C]	For Mixing, °F [°C]	For Spraying, °F [°C]
NTHAP	—	350 – 400 [177 -204]	350 – 400 [177 -204]
All PGs	≤350 [177]	275 – 350 [135 – 177]	285 – 350 [141 – 177]
MC-30	—	50 – 120 [10 – 49]	50 – 120 [10 – 49]
MC-70	—	80 – 150 [27 – 66]	80 – 150 [27 – 66]
MC-250	≤200 [93]	100 – 200 [38 – 93]	100 – 200 [38 – 93]
MC-800	≤210 [99]	160 – 210 [71 – 99]	185 – 260 [85 – 127]
MC-3000	≤250 [121]	200 – 250 [93 – 121]	225 – 275 [107 – 135]
All emulsions	—	70 – 185 [21 – 85]	70 – 185 [21 – 85]

PART 3 – COMPOSITION OF MIXTURES

3.1 ASPHALT MIX DESIGN AND INITIAL JOB MIX FORMULA

- A. Prepare superpave mix designs in general accordance with AASHTO R 35 except where modified by these specifications. Prepare PFC mix designs in general accordance with AASHTO PP 77 except where modified by these specifications. Prepare SMA mix designs in general accordance with AASHTO R 46 except where modified by these specifications. The mix design and initial job-mix formula (JMF) are the responsibility of the CONTRACTOR. Submit the mix design and initial JMF to the ENGINEER for review.
- B. The ENGINEER will determine if the mix design meets the design criteria. Provide one mix design for each asphalt concrete mixture required by the contract documents.
- C. Ensure that the initial JMF is in accordance with Tables 8, 10, and 11, or Tables 9, 10, and 11 for the type of mix required by the contract documents. Prepare a trial mixture in accordance with Section 32 12 16.13 Plant Mix Asphalt Paving, Subsection 1.4C. Propose changes to the JMF if the trial, prepared at the initial JMF proportions, fails to meet the requirements of Tables 8, 12, 13, and 14, or Tables 9, 12, 13, and 14. If the changes do not produce a mix design in accordance with these tables, the ENGINEER will require a new mix design. If the changes do produce a mix design in accordance with these tables, the ENGINEER will approve the changes for adjustment of the JMF.
- D. Ensure the JMF establishes a percentage of aggregate passing each required sieve, a percentage of asphalt contained in the mixture, and a mixture temperature at the point of discharge from the plant.
- E. The JMF with the allowable tolerances shown in Table 15, establish the specification limits for each mixture. These limits may be outside the range in Table 8 or Table 9 except for the following conditions:

1. The absolute maximum sieve size,
2. PFC and Open Graded Friction Surface Course, where the JMF with allowable tolerances must be within the broad range in accordance with Table 9.
3. When no tolerances are shown in Table 15, the broad ranges given in Table 9 are the specification limits.

3.2 PLANT PRODUCED MIXTURES

- A. Provide a uniform, plant produced mixture of the combined aggregate and asphalt in accordance with Tables 8, 12, and 13, or Tables 9, 12, and 13 within the specification limits established by the JMF with allowable tolerances.
- B. After the plant is in operation, propose any necessary adjustments to the JMF in accordance with Table 8 or Table 9. If test results indicate the adjustments are in accordance with Tables 12 and 13, adjust the JMF accordingly.
- C. Provide a new mix design to the ENGINEER if the source of materials changes before the use of the new materials. If unsatisfactory results or other conditions make it necessary, the ENGINEER will require a new mix design.
- D. The ENGINEER defines the asphalt JMF as the target value. Attempt to incorporate that asphalt amount regardless of the allowable tolerances.

3.3 RECLAIMED ASPHALT PAVEMENT

- A. Superpave mixtures containing reclaimed asphalt pavement (RAP) will be accepted in accordance with Table 7 if the mixture is not used in the surface layer and meets the contract document requirements for the type or grade.

Table 7	
Reclaimed Asphalt Pavements	
Superpave with Binder Type	Maximum RAP, %
PG 58-28	25
PG 64-22 OK	25
PG 70-28 OK	15
PG 76-28 OK	15
PG 76E-28	0

- B. Regardless of the layer or binder type, the ENGINEER will accept superpave mixtures with no more than 25 percent RAP for shoulders, driveways, and layers serving as a bond breaker under PCC pavements if the mixture meets the contract document requirements for the type or grade. Superpave mixtures containing up to 35 percent RAP will be accepted in temporary detours if the mixture meets the contract document requirements for the type or grade, and if the mixture can be produced meeting air quality standards set forth by the Oklahoma Department of Environmental Quality. Temporary is defined as any material that will not become part of any permanent pavement. Temporary material must be removed before the end of the project.

- C. Process RAP by fractionating it into at least two stockpiles: a coarse stockpile and a fine stockpile. Crush, screen, or size the coarse stockpile so that 100 percent passes through a 1.5 in (37.5 mm) sieve. Crush, screen, or size the fine stockpile so that 100 percent passes through a $\frac{5}{8}$ in (16.5 mm), $\frac{1}{2}$ in (12.5 mm), or $\frac{3}{8}$ in (9.5 mm) sieve. If RAP comes from an unknown source and documentation is unavailable, the ENGINEER will consider the insoluble residue content to be zero. The ENGINEER will reduce the amount of natural sand and gravel allowed in the combined aggregate by the amount of natural sand and gravel contained in the RAP. Do not use RAP in Stone Matrix Asphalt (SMA), Permeable Friction Course (PFC), Rich Bottom Layer (RBL), Open-Graded Friction Surface Course (OGFSC), or Open-Graded Bituminous Base (OGBB) mixes.

Table 8					
Mixtures for Superpave					
Sieve Size ^a	Percent Passing per Superpave Mixture Type				
	S2	S3	S4	S5 / RIL	S6
1½ in [37.5 mm]	100	—	—	—	—
1 in [25.0 mm]	90 – 100	100	—	—	—
¾ in [19.0 mm]	≤ 90	90 – 100	100	—	—
½ in [12.5 mm]	—	≤ 90	90 – 100	100	—
⅜ in [9.5 mm]	—	—	≤ 90	90 – 100	100
No. 4 [4.75 mm]	≥ 40	—	—	≤ 90	80 – 100
No. 8 [2.36 mm]	29 – 45	31 – 49	34 – 58	37 – 67	54 – 90
No. 16 [1.18 mm]	—	—	—	—	—
No. 30 [0.600 mm]	—	—	—	—	—
No. 50 [0.300 mm]	—	—	—	—	—
No. 100 [0.150 mm]	—	—	—	—	—
No. 200 [0.075 mm]	1.0 – 7.0 ^b	2.0 – 8.0 ^b	2.0 – 10.0 ^b	2.0 – 10.0 ^b	5.0 – 15.0
Other Mixture Requirements					
NMS ^c	1 in [25 mm]	$\frac{3}{4}$ in [19 mm]	$\frac{1}{2}$ in [12.5 mm]	$\frac{3}{8}$ in [9.5 mm]	No. 4 [4.75 mm]
Asphalt Cement ^d , % of mix mass	≥ 3.9	≥ 4.3	≥ 4.8	≥ 5.3 / ≥ 5.5	≥ 5.8
Performance grade asphalt cement	e	e	e	e	e
^a Table 8 reflects the sieve size boundaries for design and JMF purposes. After the design is established, the JMF will designate combined aggregate sieve requirements with tolerances in Table 14.					

- ^b Ensure the ratio of the percent passing the No. 200 (75 µm) sieve to the percent effective asphalt cement is from 0.6 to 1.6.
- ^c Nominal Maximum Size (NMS) is defined as one size larger than the first sieve to retain more than 10 percent.
- ^d The ENGINEER may adjust the lower limit if the effective specific gravity of the combined aggregates is greater than 2.65. The ENGINEER may allow adjustments if a theoretical lab molded specimen at the JMF asphalt content meets the VMA requirement at 4% air voids.
- ^e The CONTRACTOR may substitute a higher grade of asphalt than that shown on the Plans at no additional cost to the OWNER.

Table 9 Asphalt Mixture, Non-Superpave					
Sieve Size ^a	Percent Passing per Asphalt Concrete Mixture Type				
	SMA	PFC ^b	RBL	OGFSC ^{b, c}	OGBB
1 ½ in [37.5 mm]	—	—	—	—	100
1 in [25.0 mm]	—	—	—	—	95 – 100
¾ in [19.0 mm]	100	100	100	—	—
½ in [12.5 mm]	90 – 100	80 – 100	90 – 100	100	25 – 60
⅜ in [9.5 mm]	65 – 80	35 – 60	72 – 90	90 – 100	—
No. 4 [4.75 mm]	22 – 30	1 – 20	53 – 70	25 – 45	≤10
No. 8 [2.36 mm]	16 – 24	1 – 10	34 – 58	≤10	≤5
No. 16 [1.18 mm]	—	—	—	—	—
No. 30 [0.600 mm]	—	—	—	—	—
No. 50 [0.300 mm]	—	—	—	—	—
No. 100 [0.150 mm]	—	—	—	—	—
No. 200 [0.075 mm]	9.0 – 12.0	1.0 – 4.0	2.0 – 10.0	≤5.0	≤3.0
Other Mixture Requirements					
NMS ^d	½ in [12.5 mm]	½ in [12.5 mm]	½ in [12.5 mm]	¾ in [9.5 mm]	1 in [25 mm]
Cellulose Fiber, % of mix mass	0.3 – 0.4	0.2 – 0.5	—	—	—
Asphalt Cement ^e , % of mix mass	≥6.0	6.0 – 7.0	≥5.2	≥5.1 ^f	2.5 ^g

Table 9, Continued Asphalt Mixture, Non-Superpave					
Performance grade asphalt cement	PG 76-28 OK	PG 76-28 OK	h	h	h
^a Table 9 reflects the sieve size boundaries for design and JMF purposes. After the design is established, the JMF will designate the combined aggregate sieve requirements with tolerances set in Table 15. ^b Use an approved anti-stripping agent at the rate of 5 gal/1,000 gal [5 L/1,000L] of asphalt cement. ^c Retain at least 55 percent of the aggregate between the $\frac{3}{8}$ in [9.5 mm] and the No. 4 [4.75 mm]. ^d Nominal Maximum Size (NMS) is defined as one size larger than the first sieve to retain more than 10 percent. ^e The ENGINEER may allow the lower limit to be adjusted if the effective specific gravity of the combined aggregates is greater than 2.65. The ENGINEER may allow adjustments if a theoretical lab molded specimen at the JMF asphalt content meets the VMA requirement at 4 percent air voids. ^f Calculate the JMF for percent AC in the open graded friction course with the following equation: $\% \text{ AC} = (16.5) / (\text{Effective Specific Gravity (Gse)} + 0.165).$ ^g The ENGINEER may allow the amount of asphalt binder to be adjusted if the effective specific gravity of the combined aggregate is greater than 2.833 or less than 2.495. ^h The CONTRACTOR may substitute a higher grade of asphalt than that shown on the Plans, at no additional cost to the OWNER.					

Table 10 Mix Design Properties of Laboratory Molded Specimens							
Property	Superpave			RIL	SMA	PFC	RBL
	PG64	PG70	PG76	PG76E-28	PG76	PG76	PG64
	Number of SGC Gyration						
Nini	6	7	8	—	—	—	—
Ndes	50	65	80	50	50	50	50
	Required Density, % of Gmm						
Nini	85.5 – 91.5	85.5 – 90.5	85.5 – 89.0	—	—	—	—

Table 10, Continued Mix Design Properties of Laboratory Molded Specimens							
Ndes	96	96	96	97	96	≤ 82.0	98
VMA, %	See Table 3.3:5						
VFA, %	See Table 3.3:5						
Lab Permeability, $\text{cm/s} \times 10^{-5}$	≤ 12.5	≤ 12.5	≤ 12.5	≤ 12.5	≤ 12.5	—	≤ 12.5
TSR, Min.	0.8	0.8	0.8	0.8	0.8	—	0.8
ITS ^a , psi	—	—	≥ 75	—	—	—	—
Draindown, %	—	—	—	—	≤ 0.20	≤ 0.20	—
Hamburg Rut Test, Min. No. of Cycles to 12.50 mm, 122 °F	10,000	15,000	20,000	20,000	20,000	—	5,000
Note: For this table: PG64, PG70, and PG76 refer to the high temperature grade of the binder. Unless otherwise noted, specifications for PG binder grades higher than PG76 will use PG76 specifications. ^a Indirect Tensile Strength from AASHTO T 283, preconditioned specimen average, in psi.							

Table 11 Mix Design Properties of laboratory Molded Specimens									
Property	Superpave					RIL	SMA	PFC	RBL
	S2	S3	S4	S5	S6				
VMA ^a , %	≥ 12.5	≥ 13.5	≥ 14.5	≥ 15.5	≥ 16.5	≥ 15.5	≥ 17.0	—	≥ 14.0
VFA ^b , %	67 - 73	70 - 75	72 - 77	73 - 78	75 - 79	73 - 79	—	—	—
^a VMA is based on the bulk specific gravity of the aggregates. ^b VFA is defined as the percentage of VMA containing asphalt binder.									

Table 12 Field Properties of Laboratory Molded Specimens							
Property	Superpave			RIL	SMA	PFC	RBL
	PG64	PG70	PG76	PG76E-28	PG76	PG76	PG64
Number of SGC Gyration							
Nini	6	7	8	—	—	—	—
Ndes	50	65	80	50	50	50	50
Required Density, % of Gmm							
Nini	85.5 – 91.5	85.5 – 90.5	85.5 – 89.0	—	—	—	—

Table 12, Continued Field Properties of Laboratory Molded Specimens							
Ndes	94.5 - 97.4	94.5 - 97.4	94.5 - 97.4	95.5 - 98.4	94.5 - 97.4	≤ 82.0	96.5 - 99.4
VMA, %	See Table 13						
VFA, %	See Table 13						
Lab Permeability, cm/s × 10 ⁻⁵	—	—	—	—	—	—	—
TSR, Min.	0.75	0.75	0.75	0.75	0.75	—	0.75
ITS ^a , psi	—	—	—	—	—	—	—
Draindown, %	—	—	—	—	—	—	—
Hamburg Rut Test, Min. No. of Cycles to 12.50 mm, 122 °F	—	—	—	—	—	—	—
Note: For this table: PG64, PG70, and PG76 refer to the high temperature grade of the binder. Unless otherwise noted, specifications for PG binder grades higher than PG76 will use PG76 specifications.							
^a Indirect Tensile Strength from AASHTO T 283, preconditioned specimen average, in psi.							

Table 13 Field Properties of Laboratory Molded Specimens									
Property	Superpave					RIL	SMA	PFC	RBL
	S2	S3	S4	S5	S6				
VMA ^a , %	≥ 12.0	≥ 13.0	≥ 14.0	≥ 15.0	≥ 16.0	≥ 15.0	≥ 16.5	—	≥ 13.5
VFA ^b , %	—	—	—	—	—	—	—	—	—
^a VMA is based on the bulk specific gravity of the aggregates. Compute a new bulk specific gravity from each AASHTO T 209 test. Calculate the value by multiplying the aggregate Effective Specific Gravity (Gse) calculated from the latest AASHTO T 209 test by the aggregate Bulk Specific Gravity (Gsb) from the design. Afterwards, divide the product by the aggregate Gse from the design.									
^b VFA is defined as the percentage of VMA containing asphalt binder.									

Table 14 Hamburg Test Requirements^a	
Binder Grade	Minimum Number of Passes to 12.50 mm Rut Depth, Tested at 122°F
PG 58	10,000
PG 64	10,000
PG 70	15,000
PG 76	20,000

Table 14, Continued
Hamburg Test Requirements

Note: For the purposes of this table PG64, PG70, and PG76 refer to the high temperature grade of the binder.

^a Rut test requirements apply to Superpave, SMA, and RIL mixes only.

3.4 ACCEPTANCE OF COMBINED COLD FEED AGGREGATE GRADATION

- A. The ENGINEER may use combined aggregate samples taken before asphalt coating for mixture gradation acceptance. Obtain the sample by an approved sampling device and perform a sieve analysis in accordance with Subsection 32 12 16.39 Part 4, AASHTO T 27, and AASHTO T 11. This method may be allowed if the asphalt mixture does not contain reclaimed bituminous materials and the aggregate does not appreciably degrade during the drying and mixing process.
- B. The ENGINEER may accept bituminous plant mix gradation results based on specified cold feed combined aggregate samples under the following condition:
 - 1. If the aggregate gradation test on extracted aggregates in accordance with AASHTO T 30 compares favorably with the results of cold feed aggregate gradation results.
- C. If test results do not compare favorably, the ENGINEER will base acceptance gradation tests performed in accordance with AASHTO T 30, on aggregate from extraction or ignition oven testing.

3.5 ACCEPTANCE OF BITUMEN CONTENT

- A. Determine the bitumen content of plant produced mixtures in accordance with OHD L-26 method of test. Determine the bitumen content of open-graded plant produced mixtures (PFC, OGFSC, OGGB) using the tank strap method or a digital printout from the asphalt plant of the quantity used.

3.6 WARM MIX ASPHALT

- A. Unless otherwise shown on the plans, mixtures produced as Warm Mix Asphalt (WMA) will be accepted at the CONTRACTOR'S option. For WMA, mixing temperatures may be reduced. Unless otherwise directed, use only WMA additives or processes preapproved by the ENGINEER. The ENGINEER may accept new additives or processes with sufficient evidence of performance.
- B. Prepare WMA mix designs in general accordance with AASHTO R 35 except where modified by these specifications. Additive manufacturer recommendations will be evaluated and considered for approval by the ENGINEER. WMA requirements are the same as for HMA except where noted. When using the technology during a mix design, increase the oven aging period to four hours before preparing samples for moisture susceptibility and rut testing. Report R 35's, the Materials Division recommended temperatures, or the supplier's recommended temperatures for plant mixing and roadway compaction on the mix design. Report R 35's, the Materials Division

recommended temperatures, or the supplier's recommended temperatures, for laboratory mixing and compaction on the mix design.

- C. For WMA using an additive technology, perform the mix design using the additive. For WMA designs that use a plant process, perform the mix design as an HMA mix design. If the laboratory has a foamer, the design may be performed using that process.
- D. Alternatively, use an existing approved HMA mix design when converting to a WMA, except when the percent binder absorbed exceeds 1.00 percent. The percent binder absorbed formula is shown at the end of this paragraph. When the percent binder absorbed exceeds 1.00 percent, use the plant-produced WMA material for moisture susceptibility and rut testing. Report the additive or process used by name, supplier source, and application rate (if applicable) on the mix design.

$$P_{ba} = \frac{100 G_b (G_{se} - G_{sb})}{G_{se} G_{sb}}$$

Where:

Pba = Percent binder absorbed by total mass of aggregate

Gb = Specific gravity of the binder

Gse = Effective specific gravity of the combined aggregates

Gsb = Bulk specific gravity of the combined aggregates

3.7 TOLERANCES

- A. Apply the tolerances shown in Table 15 to the JMF in accordance with Subsection 3.6.

Table 15 JMF Tolerances Per Mixture						
Sieve Size	Superpave	Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Course	Open Graded Bitum. Base
	Percent Passing					
≥No. 4 [4.75 mm]	±7	±7	±7	±7	±7	—
No. 8 [2.36 mm]	±5	±5	±5	±5	±5	—
No. 16 [1.18 mm]	±4	±4	—	±4	—	—
No. 30 [0.600 mm]	±4	±4	—	±4	—	—
No. 50 [0.300 mm]	±4	±4	—	±4	—	—
No. 100 [0.150 mm]	±3	±3	—	±3	—	—
No. 200 [0.075 mm]	±2	±2	±2	±2	±2	—

Table 15, Continued JMF Tolerances Per Mixture						
Sieve Size	Superpave	Stone Matrix Asphalt	Permeable Friction Course	Rich Bottom Layer	Open Graded Friction Course	Open Graded Bitum. Base
	Percent Passing					
Other Mixture Tolerances:						
Asphalt cement, % of mix mass	±0.4	±0.4	±0.3	±0.4	±0.3	±0.3
Mix temperature as discharged from mixer, °F [°C]	±20 [±10]	±20 [±10]	±20 [±10]	±20 [±10]	±20 [±10]	±20 [±10]

PART 4 – SAMPLING AND TESTING

4.1 TESTING METHODS

- A. Sample and test in accordance with Table 16 on following page.
- B. Method and Procedure for Sampling Asphalt Materials
 1. Sample asphalt materials in accordance with AASHTO R 66. Sample asphalt materials at the project site or mixing plant in accordance with the following:
 - a. Truck Transports: Sample to be taken by means of a sampling valve (3/8 inch = to 1/2 inch) located in the discharge or unloading line during the unloading of the approximate middle one-third of the load. The first flow through the sampling valve of one or two gallons shall be wasted after which the sample shall be drawn directly into the sample containers.
 - b. Mixing Plant: Sample to be taken from a sampling tap, complying with the requirements of ASTM D 140, located in the bituminous feed lines connecting the storage tanks to be bituminous control unit. The first flow from the sampling valve of one or two gallons shall be wasted after which the sample shall be drawn directly into the sample containers.
 - c. Storage Tank: Sample taken during the circulation of tank contents. Sampling procedure is the same as section 4.1B.1.b.
 - d. Storage Tank: If circulation is not in operation at the time of sampling, obtain sample by means of weighted bottle or other suitable sample thief. Quickly lower sample thief to near bottom of tank and withdraw at a rate of speed so that the sample thief is not completely filled when removed. Sample thief should be cleaned each time it is used and dipped two or three times in the

material being sampled before taking the sample. Immediately after taking pour sample from sample thief directly into sampling containers.

2. The ENGINEER may modify the sampling methods, testing, and acceptance for the asphalt materials. Obtain copies of the procedure from the ENGINEER.
3. Sample at the point of manufacture if the quantity shipped warrants testing. Alternatively, take samples at the point of destination. Use asphalt materials only after the ENGINEER approves them at the source.

Table 16	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
Aggregates	
Sampling	AASHTO T 2
Sieve analysis	AASHTO T 27
Material passing No. 200 [75 µm] sieve	AASHTO T 11
Specific gravity and absorption of fine aggregate	AASHTO T 84
Specific gravity and absorption of coarse aggregate	AASHTO T 85
Los Angeles abrasion	AASHTO T 96
Sand equivalent	AASHTO T 176
Aggregate durability index	AASHTO T 210
Total evaporable moisture content	AASHTO T 255
Aggregate degradation by Micro-Deval apparatus	AASHTO T 327
Lime for asphalt mixtures	AASHTO M 303
Flat and elongated particles in coarse aggregate	ASTM D4791
Mud, clay balls, sand clusters, sticks and roots retained on No. 4 [4.75 mm] sieve	OHD L-9
Fractured faces	OHD L-18
Insoluble residue	OHD L-25
Soft particles	OHD L-38
Asphalt Mixtures	
Mechanical analysis of extracted aggregate	AASHTO T 30
Sampling asphalt mixtures	AASHTO T 168
Bulk specific gravity (Gmb) of compacted asphalt mixtures using saturated surface-dry specimens	OHD L-14
Maximum specific gravity of asphalt mixtures	AASHTO T 209
Resistance to moisture damage ^{a, g}	AASHTO T 283
Draindown characteristics of uncompacted asphalt samples	AASHTO T 305
Preparing specimens by superpave gyratory compactor ^b	AASHTO T 312
Bulk specific gravity (Gmb) and density of compacted asphalt mixtures using automatic vacuum sealing method CoreLok™	OHD L-45

Table 16, Continued	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
Hamburg wheel-track testing of compacted hot mix asphalt (HMA)	AASHTO T 324
Superpave volumetric mix design	AASHTO M 323
Reclaimed asphalt shingles for use in asphalt mixtures	AASHTO MP 23
Design considerations when using reclaimed asphalt shingles (RAS) in asphalt mixtures	AASHTO PP78
Mixture conditioning of hot-mix asphalt	AASHTO R 30
Superpave volumetric design for HMA ^C	AASHTO R 35
Sampling Asphalt Mixtures after compaction (obtaining cores)	AASHTO R 67
Bulk impregnated specific gravity of aggregates ^d	OHD L-7
Specific gravity, unit weight, and percent density of compacted asphalt mixtures	OHD L-14
Bitumen content	OHD L-26
Rutting susceptibility using the hamburg rut tester	OHD L-55
Water permeability of compacted paving mixtures	OHD L-44
Asphalt Materials	
Sampling asphalt materials	AASHTO R 66
Solubility of bituminous materials	AASHTO T 44
Flash and fire points by Cleveland Open Cup	AASHTO T 48
Penetration of bituminous materials	AASHTO T 49
Ductility of bituminous materials	AASHTO T 51
Softening point of bitumen (ring-and-ball apparatus)	AASHTO T 53
Water in bituminous materials by distillation	AASHTO T 55
Standard test methods for emulsified asphalts	AASHTO T 59
Saybolt viscosity	AASHTO T 72
Distillation of cutback asphaltic (bituminous) products	AASHTO T 78
Flash points with tag open-cup apparatus	AASHTO T 79
Inorganic matter or ash in bituminous material	AASHTO T 111
pH of aqueous solutions with the glass electrode	AASHTO T 200
Kinematic viscosity of asphalts (bitumens)	AASHTO T 201
Viscosity of asphalts by vacuum capillary viscometer	AASHTO T 202
Specific gravity of semi-solid bituminous materials	AASHTO T 228

Table 16, Continued	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
Rolling thin film oven test	AASHTO T 240
Polymer content of polymer-modified emulsified asphalt residue and asphalt binders	AASHTO T 302
Flexural creep stiffness using the bending beam rheometer	AASHTO T 313
Rheological properties using a dynamic shear rheometer	AASHTO T 315
Viscosity determination using rotational viscometer	AASHTO T 316
Multiple stress creep recovery (MSCR) test of asphalt binder using a dynamic shear rheometer (DSR)	AASHTO T 350
Emulsified asphalt	AASHTO M 140
Cationic emulsified asphalt	AASHTO M 208
Polymer-modified cationic emulsified asphalt	AASHTO M 316
Performance-graded asphalt binder	AASHTO M 320
Performance-graded asphalt binder using multiple stress creep recovery (MSCR) test	AASHTO M 332
Recovering residue from emulsified asphalt using low-temperature evaporative techniques	AASHTO R 78
Classifying hot mix recycling agents	AASHTO R 14
Accelerated aging using a pressurized aging vessel	AASHTO R 28
Grading or verifying the performance guide	AASHTO R 29
Recovery of asphalt binder from solution by abson method	AASHTO R 59
Estimating application rate and residual application rate of bituminous distributors	ASTM D 2995
Specific gravity by hydrometer	ASTM D 3142
Elastic recovery test by means of ductilometer ^e	ASTM D 6084
Elastic recovery test by means of ductilometer ^f	OHD L-42
Compatibility of an asphalt emulsion and a job aggregate	OHD L-59
Emulsified asphalt residue by evaporation (pan)	OHD L-61
^a Run AASHTO T 283 on 6 in [150 mm] diameter specimens compacted by the Superpave Gyratory Compactor to an approximate height of 3.75 in [95 mm].	
^b Mix design mixtures at 325°F [163°C] and age at 300°F [149°C] from 2 hr to 4 hr. Compact design mixtures at 300°F [149°C]. No minimum aging period is required for field samples. Heat field samples uniformly to 300°F [149°C] for no greater than 4 hr.	

Table 16, Continued	
Sampling and Testing of Aggregates, Bituminous Mixtures, and Asphalt Materials	
Materials	Testing Method
^c Compact lab-molded specimens to N _{des} gyrations to determine the density at N _{des} , percent of G _{mm} . Back-calculate the density at N _{ini} , percent of G _{mm} , from these specimens. Compact lab-molded specimens to N _{max} gyrations to determine the density at N _{max} , percent of G _{mm} for mix designs and JMF changes only. Ensure reported values are the average of two specimens.	
^d Use OHD L-7 for OGFSC only.	
^e Use ASTM D 6084 for PG binders only.	
^f Use OHD L-42 for polymer modified emulsions only.	
^g Use AASHTO R 30 for aging instead of the procedure outlined in AASHTO T 283.	

END OF SECTION 32 12 16.39

SECTION 32 92 23 - SODDING

PART 1 - GENERAL

1.1 SCOPE

- A. This work shall consist of furnishing and planting viable Bermuda grass sod in accordance with these specifications. All areas which are not covered by pavement or structures shall be sodded, and/or areas utilized for construction staging.

PART 2 - PRODUCTS

2.1 SOD

- A. Bermuda grass sod to be used as source material shall be a thick stand of common Bermuda grass growing on fertile topsoil. Types of Bermuda grass other than "Common" may not be used unless approved by the ENGINEER. The vegetative parts (rhizomes, stolons, and roots) of Bermuda grass shall be viable as indicated by a dense, deep rooted stand.
- B. The source for sod shall be free of reproducing parts of weeds classified as "Prohibited Noxious" and shall be as free of other legally "Restricted Noxious" plant materials as required by the Oklahoma Department of Agriculture Seed Law. The proposed source of sod will be approved by the ENGINEER before the beginning of sodding operations. Prior to approval, the area shall not be tilled or mowed. However, all vegetative growth exceeding 3 inches in height shall be mowed and the residue removed prior to harvesting the sod or sprigs.
- C. The sod shall be moist when excavated from the source and shall be kept moist until planted. Sod in storage which becomes dry, shall not be re-moistened and used, but shall be discarded.
- D. Sod material shall consist of vegetative parts (rhizomes, stolons and roots) of Bermuda grass with an appreciable quantity of adhering soil.
- E. Solid slab sod shall be rectangular slabs of Bermuda grass. Bermuda grass vegetative parts shall exist throughout the slab and shall be obtained from soils with a minimum P.I. of 3. The slab must have a dense vegetative growth and be capable of being transported in a condition closely resembling its original state.

2.2 FERTILIZER

- A. Fertilizer of 10 20 10 grade and ammonium nitrate (33.5% N), uniform in composition, free flowing and suitable for application with approved equipment shall be provided. The fertilizer shall be delivered to the site in bags or other convenient containers, each fully labeled, conforming to the applicable State fertilizer laws, and bearing the name, trade name or trademark and warranty of the producer.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Preparation of areas to be sodded shall include filling, reshaping of eroded areas, cleaning ditches and refinishing slopes to the established grading section. The area shall be cleared of all litter and debris.

3.2 APPLICATION

- A. The slabs of sod shall be placed soil side down. They shall be placed in rows, which on slopes shall run perpendicular to flow of water. Each slab shall fit tightly against the edge of adjoining slabs and shall be placed so that the vertical joints are not continuous across adjoining horizontal rows. Voids shall be filled with additional sod. All slabs shall be thoroughly pressed into firm contact with the soil underneath.
- B. After the slabs have been placed, the sodded area shall be thoroughly watered. When sufficiently dry, additional voids shall be filled with good soil and watered again. The area shall then be thoroughly watered daily for a period of at least seven days after placement.
- C. Soil moisture shall exist throughout the zone from 1 inch below the surface to at least 5 inches below the surface at the time of planting. The required moisture content of the soil may be estimated and judged closely by the hand squeeze test. The soil should readily form a tight cast when squeezed in the hand. The cast should break into two pieces without crumbling and without leaving excess water on the hand after casting.
- D. Fertilizer shall not be placed on hard or glazed surfaces. Fertilizer shall be applied at the rates shown on the plans or specifications.
- E. When satisfactory results can be obtained, disking for soil preparation, weed removal and incorporation of fertilizer may be accomplished in one operation.
- F. If a fertilizer containing phosphorous is specified, one half of the fertilizer shall be applied before placement of solid slab sod and shall then be incorporated into the soil by disking. After placement and compaction of the sod, the remaining one half of the fertilizer shall be applied and immediately incorporated into the soil with water.
- G. Fertilizer containing nitrogen only shall be applied after the sodding and sprigging operations have been completed.

3.3 SEASON

- A. If the construction work is not completed during the normal planting season (beginning April 15 through September 1), the CONTRACTOR shall seed the entire area with an approved temporary vegetative cover, such as wheat, oats or rye grass to prevent erosion until the following spring at which time the CONTRACTOR will be required to return and prepare the area to be sodded as specified above and sod the entire area with Bermuda grass as specified above at no additional cost to the OWNER. All areas

which have eroded will at this time be brought back to original line and grade as directed by the ENGINEER.

3.4 WATER SUPPLY

- A. The CONTRACTOR must make provisions to obtain water for this operation at his own expense. It will be the CONTRACTOR'S responsibility to transport the water to the area where it is needed.

END OF SECTION 32 92 23

DIVISION 33 – UTILITIES

SECTION 33 01 29 – TELEVISION INSPECTION OF SEWER LINES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. This section covers closed-circuit television (CCTV) inspection of existing sewer lines and rehabilitated and newly constructed sewer lines.
2. The work shall consist of furnishing all labor, materials, accessories, equipment, tools, transportation, services, and technical competence for performing all operations required to professionally execute the internal inspection of sewers in strict accordance with these specifications.

B. Safety Considerations

1. Information concerning depths of flow, manhole depths, air quality in the sewers, accessibility of manholes, traffic conditions, and other safety considerations are to be the sole responsibility of the CONTRACTOR to obtain and to incorporate the necessary provisions into the overall contract price to complete the specified work under the conditions existing in the sewers to be inspected.

1.2 LARGE-DIAMETER SEWER INSPECTIONS

A. Potential Requirements

1. For large-diameter sewer inspections, the CONTRACTOR may be required to submit sample video recordings from recently completed projects demonstrating the picture quality obtained with each available inspection system for pipe diameters twenty-seven inches (27") and larger.

1.3 GUIDELINES

- A. All television testing shall be performed in accordance with guidelines published by the National Association of Sewer Service Companies (NASSCO) and as modified or specified in these specifications.

PART 2 – EQUIPMENT

2.1 EQUIPMENT REQUIREMENTS

- A. All television cameras used for inspection shall be color units specifically designed and constructed for the method of inspection performed.
- B. Camera(s) may be modified by mounting on conventional or floating skids, or rafts, for use in multiple-diameter, sewer line inspection work.

- C. Units shall have either automatic or remote focus and iris controls.
- D. The complete system(s) shall be operable in conditions of hundred (100) percent humidity.
- E. Lighting shall be suitable to allow a clear picture of the entire periphery of the main sewer pipe.
- F. For large-diameter (twenty-seven inches (27") and larger) pipe, the camera lens shall have not less than a sixty-five (65°) degree viewing angle.
- G. A radial viewing camera with a three hundred and sixty (360°) degree vertical rotation and a two hundred and seventy (270°) degree horizontal rotation, or any combination of the two, may be required to properly evaluate the condition of the main sewer and laterals. Lighting shall operate in a manner that allows the viewed object to be illuminated no matter what the angle of the lens. For a radial viewing camera, the lighting shall be built into the unit so that the lamp(s) remains aligned with the lens.
- H. A minimum illumination of three (3) lux with a light color in the twenty-two hundred (2200°) to thirty-two hundred (3200°) degree Kelvin range shall be provided. Auxiliary lighting acceptable to the ENGINEER shall be provided for large diameter pipe. For diameters of sixty inches (60") and greater, a minimum of one million (1,000,000) candlepower lighting in the thirty-two hundred (3200°) degree Kelvin range shall be made available.
- I. The CONTRACTOR shall be responsible for having the necessary camera skids, floats, and rafts available to allow for inspection of lines in a manner acceptable to the OWNER under live flow conditions.
- J. In all cases, the complete video system (camera, lens, lighting, cables, monitors, and recorders) shall be capable of providing a picture quality acceptable to the ENGINEER, and if unsatisfactory, equipment shall be removed, and no payment shall be made for unsatisfactory inspections.

PART 3 – CONSTRUCTION METHODS

3.1 GENERAL

- A. The CONTRACTOR shall use one of the following methods individually or in combination, as approved by the ENGINEER:
 - 1. Conventional color inspection cameras specifically designed for use in sewer line inspection work, mounted on conventional camera skids or tracks.
 - 2. Conventional color inspection cameras specifically designed for use in sewer line inspection work, mounted on floating skids or rafts.
 - 3. Special industrial grade, color-inspection cameras contained in waterproof

housings, and mounted on floating skids or rafts

4. Special industrial grade, color-inspection cameras, either handheld or contained in waterproof housings, and carried manually through the sewer during inspection work.

3.2 PROCEDURES

- A. Pre-Work Submittals for Inspection of Large Diameter Pipes: For pipes 27 inches and larger, the CONTRACTOR shall submit a listing of actual measured flow depths and times of measurement at a sufficient number of locations to indicate the flow depths that could be expected during inspection work. A minimum of one (1) flow depth measurement shall be provided for each line section at no additional cost to the OWNER. Additional off-peak flow measurements (i.e., night flow measurements) may be requested by the ENGINEER at various locations, also at no additional cost to the OWNER.
- B. A meeting shall be scheduled prior to beginning any internal pipe inspection work to review the CONTRACTOR'S proposed inspection methods for each of the line section groupings. At that time, the CONTRACTOR shall have available the necessary flow depth data as well as the overall listing of proposed inspection methods in each area.
- C. Remote Inspections: Remote pipe inspections shall be permitted in cases where conditions are, as determined by the ENGINEER, to be unsafe or impractical for manual inspections, and where acceptable picture quality can be obtained by the CONTRACTOR.
- D. The main sewer shall be cleaned as directed by the ENGINEER and free of grease, roots and debris that may hinder movement of inspection equipment through the lines. Major line obstructions that require point repairs are excluded.
- E. The maximum flow depth for remote inspection work in pipes twenty-four inches (24") and less is twenty (20%) percent of the pipe diameter.
- F. For large pipe diameters [twenty-seven inches and greater], the maximum flow shall be thirty (30%) percent of the pipe diameter. The CONTRACTOR may be required to perform inspections during off-peak hours (night inspections) when specifically requested by the ENGINEER to obtain this flow standard.
- G. No inspections shall be performed where flow depths exceed 50 percent of pipe diameter without prior approval of the ENGINEER.
- H. Suspended moisture or fog in pipes shall be cleared with blowers. Filming shall commence only when the ambient temperature above ground is a minimum of 40° degrees Fahrenheit.
- I. CCTV inspection shall be done one manhole section at a time and the flow in the section being inspected shall be suitably controlled as specified in Section 33 01 31. The inspection shall proceed from one section to another starting either upstream or downstream and completing in that order for the entire line. When

an obstruction prevents the camera from passing through the entire manhole section, the inspection shall be continued from the opposite manhole before proceeding to the next section.

- J. The camera shall be moved through the line at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. The maximum speed of the camera shall not exceed 30 feet per minute. Caution shall be taken to not linger in one spot allowing the heat generated from the unit to ignite roots, debris, etc.
- K. The camera shall be moved through the line by conventional means of manual winches, power winches, television cable, and powered rewinds or other devices, which do not obstruct camera view or interfere with proper documentation of the sewer conditions. In instances where manual or remote power winches are used to pull the camera through the sewer constant two-way communication shall be set up between the two manholes of the line being inspected.
- L. Accurate and continuous footage readings shall be superimposed on the video recording for each line inspected by remote inspection methods. Also shown shall be the date of inspection and a manhole number designation that corresponds to the field logs for each manhole on the line section inspected.
- M. When specified, a lateral sewer camera shall be employed to inspect up to 25 feet of the lateral. The lateral camera launcher shall be brought into position by the main sewer television camera. Lateral sewers entering manholes shall be inspected with a mini push camera. Actual footage inspected shall vary depending on the condition of the pipe. Videotapes of laterals may be in black and white and shall show a view of the lateral connection by the main sewer camera before showing the internal view of the lateral by the launcher.
- N. The CONTRACTOR shall provide photographs developed from the television screen of problems revealed by the CCTV camera upon the request of the ENGINEER, as long as such photographing does not interfere with the CONTRACTOR'S operations.
- O. Manual (Walk Through) Inspections: Manual inspections shall be required in lines where conditions will allow the CONTRACTOR'S inspection crew to safely walk through the sewer. In general, lines 60 inches in diameter and larger and having flow depths of less than 20 percent of the pipe diameter, shall be manually inspected as directed by the ENGINEER.
- P. Inspection crews shall consist of two or more people. Blowers and exhaust fans shall be available to provide ventilation for the sewer line being inspected.
- Q. Manual pipe inspections shall be conducted in such a manner as to transmit the video signal to an aboveground viewing room to permit the ENGINEER to watch the inspection work live on a color monitor in the viewing facility. In addition, direct voice communication between the ENGINEER, the in-pipe inspection personnel, and the recording technician in the aboveground unit shall be maintained at all times during the manual inspection work. Video recording equipment shall also be

located above ground in the inspection truck and accurate, continuous footage readings shall be superimposed on the video recording for permanent record. Camcorders shall not be permitted for use as the sole means of obtaining video records.

- R. During manual inspections, the video camera shall be used to look up sidelines and laterals, whenever practical. Conditions noted in these sidelines and laterals shall be noted on the inspection logs and videotapes for the project.
- S. During manual inspections, thirty-five (35mm) millimeter color photographs shall be obtained as instructed by the ENGINEER or as deemed necessary by the in-pipe technicians to document line conditions.

PART 4 – DOCUMENTATION

4.1 REQUIREMENTS

- A. Television Inspection Logs: Printed location records shall be kept by the CONTRACTOR and will clearly show the location in relation to an adjacent manhole of each infiltration point observed during inspection. In addition, other points of significance such as locations of building sewers, unusual conditions, roots, storm sewer connections, broken pipe, presence of scale and corrosion, and other discernible features will be recorded, and a copy of such records shall be supplied to the ENGINEER. The video audio recording and written report of the condition of each lateral, if inspected, shall be included along with an identification number corresponding to main sewer log and approximate locations of any pipe defects.
- B. If preliminary inspection occurs in conjunction with a rehabilitation or replacement project, no construction activities shall begin without prior review and subsequent approval by the ENGINEER of the work outlined in the submittals.
- C. During large-diameter pipe inspections, the CONTRACTOR shall document in writing observed conditions and comments given about each sewer line. These field logs shall then be reviewed by the CONTRACTOR'S technical staff, along with reviewing the associated video record, as a means of insuring that no defects or entries are omitted or incorrect, and as a means of gaining a second opinion as to the condition of each sewer line. Edited field logs shall then be reprinted or typed for use in the final project reports. Detailed, one-page summaries shall also be prepared for each line section inspected, during the data review, presenting the ENGINEER'S synopsis of the line's general condition and the relative severity of observed defects. These summaries shall also be included in all field report copies immediately before each associated inspection report. Direct submittal of copies of the field technician's field logs, without this secondary review and summary pages, shall not be acceptable.
- D. Five (5) complete copies of the final project reports shall be submitted to the OWNER within fifteen (15) calendar days of completion of all field activities. One of the five (5) copies shall contain the original photos.

- E. An overall summary narrative shall be provided in the final report describing the overall conditions found in each associated line section grouping and detailed summary tables shall also be compiled showing those lines where major and significant defects were located.
- F. Original recordings, along with the required submittals, shall be forwarded to the ENGINEER upon completion of the inspection and shall become the property of the OWNER.
- G. Video Audio Recordings - A forward introduction sequence stating the time and date, location or segment number, depth, diameter, and pipe material for each length between manholes shall precede the recording of each line segment. The camera shall progress through the pipe indicating the beginning manhole and destination manhole as it marks the footage continuously. Should there be a need to access the line from the other direction, a new introduction track shall precede the setup, and the footage shall begin at zero.
- H. The camera shall pause as it approaches a service so that the connection between pipe and service may be evaluated. The lens shall then rotate to display the interior of the service. The service inspection should reveal any roots, cracks, or capped risers.
- I. Audio description shall accompany the visual. Operator's comments shall contain verbal verification of footage and condition of each service, and any defects or unusual conditions noted in the main. When television inspection is performed as a part of final examination for acceptance of project, it shall be performed after all the lines have been constructed and within twenty-four hours of conducting deflection test on a line. It shall be continuous and present each segment in the order laid out in the plans (e.g., Line A: station 0+00 to 4+00, station 4+00 to 8+00, Line B: station 0+00 to 3+00, etc.).
- J. All recordings shall be DVD format, or a format specified by the ENGINEER. Each tape shall be professionally labeled showing the OWNER'S name, project number, project location, the date(s), etc., lines recorded on the tape, and name of the Contractor. If the quality of the recordings is not satisfactory to the ENGINEER, the lines shall be re-recorded at the CONTRACTOR'S expense.
- K. Photographs: All photographs taken during manual walk-through inspections shall be properly mounted and labeled on eight and one half by eleven (8½" x 11") inch paper for inclusion in the final project reports. One (1) copy of the final reports shall contain the original thirty-five (35) millimeter photos, on fully laminated pages, and the remaining requested copies shall contain copier of pages of these photos. The photo pages shall be presented immediately following the inspection report for the line section in which they were taken.

Photographs taken from the monitor for remote television inspections shall also be presented in the same manner as described above.

PART 5 – METHOD OF MEASUREMENT

5.1 PAYMENT DEFINITIONS

- A. Payment shall be made for pre-construction inspection, when required for construction, and post construction inspection only. Unless separately specified, all other recording and/or photographs requested by the ENGINEER shall be considered incidental to the project and the cost included in the price for other items.
- B. "Television Inspection" shall be measured along the stations, through manholes, junction boxes and other small structures. Payment for "Television Inspection (CCTV)" shall be made at the unit price bid per lineal foot of pipe regardless of size. The price established shall be full compensation for all equipment, labor, materials, mobilization, demobilization, reverse setups, recordings, reports, photographs, and incidentals necessary to complete these items of work.

PART 6 – BASIS OF PAYMENT

6.1 PAYMENT TERMS

- A. The items measured as provided above will be paid for at the contract unit price bid:

PRE AND POST VIDEO INSPECTIONL.F.
- B. Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools, and incidentals, and for performing the work in accordance with these specifications.

END OF SECTION 33 01 29

SECTION 33 11 00 - WATERLINE AND SANITARY SEWER SPECIFICATIONS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This division shall consist of the material and construction specification of water distribution lines, sanitary sewer lines, appurtenances, and related work, at the locations and grades as set out on the plans or established by the ENGINEER.

1.2 SUBMITTALS

- A. Submittals shall be in accordance with Section 01 33 00 "Submittal Procedures" and shall include:
 - 1. Shop Drawings:
 - a. Drawings shall show complete physical description and performance capabilities of the equipment, including, but not necessarily limited to dimensions, flange ratings, weights, materials of construction, assemblies, sectional views.
 - b. Hydraulic calculations and CV characteristics certifying the valve can meet all the design conditions attached to this specification.
 - 2. Operation and Maintenance Manuals: Manuals shall be prepared by the equipment manufacturer and shall also incorporate appropriate final certified shop drawings. Manuals may be the manufacturer's standard instructions but shall be supplemented as necessary to cover any special feature not included in standard material. O&M manuals shall include storage instructions, valve installation and adjustment procedures and troubleshooting procedures. Manuals shall be provided in hard copy and digital format fully indexed.

PART 2 - APPLICABLE SPECIFICATIONS

2.1 DESCRIPTION

- A. The specifications, standards, and publications, including the latest amendments thereto, listed in these specifications by basic designation only, form a part of this specification to the extent indicated by the references thereto.
- B. Specification 03 30 00 – Cast-In Place Concrete
- C. Specification 31 23 33 – Trenching, Backfilling, & Compaction
- D. Specification 32 12 16.39 – Plant Mix Bituminous Bases and Surfaces
- E. Specification 33 05 07.13 – Directional Bore
- F. Specification 33 31 30 – Pipe Busting

PART 3 - CAST IRON AND DUCTILE IRON PIPE, FITTINGS AND VALVES**3.1 DESCRIPTION**

- A. The work under this item shall include furnishing, hauling, placing, and jointing of Cast Iron and Ductile Iron Pipe in the trench in specific conformity with the lines and levels given. For all pipe, the AWWA Standard for Installation of Cast Iron Water Mains, AWWA Designation C-600 shall govern the installation as applicable. The method of bedding shall be in accordance with Specification 31 23 33 and as shown on the plan Standard Details. If the paint is damaged, the valve shall be cleaned by wire-brushing and given two coats of black asphalt paint.

3.2 PIPE AND FITTINGS

- A. Where Ductile Iron Pipe (DIP) three (3) inches in diameter and larger is specified or required, it shall conform to, and be tested in accordance with, the current American Standard Specification for Ductile Iron Pipe, Centrifugally Cast in metal molds or sand-lined molds, for water or other liquids, AWWA Designation C 151 (ANSI A21.51). Ductile iron pipe less than three (3) inches in diameter shall conform to the manufacturer's standards, either centrifugally or statically cast with a minimum thickness of 0.25 inches. The ductile iron (nodular cast iron) shall conform to ASTM Specification A536 with physical properties of Grade 60-40-18. Length of joints shall be either eighteen or twenty feet. The minimum standard thickness of each size pipe shall be as follows:

<u>Pipe Size</u>	<u>Thickness Class</u>
3" thru 4"	51
6" thru 24"	50
30" thru 54"	51

For larger diameter or deep cover, special design will be provided.

- B. Where Cast Iron Pipe (CIP) is specified or required, it shall conform to, and be tested in accordance with, the American Standard for Gray Iron Pipe Centrifugally Cast in Metal Molds for water or other liquids, AWWA Designation C106. Lengths shall be either eighteen feet or twenty feet. Strength of iron shall be 18/40 and the minimum standard thickness of each size pipe shall be as follows:

<u>Pipe Size</u>	<u>Thickness Class</u>
3" thru 10"	22
12"	23
14" thru 24"	24
30" thru 48"	25

- C. Where Cast Iron Pipe (CIP) and Ductile Iron Fittings are specified or required, they shall conform to, and be tested in accordance with the American Standard for Gray Iron and Ductile Iron Fittings, 3-inch through 48-inch for water and other liquids, AWWA Designation C110. Pressure rating shall be 250 psi. All sleeves shall be the longest of the lengths allowed.

- D. The work under this item shall include all of the requirements specified under the item

of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.

3.3 JOINTS

- A. Cast Iron and Ductile Iron Pipe and Fittings shall be jointed with any of the end types as specified below unless a particular end type is specified. Flange ends shall be used only where specifically noted on the drawings except that the valve connection end of all tapping sleeves shall be flanged.
- B. Push-on joints shall conform to, and be tested in accordance with, the American Standard for Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings, AWWA Designation C111.
- C. Mechanical joints shall conform to, and be tested in accordance with, the American Standard for Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings, AWWA Designation C111.
- D. Bell and spigot joints shall consist of square, braided, sterilized hemp and 99.73 percent pure lead caulking.
- E. Flange joints shall conform to the American Standard for Cast Iron Pipe Flanges and Flanged Fittings, A.S.A. Designation B.16.1.

3.4 LINING AND COATING

- A. All Cast Iron and Ductile Iron Pipe and Fittings shall be bituminous coated outside and cement-mortar lined inside with seal coat in accordance with American Standards for Cement Mortar Lining for Ductile Iron and Gray Iron Pipe and Fittings for Water, AWWA Designation C104.

3.5 VALVES

- A. All valves shall be rated for 250 psi working pressure.
- B. Valve boxes shall consist of a cast iron valve box, encased with a concrete collar over a section of 6-inch PVC pipe, SDR-35 typically, which is of adequate length enabling the valve box to be set at ground level as shown on the standard drawings.

3.6 GATE VALVES

- A. Where gate valves are specified or required, they shall conform to, and be tested in accordance with, the AWWA Standard for Gate Valves, 3-inch through 48-inch NPS for Water and Sewage Systems, AWWA Designation C500. Valves shall have double disc parallel seats, non-rising stem, vertical mounting "O" ring stem seal, counterclockwise opening, and ends to fit the pipe or fitting to which attached.

3.7 BUTTERFLY VALVES

- A. Where butterfly valves are specified or required, they shall conform to, and be tested in accordance with the AWWA Standard for Rubber-Seated Butterfly Valves, AWWA Designation C504. Valves shall have operators which are side mounted with plumb, non-rising stems, counterclockwise opening, and have mechanical joint connections of the size shown on the plans. The operator shall be mounted so that the square operating nut on the valve can be operated from the top.

3.8 AIR RELIEF VALVES

- A. Where air relief valves are specified or required, the valve shall be heavy-duty combination air release and vacuum type for 300 psi water working pressure, tested to 300 psi unless otherwise specified, two-inch size. Body, cover, and baffle shall be cast iron. All internal parts to be either highest quality stainless steel or bronze, and the inside of valve coated with rust inhibitor. Air relief valves shall be set so that the square operating nut on the valve can be operated from the top. Construction standards for air relief valve vaults shall be the same as for manholes.

3.9 CHECK VALVES

- A. Where check valves are specified or required, they shall conform to, and be tested in accordance with the AWWA Standard for Swing Check Valves for Ordinary Water Works Service, AWWA Designation C508. They shall be horizontally mounted, single disc, swing type with a full diameter passage providing minimum pressure loss. Valves shall be of the non-slamming type designed for the future installation of outside lever and weight. Disc faces and seat rings shall be bronze. Ends shall fit the pipe or fitting to which attached (push-on, mechanical, bell and spigot, or flanged). Construction standards for check valve vaults shall be the same as for manholes.

3.10 TAPPING VALVES

- A. Tapping valves shall have the same features as above double disc gate valves and shall have piloted flange or centering lip on the valve flange to fit the tapping sleeve flange.

3.11 FIRE HYDRANTS

- B. Fire hydrants shall conform to the AWWA Standard for Dry-Barrel Fire Hydrants, AWWA Designation C502 as to design, composition, quality of materials, workmanship and shall be manufactured by Mueller, American, M & H, or approved equal by ENGINEER.
- C. All fire hydrants shall be 6" mechanical joint connection, 5-1/4" valve openings

furnished with two 2-1/2" nozzles, and one 4-1/2" pumper connection, with National Standard threads. Two 2-1/2" nozzles shall be spaced 180 degrees apart, with the 4-1/2" pumper nozzle centered between them.

- D. Hydrants shall be of the compression type and shall have incorporated in their design a special section or bolts which intentionally have a lower breaking point than the balance of the unit (traffic flange).
- E. Hydrants shall have a 1-1/2" pentagon shaped operating nut, open left and shall be sized for 3-1/2 feet depth of bury.
- F. All nozzles shall be equipped with chained caps provided with gaskets made of suitable plastic or neoprene.
- G. All fire hydrants shall be painted with two coats of Pittsburg, first line, or approved equal paint. Colors are to be designated by the OWNER'S Fire Department to conform with color-coding system.
- H. Where fire hydrant extensions are specified or required, they shall be of the proper design to accommodate the make of fire hydrant installed.

3.12 CONSTRUCTION

- A. Proper implements, tools and facilities satisfactory to the ENGINEER shall be provided and used by the CONTRACTOR for the safe and convenient performance of the work. All pipe, valves and hydrants shall be carefully lowered into the trench piece by piece by means of a derrick, ropes, or other suitable tools or equipment, in such a manner as to prevent damage to water main materials and protective coatings and linings. Under no circumstances shall water main materials be dropped or dumped into the trench. If damage occurs to any pipe or water main accessories in handling, the damage shall be immediately brought to the ENGINEER'S attention. The ENGINEER shall prescribe corrective repairs or rejection of the damaged items. All pipe and fittings shall be carefully examined for cracks and other defects while suspended above the trench immediately before installation in final position. Defective pipe or fittings shall be laid aside for inspection by the ENGINEER, who will prescribe corrective repairs or rejection. All lumps, blisters, and excess coating shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell shall be wire brushed and wiped clean and dry and free from oil and grease before the pipe is laid.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. During laying operations, no debris, tools, clothing, or other materials shall be placed in the pipe. As each length of pipe is placed in the trench, the spigot end shall be centered in the bell and pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material tamped under it except at the bells. Precautions shall be taken to prevent dirt from entering the joint space.

1. Joining of Push-On Joint Pipe: The inside of the bell and the outside of the spigot

end shall be thoroughly cleaned to remove oil, grit, excess coating and other foreign matter. The circular rubber gasket shall be flexed inward and inserted in the gasket recess of the bell socket.

A thin film of gasket lubricant shall be applied to either the inside surface of the gasket or the spigot end of the pipe or both. Gaskets lubricant shall be as supplied by the pipe manufacturer and approved by the ENGINEER.

The spigot end of the pipe shall be entered into the socket with care used to keep the joint from contacting the ground. The joint shall then be completed by forcing the plain end to the bottom of the socket with a forked tool, jack-type tool or other device approved by the ENGINEER.

Pipe that is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint. Field-cut pipe lengths shall be filed or ground to resemble the spigot end of such pipe as manufactured.

2. Joining of Mechanical-Joint Pipe: The outside of the spigot and inside of the bell of mechanical-joint pipe shall be thoroughly cleaned to remove oil, grit, excess coating and other foreign matter from the joint, and then a thin film of gasket lubricant shall be applied to either the inside surface of the gasket or the spigot end of the pipe or both. Gasket lubricant shall be as supplied by the pipe manufacturer and approved by the ENGINEER.

The cast-iron gland shall be coated with the lubricant and placed on the spigot end with the thick edge toward the gland. The entire section of the pipe shall be pushed forward to seat the spigot end in the bell. The gasket shall then be pressed into place within the bell; care shall be taken to locate the gasket evenly around the entire joint.

When tightening bolts, the gland shall be brought up toward the pipe flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. This shall be done by partially tightening the bottom bolt first then the top bolt, next the bolts at either side, and last, the remaining bolts. This cycle should be repeated until all bolts are within the range of torques as shown below:

Bolt Size (Inches)	Range of Torque (Ft. – Lb.)	Length of Wrench (Inches)
5/8	40 – 60	8
3/4	60 – 90	10
1	70 – 100	12
1 1/4	90 – 120	14

The torque loads may be applied with torque-measuring or torque-indicating wrenches, which may also be used to check the application of approximate torque loads applied by men trained to give an average pull on a definite length or regular socket wrench. If effective sealing is not attained at the maximum torque indicated, the joint should be disassembled, thoroughly cleaned, and reassembled. Overstressing of bolts to compensate for poor installation practice shall not be allowed.

3. For waterlines, all fittings or specials included as pipe shall be blocked in accordance with the attached Standard Details.
 4. For sanitary sewers, a joint between cast iron pipe and vitrified clay pipe or reinforced concrete pipe shall be made with special adapters as approved by the ENGINEER. If adapters are not available, the joint shall be made as instructed by the ENGINEER and encased with concrete one foot (1 ft.) each side of the joints and six inches (6) in thickness.
- I. Fire hydrants shall be located as shown or as directed to provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians.
1. When placed behind the curb, the hydrant barrel shall be set so that no portion of the pumper or hose nozzle cap will be closer than three (3) feet nor more than six (6) feet from the face of the curb.
 2. When set in the lawn space between the curb and the sidewalk, no portion of the hydrant or nozzle cap shall be within six (6) inches of the sidewalk.
 3. All hydrants shall stand plumb and shall have their nozzles parallel with, or at right angles to the curb, with the pumper nozzle facing the curb, and centerline nozzles at least eighteen (18) inches above the ground.
 4. Each hydrant shall be connected to the main with a six (6) inch ductile iron branch controlled by an independent six (6) inch gate valve, unless otherwise specified.
 5. Each hydrant shall be placed upon a slab of stone or concrete not less than six (6) inches thick and fifteen (15) inches square. The rear side of the hydrant, opposite the pipe, shall be blocked with concrete or stone, firmly wedged between the hydrant and the vertical face of the end of the trench of undisturbed earth or it shall be tied to the pipe with suitable straps or metal tension rods as shown on the standard drawings or as directed by the ENGINEER.
 6. Dry walls shall be constructed of crushed stone or coarse gravel having a volume of approximately one-half cubic yard and shall be placed beneath and around the drain ports of the hydrant so the hydrant will properly drain when closed.
 7. Fire hydrant extensions shall be required to bring the fire hydrant up to the existing or proposed grade of the surrounding areas, whereby an 18-inch minimum distance from the ground level to the center of the pumper nozzle may be obtained as shown on the standard drawings.

3.13 METHOD OF PAYMENT

- A. Cast Iron and Ductile Iron Pipe (CIP and DIP) shall be measured for payment by the linear foot of pipe of the size specified in the proposal and shown on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the center line of the pipe. No additional payment shall be made for vertical bends in the pipe, fittings used with drop manholes, fittings or specials not included in this specification, or for concrete blocking.
- B. Deductions will not be made for bends or specials.

3.14 BASIS OF PAYMENT

- A. Accepted quantities of Cast Iron and Ductile Iron Pipe (CIP and DIP) measured as provided above, will be paid for at the contract unit price for:

Cast Iron Pipe Lineal Feet

Ductile Iron Pipe. Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 4 - STEEL PIPE AND FITTINGS**4.1 DESCRIPTION**

- A. The work under this item shall include furnishing, hauling, placing, and jointing of steel pipe in the trench in specific conformity with the lines and levels given. For all lines, the AWWA Standard for Installation of Cast Iron Water Mains, AWWA Designation C-600 shall govern the installation, as applicable. The method bedding shall be in accordance with Specification 31 23 33 and as shown on the attached Standard Details. The drawings show the plan and grade for the pipeline. The CONTRACTOR shall submit detail drawings to the ENGINEER for approval, showing his proposed method of laying the pipe to these grades. All pipelines to be crossed shall be located before these drawings are prepared. Fittings or specials included as pipe shall be blocked in accordance with the attached Standard Details

4.2 PIPE AND FITTINGS

- A. Where steel pipe is specified or required, it shall conform to the AWWA Standard for Steel Water Pipe 6-inches and larger, AWWA Designation C200. Only the following mill pipes specified under AWWA C200 shall be acceptable: ASTM A139, Grades B and C; ASTM A53, Grade B; ASTM A135, Grade B. Only the following steel plate fabricated under ASTM A134 shall be acceptable: ASTM A36, ASTM A572.
- B. All pipe shall be hydrostatically tested to 80% of the minimum yield point with the hydrostatic test pressure indicated on shop fabrication drawings. AWWA Designation C200 shall govern the testing. Pipe length shall be not less than 35 feet per joint, except for specials unless otherwise noted. There shall be no more than one longitudinal or girth seam per section. Nominal pipe diameter and steel thickness shall be as specified on the drawings. The diameter shown is the required inside diameter of steel pipe if coal tar lining is used or inside diameter of lining if mortar lining is used.
- C. All pipe shall be manufactured by an established manufacturer who has had at least three (3) years' experience in successfully building this type of pipe. Openings for air valves, main connections, and blow-off connections must be provided with suitable reinforcements around the opening, welded to the body of the pipe. Openings of the sizes shown on the drawings shall be furnished with steel blind flanges of proper strength to withstand the working pressure of the line where no other provision is made for closing the openings. The pipe shall have ends for slip joints for field welding,

beveled ends for field welding, beveled ends for field butt welding, or plain ends for mechanically coupled field joints.

- D. Twenty-four inch (24") or smaller pipe shall be manufactured with ends of true circular shape, free from indentations, projections, or roll marks for a distance of eight inches (8") from the end of the pipe. This shall be done by hydraulic expansion or some other method satisfactory to the ENGINEER. The outside diameter of the pipe shall be true enough in dimension to permit the passage for a distance of eight inches (8") from the end of the pipe a ring gauge with a bore three-thirty seconds (3/32") of an inch larger than the outside diameter of the pipe.
- E. Where steel fittings or special fittings are specified or required, they shall conform to all of the steel pipe specification requirements and to the AWWA Standard for Dimensions for Steel Water Pipe Fittings, AWWA Designation C208. Where fittings and specials are fabricated from mill pipe, they shall be fabricated from pipe hydrostatically tested to 80% of the pipe steel yield point with mitered joints dye checked for welding flaws. Where fittings and specials are fabricated from plate, they shall be hydrostatically tested to 80% of the minimum plate steel yield point. Changes in line and grade shall be made by steel specials or in the joints. Steel specials shall be used wherever the angle exceeds ten degrees (10°).
- F. Where field cutting of steel pipe is permitted, pipe shall be cut by sawing. The inside lining shall be removed for a minimum of eight inches each side of the cut and the pipe surface shall be cleaned and brushed to bright metal. After welding, the inside lining shall be replaced in accordance with AWWA C203.
- G. All steel blind flanges supplied in accordance with Section 405 shall be ASTM A36 Steel, 5/8-inch thick with approved gaskets and bolts. All bolts shall be carbon steel ASTM A307 Grade A only, in accordance with AWWA C207.
- H. The work under this item shall include all of the requirements specified under the item of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.

4.3 JOINTS

- A. Steel Pipe and fittings shall be jointed with any of the end types as specified below unless a particular end type is specified. Flange ends shall be used only where specifically noted on the drawings.
- B. Welded joints shall conform to, and be tested in accordance with, the AWWA Standard

for Field Welding of Steel Water Pipe, AWWA Designation C206.

- C. Mechanically coupled joints shall consist of Dresser Couplings, Style 38, or equal, or as specified on the drawings.
- D. Flanged joints shall conform to the AWWA Standard for Steel Pipe Flanges for Waterworks Service Size 4-inch through 144-inch, AWWA Des. C207, Class E.

4.4 LINING AND COATING

- A. Steel pipe and fittings shall be lined in accordance with the AWWA Standard for Cement Mortar Protective Lining and Coat for Steel Water Pipe, AWWA Designation C205, or the AWWA Standard for Coal-Tar Enamel Protective Coatings for Steel Water Pipe, AWWA Designation C203. The exterior of all underground pipe shall be cleaned, primed, and coated with coal-tar enamel, fibrous glass mat, and a bonded asbestos felt wrapper, and with either a whitewash coating or a final wrap of kraft paper, and the exterior of all above ground pipe shall be cleaned, primed, and painted, all in accordance with the AWWA Standard for Coal-Tar Enamel Protective Coatings and Linings for Steel Water Pipe, AWWA Designation C203, or in accordance with the AWWA Standard for Chlorinated Rubber-Alkyd Paint System for the Exterior of Above Ground Steel Water Piping.
- B. If mechanical couplings are used for field joints, the ends of the pipe shall be primed and enameled before the pipe is laid. If field welding is used, the pipe joints shall be furnished with the inside lining and outside coating held back twelve inches on each end for field welding. All of the lining and coating, including any field touch-up work, shall be done under the direction of the manufacturer of the lining and coating to the satisfaction of the ENGINEER. The lining at the joints on welded pipe may be patched with a minimum of two (2) coats of a coal tar or epoxy-based paint which shall be compatible with the interior lining and which shall impart no taste or odor to the water in the lines.

4.5 CONSTRUCTION

- A. If joints are field-welded, they shall develop the full strength of the pipe. The CONTRACTOR shall file with the ENGINEER a description of the method of welding which he proposes to use, the name of the individual or company who will do the welding, and a statement regarding the previous experience of such individual or company in this particular line of work. If requested, coupons shall be cut across the field welds and tested by an approved testing laboratory. The line may be welded continuously with provisions for slack in the line, or in sections to be lowered in the trench and connected by a position weld.
- B. If joints are to be mechanically coupled, sections up to 240 feet may be coupled and lowered carefully into the ditch. Electrical continuity shall be provided at all joints. Preparation for, protection of, and repair of pipe coating and lining, and coating of mechanical couplings shall conform to the applicable section of these specifications.

4.6 METHOD OF PAYMENT

- A. Steel pipe shall be measured for payment by the linear foot of pipe specified in the proposal and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe, fittings used with drop manholes, fittings or specials included as pipe, or for concrete blocking.

4.7 BASIS OF PAYMENT

- A. Accepted quantities of steel pipe measured as provided above, will be paid for at the contract unit price for:

STEEL PIPE Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 5 - REINFORCED CONCRETE PIPE AND FITTINGS

5.1 DESCRIPTION

- A. The work under this item shall include furnishing, hauling, placing and jointing of reinforced concrete pipe (RCP) in the trench in specific conformity with the lines and levels given.

5.2 PIPE AND FITTINGS

- A. Where reinforced concrete pipe (RCP) and fittings are specified or required for waterlines, they shall conform to and be tested in accordance with the AWWA Standard for Prestressed Concrete Pressure Pipe, Steel Cylinder Type, for Water and Other Liquids, AWWA Designation C301. All pipe shall be manufactured by an established manufacturer who has had at least three years' experience in successfully building this type of pipe. All specials and fittings shall be either of Type A or Type B and must be built to the details furnished by the manufacturer and approved by the ENGINEER. Each special and each length of straight pipe shall be plainly marked to indicate the head for which the pipe is designed and to indicate where the pipe will be used by reference to the layout drawings.
- B. Where reinforced concrete pipe (RCP) and fittings are specified or required for sanitary sewers, they shall conform to and be tested in accordance with the specifications for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe, ASTM Designation C76, Class as shown on the drawings. No lengths of pipe shall be less than eight feet. All concrete pipe shall be coated inside with two (2) coats of a coal-tar base paint (Standard Inertol®, or approved equal), with a twenty-four hour drying period between coats.

5.3 JOINTS

- A. Reinforced concrete pipe and fittings for waterlines shall be jointed according to AWWA Standard for Prestressed Concrete Pressure Pipe Steel Cylinder Type, for Water and Other Liquids, AWWA Designation C301.
- B. Reinforced concrete pipe and fittings for sanitary sewer shall be jointed with a single natural rubber or neoprene gasket and cement mortar formed by a diaper. It shall be formed in a continuous ring of suitable cross sections and of such size as to assure a watertight joint. Each length of pipe shall be provided with bell-and-spigot ends formed in the concrete wall. The spigot end shall contain a groove so that the gasket will be enclosed and compressed on four surfaces when the joint is in final position. All jointing materials shall be used in accordance with the manufacturer's instructions and subject to approval of the ENGINEER.

5.4 CONSTRUCTION

- A. For waterlines, the AWWA Standard for Installation of Cast Iron Water Mains, AWWA designation C-600, shall govern the installation as applicable. The method of bedding shall be in accordance with Specification 31 23 33 and as shown on the attached Standard Details. The drawings show the plan and grade for the pipeline. The CONTRACTOR shall submit detailed drawings to the ENGINEER for approval, showing the proposed method of laying the pipe to these grades. All pipelines to be crossed shall be located before these drawings are prepared. The ends of the pipes to be jointed shall be cleaned immediately prior to joining and the rubber gasket thoroughly lubricated with a thin film of gasket lubricant before it is placed in position on the spigot end.
- B. Gasket lubricant shall be as supplied by the pipe manufacturer and approved by the ENGINEER. Extreme care shall be taken in moving the spigot end of the pipe into the bell end of previously laid pipe. If the gasket is damaged or moved out of place, the new pipe shall be removed, and a new gasket applied before rejoining. Any lubricant remaining on the exposed concrete surfaces inside or outside the pipe shall be completely removed. Fittings or specials included as pipe shall be blocked in accordance with the attached Standard Details.
- C. For sanitary sewers, the methods of laying pipe, foundation, and grade specified under Pipe, Vitrified Clay, shall apply. All pipe shall be installed with the mark "C-76" visible on the top of the pipe. The ends of the pipes to be jointed shall be cleaned immediately prior to joining and the rubber gasket thoroughly lubricated with gasket lubricant before it is placed in position on the spigot end. Extreme care shall be taken in moving the spigot end of the pipe into the bell end of the previously laid pipe. If the gasket is damaged or moved out of place, the new pipe shall be removed, and a new gasket applied before rejoining.
- D. For all lines, after the pipe has been jointed, a band at least 5-1/2 inches wide shall be placed around the outside of the pipe at the joint. This band shall serve as a form for placing 1:1 cement mortar grout in the external recess formed by the face of the groove and the shoulder of the tongue. If a reinforced paper joint bank is used, it shall be drawn up tight around the pipe and the backfill tamped against it up to the spring line before pouring the grout. If a cloth band is used, it shall be wired around the outside

of the pipe, and the grout poured before backfilling. On all pipes, the joint space remaining on the inside of the pipe shall be filled with a stiff mixture of 1:1 cement mortar which shall be troweled in place to produce a continuous, smooth, flush surface across the joint.

5.5 METHOD OF PAYMENT

- A. Reinforced Concrete Pipe (RCP) shall be measured for payment by the linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe, fittings used with drop manholes, fittings or specials included as pipe, or for concrete blocking.

5.6 BASIS OF PAYMENT

- A. Accepted quantities of Reinforced Concrete Pipe (RCP), measured as provided above, will be paid for at the contract unit price for:

REINFORCED CONCRETE PIPE (RCP) Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 6 - THERMOPLASTIC POLYVINYL CHLORIDE (PVC) WATER PIPE AND FITTINGS

6.1 DESCRIPTION

- A. Thermoplastic Polyvinyl Chloride (PVC) water pipe 6 to 12-inches in size shall be allowed in the distribution system of the OWNER. The AWWA Standard for the installation of PVC water mains, AWWA Designation C-605 shall govern the installation, as applicable.

6.2 PIPE AND FITTINGS

- A. Where thermoplastic polyvinyl chloride (PVC) water pipe is specified or required, it shall conform to the AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch through 12-inch, for water, AWWA Designation C900. PVC pipe shall conform to the dimensions shown in Table 2 of AWWA C900, Dimensions and Pressure Classes for Dimension Ratio (DR) for PVC 1120 Pipe with Cast Iron Pipe Equivalent ODS. The minimum DR shall be in accordance with the plans and the minimum working pressure rating shall be 150 psi.
- B. Fittings for PVC pipe 8-inches in diameter and smaller shall be Cast Iron Short Body Fittings in accordance with AWWA C110 specification for Cast Iron Fittings, 2-inch through 48-inch, for Water and Other Liquids. All fittings shall be designed and rated for 250 psi water working pressure.

- C. The work under this item shall include all of the requirements specified under the item of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.

6.3 JOINTS

- A. Jointing of plastic pipe shall be accomplished by push-on type joints. Push-on joints consisting of a rubber "O" ring shall be used. The CONTRACTOR shall furnish to the ENGINEER details of the proposed joint in triplicate for approval before any such jointing material is delivered to the job site.

6.4 CONSTRUCTION

- A. Pipe shall be laid to the lines and grades established by the ENGINEER. The bottom of the trench shall be relatively uniform and in no case shall pipe be laid on rock. Where rock is encountered, Class "A" bedding shall be required.
- B. Long plastic pipelines, over three hundred feet (300 ft.) in length without an abrupt change in direction, shall be "snaked" in the trench to provide for expansion and contraction. Snaking shall be equivalent to the pipe touching opposite sides of a twenty-four inch (24) wide trench within a distance of eighty feet (80 ft.). It is recommended that, during warm weather, whenever practical, pipelines be filled with cold water or allowed to cool overnight before backfilling trench. Push-on joints shall be made with extreme care and by following the manufacturer's recommendation as to installation procedures. If the design of the joint permits for linear expansion of the pipe, the trench width may be reduced. Adequate thrust blocks as approved by the ENGINEER will be required at all bends, tees, and crosses.

6.5 METHOD OF PAYMENT

- A. Thermoplastic Polyvinyl Chloride (PVC) water pipe shall be measured for payment by the linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe.

6.6 BASIS OF PAYMENT

- A. Accepted quantities of Thermoplastic Polyvinyl Chloride (PVC) water pipe, measured as provided above, will be paid for at the contract unit price for:

THERMOPLASTIC POLYVINYL CHLORIDE (PVC) PIPE Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 7 - TYPE PSM POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS**7.1 DESCRIPTION**

- A. Type PSM Polyvinyl Chloride (PVC) sewer pipe ranging in size from 4 inches to 15 inches, may be installed within the OWNER'S collection system, as approved by the ENGINEER. The work under this item shall include furnishing, hauling, placing, and joining of PVC sewer pipe within the trench in specific conformity with lines and levels given. For all pipe, the ASTM Standard 2321-89 "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications" shall govern with respect to installation of the pipe. The method of bedding shall be in accordance with PART 5 of this specification and any exceptions listed below, and as shown on the attached standard details.

7.2 PIPE AND FITTINGS

- A. Where Type PSM polyvinyl chloride (PVC) sewer pipe is specified or required, it shall conform to ASTM Standard D3034-94 "Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings". Nominal pipe diameter may be from 4 inches to 15 inches in size. All PVC sewer pipe shall have a minimum pipe stiffness of 115 psi and shall have a Standard Thermoplastic Pipe Dimension Ratio (SDR) in accordance to the plans. The pipe shall be made of PVC plastic having a cell classification of 12454-B or 12454-C or 12364-C or 13364-B (with minimum tensile modulus of 3450 MPa (500,000 psi) as defined in ASTM Standard D1784. The pipe shall be clearly marked at intervals of 1.5 meters (5 ft.) or less, and the markings shall indicate manufacturer's name or trademark and code, nominal pipe size, the cell classification, the designation "Type PSM SDR-XX PVC Sewer Pipe", and the designation "Specification D3034". The fittings shall be marked with manufacturer's name or trademark, nominal size, the material designation "PVC", PSM, and the designation "Specification D3034".

7.3 JOINTS

- A. Jointing of plastic pipe shall be accomplished by push-on type joint, with an elastomeric seal conforming to ASTM Standard D3212-92 "Standard Specification for Joint for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals". The CONTRACTOR shall furnish to the ENGINEER details of proposed joint in triplicate for approval before any such jointing material is delivered to the job site.

7.4 CONSTRUCTION

- A. The pipe shall be laid on a firm foundation as required in over-excavated areas, and a bedding with a minimum thickness of 4 inches (6 inches in rock cuts). Haunching material shall be placed to the springline of the pipe and be installed in layers with a maximum thickness of 6 inches. The haunching material shall be worked around the pipe by hand, and the shovel slicing method to provide uniform support of the pipe. The initial backfill shall be placed in layers to a minimum depth of 6 inches to the top of the pipe and be placed in layers with a maximum thickness of 6 inches. All material for foundation, bedding, haunching and initial backfill shall be compacted to 85% or 95% of Standard Proctor as required according to the USCS soil classification system, and in conjunction with ASTM Standard D2321-89. Maximum particle size for all backfill material shall be 3/4 inch. All backfill shall be free from clods, lumps, boulders and frozen matter.
- B. Place pipe and fittings in the trench with the invert conforming to the required elevations, slopes and alignment. Provide bell holes in the pipe bedding, no larger than necessary, in order to ensure uniform pipe support. Fill all voids under the bell by working in bedding material. In special cases where the pipe is to be installed to a curved alignment, maintain angular "joint deflection" (axial alignment) or pipe bending radius, or both, within acceptable design limits.
- C. Comply with manufacturers recommendation for assembly of joint components, lubrication, and making of joints. When pipe laying is interrupted, secure piping against movement and seal open ends to prevent the entrance of water, mud, or foreign material.
- D. For elastomeric seal joints conforming to ASTM D3212-92 "Standard Specification for Joints for Drain and Sewer Plastic Pipe Using Flexible Elastomeric Seal", the pipe ends shall be marked to indicate insertion stop position and ensure that the pipe is inserted into pipe or fitting bells to this mark. Push spigot into bell using methods recommended by the manufacturer, keeping pipe true to line and grade. Protect end of the pipe during homing and do not use excessive force that may result in over-assembled joints or dislodged gaskets. If full entry is not achieved, disassemble and clean the joint and reassemble. Use only lubricant supplied or recommended for use by the pipe manufacturer. Do not exceed manufacturer's recommendation for angular "joint deflection" (axial alignment).
- E. Where coarse and open-graded material is placed adjacent to finer material and within anticipated ground water elevations, a geotextile filter fabric shall be placed around the bedding and initial backfill material to prevent the migration of the surrounding fines into the open voided area.
- F. After installation of the pipe has been completed and air tested, the CONTRACTOR shall pull a mandrel that has been machined to 5% of the inside diameter of the pipe from manhole to manhole. The pulling of the mandrel shall be performed no earlier than 30 days from the date of the air testing.

7.5 METHOD OF PAYMENT

- A. Type PSM Polyvinyl Chloride (PVC) sewer pipe shall be measured for payment by linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe or fittings used with drop manholes.

7.6 BASIS OF PAYMENT

- A. Accepted quantities of Polyvinyl Chloride (PVC) sewer pipe, measured as provided above, will be paid for at the contract price for:

Polyvinyl Chloride (PVC) Sewer Pipe Lineal Feet

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 8 – HDPE PIPE AND FITTINGS**8.1 DESCRIPTION**

- A. This specification covers the material, joining methods, and general installation practice for high density polyethylene pipe (HDPE) piping systems for use as indicated on the drawings. For all pipe, it must be installed in accordance with AWWA C901 and C906.

8.2 PIPE AND FITTINGS

- A. All materials shall be manufactured from a PE 4710 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material shall meet the specifications of ASTM D3350 with a minimum cell classification of 445474C or 445574C. HDPE pipe and fittings shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. HDPE products shall be homogenous throughout and free of visible cracks, holes, foreign inclusions, voids, or other injurious defects.
- B. Pipe shall be made of HDPE material with a minimum material designation code of PE 4710 and with a minimum Cell classification as noted in Section A. The polyethylene compound shall be suitably protected against degradation by ultraviolet light by means of carbon black of not less than 2 percent. The manufacturer of the HDPE resin shall certify the cell classification indicated.
- C. Pipe sizes 3" DIPS/4" IPS and larger shall have a manufacturing standards of ASTM F714, while IPS pipe 3" and smaller shall be manufactured to the dimensional requirements listed in ASTM D3035. Dimension Ratio (DR) and Outside Diameter (IPS/DIPS) shall be as specified on plans.

- D. Pipe shall be manufactured by an ISO 9001 certified manufacturer. The pipe manufacturer shall have an ongoing Quality Control program for incoming and outgoing materials and shall assure that the pipe will meet the material requirements of this specification. HDPE resins for manufacturing of pipe shall be checked for density, melt flow rate, and decontamination. For potable water systems the facility shall have the necessary testing equipment to verify that pipe meets the AWWA and NSF standards. Pipe shall be checked for outside diameter, wall thickness, length, and surface finish on the inside and outside. The manufacturer's production facilities shall be open for inspection by the Owner or Engineer.
- E. All pipe may be color coded for the intended service. When required, the color coding shall be permanently co-extruded stripes on the pipe outside surface as part of the pipe's manufacturing process. Painting HDPE pipe to accomplish color coding is not permitted.
- F. All fabricated elbows, tees, reducing tees and end caps shall be produced and meet the requirements of ASTM F2206, as manufactured by ISCO Industries, Inc or other approved manufacturer holding an ISO 9001 quality system certificate. Each fitting will be marked per ASTM F2206 section 10 including the nominal size and fitting EDR, which will meet or exceed the pipe DR identified for the project. Fabricated fittings shall be manufactured using a data recording device to record fusion pressure and temperature and shall be stamped with unique joint number that corresponds to the joint report. A graphic representation of the temperature and pressure data for all fusion joints made producing fittings shall be maintained for a minimum of 5 years as part of the quality control and will be available upon request of owner. Test results to validate ASTM F2206 section 7.3 and 9 shall be provided to owner or owner's representative upon request.
- G. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans or accepted by ENGINEER.
- H. The work under this item shall include all of the requirements specified under the item of pipe, in that "pipe" is understood to also mean "bends, tees, crosses, sleeves, outlet assemblies and other specified fittings". Unless otherwise specified, outlet assemblies shall consist of a flanged outlet constructed into the wall of steel or concrete pipe. If cast or ductile iron pipe is used, the outlet shall consist of a tee with the outlet flanged. If a gate valve or butterfly valve is shown on the drawings to be attached to the outlet, the line side end shall be flanged, and the opposite end shall be bell or mechanical joint according to the item for valves. All bends, tees, crosses, outlet assemblies, and plugs shall be blocked with concrete as shown on the attached Standard Details, except where the fittings have flanged, welded, or harnessed joints, the ENGINEER may under certain conditions delete the blocking. Concrete blocking shall be placed so that joints are accessible for repair.
- I. Bolted Connections
 - 1. Flanged and Mechanical Joint Adapters can be made to ASTM D3261. Flange adapters, if machined, may also meet the requirements of ASTM F2880. Flanges and MJ Adapters shall be fused onto the pipe and have a minimum pressure rating equal to or greater than the pipe unless otherwise specified on the plans.

2. Metallic back-up rings (Van-Stone style lap joint flanges), shall have a radius on the inside diameter of the bore so as to be compatible with AWWA C207 Class D (or B or E), ASME/ANSI B 16.5 Class 150, ASME/ANSI B 16.1 Class 125, or ASME/ANSI B16.47 Series A.
3. Flange assemblies shall be assembled and torqued according to PPI TN-38, "Bolt Torque for Polyethylene Flanged Joints."

J. Mechanical Fittings

1. The use of mechanical coupling and saddles shall be approved by the ENGINEER prior to installation. Mechanical fittings shall be designed for use an compatible with HDPE pipe.
2. Coupling without self-restraining capabilities (integrated serrated teeth or grippers) shall include a plan for external restraint or isolation from pipeline generated forces.
3. Mechanical saddles shall have wide straps for distribution of clamping loads. No U-Bolts shall be allowed.
4. When required by mechanical coupling manufacturer, pipe stiffeners shall be employed to support the interior wall of the HDPE. The stiffeners shall support the pipe's end and control the "necking down" reaction to the pressure applied during normal installation. The pipe stiffeners shall be formed of 304 or 316 stainless steel, with a wedged style design to fit the HDPE manufacturers published average inside diameter of the specific size and DR of the HDPE.

8.3 EQUIPMENT

- A. All fusion equipment, whether new or used, rented or owned, shall comply with the requirements of ISO 12176-1 "Equipment for Fusion Jointing Polyethylene Systems".
- B. Butt Fusion
 1. Butt fusion equipment must be in satisfactory working order and the hydraulic system must be leak free. Heater plates shall be free from scrapes, gouges, and have a consistent clean coated surface. The pressure gauge and thermometer should be properly calibrated. When requested by the ENGINEER, records showing a maintenance service or inspection within 3 months prior to use for this project shall be provided.
 2. For 16" and larger pipe sizes, the butt fusion machine shall be capable of autonomously calculating the drag pressure and perform the shift sequence autonomously.

3. For 6" and larger pipe sizes, the pipe butt fusion machine shall be a self-contained hydraulic fusion machine capable of butt fusing HDPE pipe. The carriage must be removable from the chassis for in-ditch use. The machine must be compatible with an electronic data recording device. Accessories will include all butt fusion inserts for the specified range of pipe sizes, a pyrometer kit for checking the surface temperature of the heater, extension cord of appropriate gauge (25' minimum), and hydraulic extension hoses (minimum of four). The butt fusion machine will be McElroy, or approved equivalent.
 4. In areas where there may be insufficient space for layout of the entire length of fused pipe to be pulled-back, the Contractor shall utilize a continuous HDPE pipe fusion equipment such as a PolyHorse by McElroy or other means in order to fuse the length of pipe necessary for the installation.
- C. Electrofusion processors shall be maintained and calibrated per manufacturer's requirements and recommendations.

8.4 JOINTS

- A. All HDPE pipe shall be joined to by the heat fusion process which produces homogeneous, sealed, leak-tight joints. Tie-ins between sections of HDPE pipe shall be made by butt fusion whenever possible.
- B. Butt Fusion
1. The pipe shall be joined by the butt fusion procedure outlined in ASTM F2620 or PPI TR-33. All fusion joints shall be made in compliance with the pipe or fitting manufacturer's recommendations. Fusion joints shall be made by qualified fusion technicians per ASTM F3190. A record or certificate of training for the fusion operator must be provided that documents training to the fundamentals of ASTM F2620. Considerations should be given to and provisions made for adverse weather conditions, such as temperatures below freezing, precipitation, or wind, which is accepted by the owner/engineer. The use of a controlled cooling cycle procedure to reduce cooling time is acceptable only as part of a controlled cooling cycle procedure where testing demonstrates that acceptable joints are produced using the controlled cooling cycle procedure.
- C. Electrofusion
1. Electrofusion joining shall be done in accordance with the manufacturers recommended procedure. Other sources of electrofusion joining information are PPI TN 34 and PPI Municipal Advisory Board (MAB) Generic Electrofusion Procedure for Field Joining of 12 Inch and Smaller Polyethylene (PE) Pipe. The process of electrofusion requires an electric source, commonly called an electrofusion processor that has wire leads and a method to read electronically (by laser) or otherwise input the barcode of the fitting. The electrofusion processor must be capable of reading and storing the input parameters and the fusion results for later download to a record file. Qualification of the fusion technician shall be demonstrated by evidence electrofusion training within the past year on the equipment to be utilized for this project.

D. Data Recording

1. For 6" and larger pipe sizes, McElroy DataLogger or equivalent fusion data recorder shall be used to record all fusion welds on hydraulically operated fusion machines. The device shall be capable of meeting the requirements of ASTM F3124, "Standard Practice for Data Recording the Procedure used to Produce Heat Butt Fusion Joints in Plastic Piping Systems or Fittings". The device, or combination of devices, shall record the following variables of each fused joint:
 - i. Heater surface temperature- immediately before inserting the heater plate, measure with a pyrometer and manually enter into the weld record.
 - ii. Gauge pressure during the initial heat cycle
 - iii. Gauge pressure and elapsed time during the heat-soak cycle
 - iv. Heater removal (dwell) time
 - v. Gauge pressure and elapsed time during the fusing/cool cycle
 - vi. Drag pressure
 - vii. Pipe diameter and wall thickness
 - viii. Type of HDPE material (Specification and Classification) and manufacturer
 - ix. Fusion Machine Identification
2. The device shall record the operator name and a unique operator ID number, along with the date and time of each weld.
3. Records showing the device is up to date on all required calibration should be available for presentation when requested.
4. All fusion welds should be traceable to the report (via operator and weld ID) with an indentation weld stamp or by permanent paint marker/pen next to fusion weld.
5. A weld location map may be requested, prior to commencement of work, by the owner or owner's representative.

8.5 CONSTRUCTION

A. For direct burial, refer to Specification 31 23 33.

B. Pull-In Installation

1. Per ASTM F1804 and/or www.HDPEapp.com, the contractor shall determine and document the maximum proposed pull-in length and pull-in force for the pressure class and pipe diameter to be pulled into an open trench. Pull-in lengths will not exceed the maximum lengths for the class and diameter pipe. A commercially available load limiter (weak link) approved by the Engineer shall be used between the puller and the pipe.
2. Prior to pulling the pipeline, contractor shall place rollers or other approved devices beneath the pipe to avoid unnecessary damage and to reduce pipe drag.

3. Trenchless installations:

- i. For Horizontal Directional Drilling (HDD), refer to Specification 33 05 07.13 and ASTM F1962, PPI TR-46, PPI PE Handbook (Chapter 12).
- ii. For sliplining, refer to ASTM F585, PPI PE Handbook (Chapter 11).
- iii. For pipe bursting, refer to Specification 33 31 30 and PPI PE Handbook (Chapter 16)

C. Appurtenances

- 1. All appurtenances (tees, elbows, services, valves, air relief valves, fire hydrants, etc.), must be independently supported and shall not rely on the pipeline and its connections for this support. Excessive stresses may be encountered when appurtenances are inadequately supported.
- 2. Hydrant Assemblies shall be installed and field tested according to the requirements of AWWA M17.
- 3. Installation of Tracer Wire. When tracer wire is required, the Contractor shall install along the entire section of pipeline and along all service connections as listed below. The tracer wire shall be installed simultaneously with the polyethylene piping system. Tracer wire shall be installed by the Contractor once backfill has been placed and compacted to at least 12 inches above the top of the pipe and not more than 18 inches above the top of the pipe. Tracer wire shall be properly spliced at each end connection and each service connection. Care should be taken to adequately wrap and protect wire at all splice locations. No bare tracer wire shall be accepted. Provide Magnesium alloy anode for cathodic protection that conforms to the requirements of ASTM B843. Install tracer wire per local and manufacturer's requirements.

8.6 METHOD OF PAYMENT

- A. HDPE pipe shall be measured for payment by the linear foot of pipe of the size specified in the proposal and on the plans and placed as shown on the drawings. Total footage shall be the actual horizontal measurement along the centerline of the pipe. No additional payment shall be made for vertical bends in the pipe.

PART 9 – SEWER CONNECTION

9.1 DESCRIPTION

- A. The work under this item shall include all excavation, furnishing all materials required, construction, finishing, and backfilling of connections to existing mains, manholes, drop connections to manholes, special connections, service line connections, or plugs, as indicated on the drawings or as directed by the ENGINEER.

9.2 CONSTRUCTION

- A. Connections to existing manholes shall be made by cutting into the manhole at the specified grade, inserting the pipe, and encasing the joint with concrete. CONTRACTOR shall not break into any existing sewer unless the OWNER'S REPRESENTATIVE is present and the work done shall be under the direction of the OWNER'S REPRESENTATIVE. The manhole base shall be cut and reconstructed in such a manner that a proper invert section is maintained. All waste mortar, debris, and sharp edges shall be removed from the joints, bottom, and invert. CONTRACTOR shall remove and replace the manhole steps in the proper location and in accordance with the attached standard details if they are not properly located after the connection is made. Any and all diversion or pumping of water or sewage in a wet connection is included in this item.
- B. Methods of construction shall be the same for sewer service line reconnections as for main sewers. All reconnections shall be constructed in conformance with the Plumbing Code of the OWNER unless modified herein. New pipe used shall be of the same diameter as the existing line.
- C. Plugs shall be constructed of manhole brick and mortar, extending at least one foot into the line plugged from the manhole. The plug shall be watertight and troweled to a smooth finish on the interior of the manhole.
- D. At points indicated on the plans or by the ENGINEER, risers of the size indicated on the plans, or as required by the ENGINEER, shall be constructed. A 45-degree bell and spigot bend shall be jointed to the wye to a point level with lower side of bell of 45-degree bend. Pipe for risers shall be regular length joints of sewer pipe. Risers using full joints of pipe shall be set so that the top of riser is near to but not less than ten (10) feet below finished ground grade at rear of building location. If the OWNER desires, the CONTRACTOR may, at the OWNER's expense, extend risers to a point not less than six (6) feet below finished grade at rear of the building locations, but, in no case, shall there be less than four (4) feet of cover over riser.

When contained wholly on the public right-of-way, or within the boundaries of utility easements, risers may be laid on a slope of 45 degrees.

9.3 METHOD OF MEASUREMENT

- A. Connections will be measured for payment per each classification of connection as shown on the proposal. No additional payment will be made for excavation, backfilling, furnishing and placing concrete, removing and replacing manhole steps, or for diversion or pumping of water or sewage necessary to make the connection. Connections shown on the plans but not classified on the proposal shall be considered incidental to the work and will not be measured for payment but the cost shall be included in other items.

9.4 BASIS OF PAYMENT

- A. Accepted quantities measured as provided above will be paid for at the contract unit price as shown on the proposal for each connection which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 10 – WATER CONNECTION

10.1 DESCRIPTION

- A. The work under this item shall include all excavation, furnishing all materials required, construction, finishing, and backfilling of connections to existing mains, valves, special connections, service line connections, as indicated on the drawings or as directed by the ENGINEER.

10.2 CONSTRUCTION

- A. The drawing shows details of the various connections and they shall be made in accordance with the details or as directed by the ENGINEER. On water mains, the CONTRACTOR will make the pressure and wet connections to existing mains as shown on the drawing unless specifically noted otherwise. In making these connections all material, equipment, and personal necessary for the job shall be assembled at the site and all work possible shall be done before the service is interrupted. The order and time of the work will be under the jurisdiction of the ENGINEER. If deemed necessary, the ENGINEER may order the CONTRACTOR to make the connection at night so as to inconvenience the public as little as possible.

- B. Where called for on the plans, or by the specifications, tapping valves and sleeves shall be used to make connections with existing water mains. The CONTRACTOR, when ready to make any of these connections, will notify the ENGINEER 48 hours in advance. The CONTRACTOR shall furnish all material, labor and equipment to make the taps.

The tapping valves furnished shall be Mueller, American Flow, or approved equal and tapping sleeves furnished shall be Ford, Smith Blair, or approved equal satisfactory to the ENGINEER. The tapping sleeves shall be the bolted type, heavy duty, using iron bolts, cast iron or equal satisfactory to the ENGINEER.

- C. Service line connections for water services shall be constructed as shown on the standard drawings and materials shall be copper, brass, municipex, or approved equal by ENGINEER.
- D. The material and workmanship for brass goods shall be of the highest quality and shall interchange with brass goods presently in use by the owner. Brass goods shall conform to the same precise standards as described in AWWA Specifications Number C800 Standard Specifications for underground service line fittings.
- E. Brass goods shall contain 85 percent copper and 5 percent each of tin, lead, and zinc and shall be tested by hydrostatic pressure of 200 pounds per square inch. The bidder shall furnish a complete description of brass goods with his bid.

- F. Copper tubing shall be Type "K" soft annealed seamless tubing and shall conform to ASTM-B88 Standard Specification for Seamless Copper Water Tube.
- G. The coils of copper tubing shall be in individual packages. The CONTRACTOR shall furnish an affidavit that the copper tubing furnished complies with all specifications.
- H. Municipex pipe shall be in accordance with AWWA 904 and ASTM F876.

PART 11 – CASTINGS

11.1 GENERAL

- A. Castings for valve boxes, valve vaults, manholes, lamp holes, and other appurtenances shall conform to, and be tested in accordance with the specifications for Gray Cast Iron, ASTM Designation A48, Class 30. Design shall be according to the attached Standard Details. Frames and covers that are to be located within dedicated public right-of-way, or any other location subject to vehicular traffic, shall have all bearing surfaces machined so that fittings parts will not rattle or rock under traffic. All castings shall be subject to a hammer test before installation.

PART 12 - RIGHT-OF-WAY CLEARING AND RESTORING

12.1 DESCRIPTION

- A. Work under this item shall include the removal and reconstruction or replacement of all obstructions affected, other than those covered in this specification, by the construction of the project including, but not limited to fences, retaining walls, patios, barbecues, signs, mailboxes, outbuildings, landscaping, sidewalks, driveways, parking lot surfacing, curbs, and the like. Any such obstructions which are not to be reconstructed are so designed on the drawings. Such shall be removed and disposed of by the CONTRACTOR. All obstructions to be replaced or reconstructed shall be restored to substantially the same condition as existed prior to the construction, except as otherwise noted. All sidewalk, driveway, and parking lot replacement shall be of at least equal quality, thickness, compacted subgrade and base course, and surface course as that removed or damaged. The CONTRACTOR shall remove and dispose of all debris, restore the grade of the surface of the earth as reasonably as may be done to the grade existing prior to construction, and upon completion of the work shall leave the site in as neat, clean, and orderly condition as nearly as it was prior to construction as may be reasonably done.

12.2 MATERIALS AND TESTS

- A. Backfill materials under parking lots and driveways shall be in accordance with Specification 31 23 33 or as approved by the ENGINEER.
- B. Portland Cement Concrete shall be in accordance with Specification 03 30 00. All concrete placed in parking lots, driveways, sidewalks, and all other concrete structures within the right-of-way shall use high-early strength cement.
- C. Asphaltic Concrete - Bituminous pavement shall meet the requirements shown in Section 32 12 16.39.

- D. Sampling and Testing - Sampling of materials will be made in accordance with the appropriate methods specified in the corresponding section listed above. Tests will be conducted in accordance with the schedule of tests provided in the special provisions or as shown on the plans.

12.3 CONSTRUCTION

- A. Passable surfaces across or along the construction vicinity shall be maintained at all times with gravel, steel mat or plate, or temporary bituminous surfacing material where a sidewalk, driveway, or parking lot previously existed.
- B. Sidewalks, driveways, parking lots, and other paved areas, all or partially composed of concrete, asphaltic concrete, or bituminous material shall be saw cut, removed, and replaced to at least the standard trench width if the project crossing is at right angles to the obstruction. If a construction joint is within two (2) feet of any proposed sawed line, the cut shall be extended to the joint, or as directed by the ENGINEER. Curbs shall be tunneled under in all cases, unless otherwise approved in writing by the ENGINEER.
- C. Backfill under sidewalks, driveways, parking lots, and other paved areas shall be in accordance with Specification 31 23 33. All backfill shall be thoroughly compacted with sufficient moisture and by mechanical means to prevent settlement. Settlement or other failure of backfill or restored right-of-way shall be corrected immediately. The method of correction shall be as directed by the ENGINEER.
- D. Existing water and sewer lines: Wherever existing water or sewer lines are encountered, the CONTRACTOR shall protect the same from damage. In case damage does result, the CONTRACTOR shall, as directed by the ENGINEER, repair the same at his own expense.
- E. Vertical and horizontal separation of water and sewer lines: Where a sanitary sewer crosses any existing or proposed water main and is closer than 10-feet horizontally or 2-feet vertically the sanitary sewer shall be ductile iron pipe for a distance of 20-feet horizontally. If the sanitary sewer crosses above the water main, the sanitary sewer shall be ductile iron pipe and concrete encased. Where a sanitary sewer is constructed closer than 50 feet to a water well (existing or proposal) the sanitary sewer shall be ductile iron pipe.

Where a water main crosses any existing or proposed sanitary sewer and is closer than 10-feet horizontally or 2-feet vertically, the sanitary sewer shall be replaced for a distance of 20-feet horizontally with ductile iron pipe. If the water main crosses below the sanitary sewer, the sanitary sewer shall be replaced with ductile iron pipe and concrete encased.

- F. Existing structures which are to be abandoned shall be broken off or removed to a depth of not less than six (6) inches below the foundation grade of new structures. Any blasting or other operation which might endanger the new work shall be completed prior to the construction of any part of the new structure. After the removal of any existing structures, all excavations not to be occupied by new structures and all holes created shall be cleaned up and the site left in a neat and orderly condition.

- G. If an obstruction is of public ownership, the CONTRACTOR shall notify the appropriate agency, and obtain any necessary permit or license forty-eight (48) hours before beginning any operations affecting the obstruction. All work shall conform to the current standards and specifications of that agency and shall be approved by the agency before completion of the project. At the CONTRACTOR'S request, the ENGINEER will furnish information as to what licenses or permits are required.
- H. The CONTRACTOR shall notify all utility companies prior to beginning construction and shall provide an electrical or mechanical device or use such other means he may select, to locate any hidden utility line, oil or gas pipe line, water pipe line, sewer pipe line, telegraph and telephone line or other structures provided for in these specifications and locate such line or structures shown on the plans and any uncharted line or structure whether shown on the plans or not and protect, adjust to grade, disconnect and replace, relocate and replace, remove, provide supports during the construction and settlement of backfill and protect against freezing or unnecessary damage by the elements of existing utility lines, oil or gas pipe lines, water pipe lines, sewer pipe lines, telegraph and telephone lines, railroad right-of-way lines and other structures and shall pay all fees to County, City, State or Federal agencies which may be required in the performance of this work. In the event injury does result to any gas lines, power lines or poles, telephone lines or poles, etc., the CONTRACTOR shall, holding the OWNER entirely blameless, make proper restitution.

12.4 METHOD OF MEASUREMENT

- A. Remove and replace paved driveways, paved parking lots and other paved areas, except sidewalks, shall be measured by the square yard. This area will be derived by multiplying the length along the centerline of the pipe by the standard trench width and converting to square yards, unless otherwise approved by the ENGINEER.
- B. Remove and replace sidewalks shall be measured by the square foot, whereby the area was measured in the same manner as paved driveways in 12.3(B) above.
- C. Gravel and rock driveways, parking lots, and other areas will not be measured for payment, but rather shall be considered incidental to the work.
- D. Temporary materials required for maintenance of traffic through pavement cut locations will not be measured for payment.
- E. Compaction of backfill to 90% Standard Density in driveways, parking lots, etc. will not be measured for payment, and the cost of this work shall be included in other bid items.
- F. Other structures and obstructions shall not be measured for payment, unless shown on the proposal, and the cost of this work shall be included in other bid items.

12.5 BASIS OF PAYMENT

- A. Accepted quantities, measured as provided above will be paid at the contract unit price for:

Pavement repair, HES concrete Sq. Yd.

Pavement repair, asphaltic Sq. Yd.

Sidewalk repair, concrete Sq. Yd.

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 13 - STREET AND ALLEY, RIGHT-OF-WAY CROSSINGS**13.1 DESCRIPTION**

- A. Work under this item shall consist of backfilling, compacting, and pavement repair, where applicable, of all trenches crossing streets and alleys, dedicated or proposed to be dedicated to the public in accordance with the lines, grades and dimensions shown on the plans or as directed by the ENGINEER.

13.2 MATERIALS AND TESTS

- A. Backfill materials and streets and alleys shall be in accordance with Specification 31 23 33.
- B. Portland Cement Concrete shall be in accordance with 03 30 00. All concrete placed within the right-of-way shall be high-early-strength (HES) cement.
- C. Asphaltic Concrete - Bituminous Pavement shall meet the requirements of Specification 32 12 16.39.
- D. Sampling and Testing - Sampling of materials will be made in accordance with the appropriate methods specified in the corresponding section listed above. Tests will be conducted in accordance with the schedule of tests provided in the special provisions or as shown on the plans.

13.3 CONSTRUCTION

- A. Compaction: The CONTRACTOR shall place the select soil in accordance with Specification 31 23 33.
- B. Pavement Removal: Removal of paved surfaces shall be in accordance with the standard drawings.
- C. Pavement Repair: Concrete and Bituminous Pavement shall be repaired in accordance with the standard drawings and the Standard Specifications for Streets and Alley Construction of the OWNER.

13.4 METHOD OF MEASUREMENT

- A. Compacted backfill in unpaved streets and alleys will be measured by the cubic yard. This volume will be derived by multiplying the length along the centerline of the pipe by the standard trench width and by the average depth of the trench and converting to cubic yards, unless otherwise approved by the ENGINEER.
- B. Compaction of backfill to 95% Standard Density in paved streets and alleys will not be measured for payment, and the cost of this work shall be included in removal and replacement of pavement.
- C. Remove and replace concrete and bituminous pavement will be measured by the square yard. This area will be derived by multiplying the length along the centerline of the pipe by the standard trench width plus 12-inches on each side of the trench and converting to square yards.
- D. Over-breakage (the removal of more paving than is specified in 4.4(C) above) will not be measured for payment but shall be repaired in accordance with these specifications at the expense of the CONTRACTOR.

13.5 BASIS OF PAYMENT

- A. Accepted quantities of the type specified on the proposal, measured as provided above, will be paid for at the contract unit price for:

Remove and replace pavement Sq. Yd.

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 14 - PIERS, REINFORCED CONCRETE**14.1 DESCRIPTION**

- A. The work under this item shall include all materials, forming, pipe anchorage, construction and finishing of above ground standard reinforced concrete piers and below ground, restraining collar, reinforced concrete piers. Piers shall be located and constructed as shown on the drawings and the attached standard drawings.

14.2 MATERIALS AND TESTS

- A. Materials and testing shall be in accordance with Section 03 30 00.

14.3 CONSTRUCTION

- A. Forms shall be made to conform to the shape of the pier and securely braced. Reinforcing steel shall be bent as detailed and securely tied in place. Bearing area for the pipe shall be made to fit the outside diameter of the pipe and shall support the pipe at the proper grade. Any honeycomb or other unevenness in the concrete shall be patched with cement mortar immediately after form removal. Construction of piers shall be in accordance with Specification 03 30 00.

14.4 METHOD OF PAYMENT

- A. Reinforced concrete piers and restraining collars shall be measured by the number of units constructed. No additional payment will be made for excavation, forming, bracing, dewatering, backfilling, reinforcing steel, or pipe anchorage.

14.5 BASIS OF PAYMENT

- A. Accepted quantities of reinforced concrete piers, measured as provided above, will be paid at the contract unit price for:

Reinforced Concrete Pier, Standard EA.

Reinforced Concrete Pier, Restraining Collar EA.

which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

PART 15 - FIELD TESTS AND REVISIONS:**15.1 DESCRIPTION**

- A. Field tests and revisions of water and sewer mains shall be successfully completed prior to final acceptance. All discrepancies shall be corrected by the CONTRACTOR to make a complete and workable system.

15.2 MATERIALS AND TESTS

- A. Sewer:

1. Alignment: After joints have been inspected and approved and trench backfilled as specified, the ENGINEER shall check alignment between manholes or manhole locations. Any misplaced pipes detected shall be corrected to line and grade at the CONTRACTOR'S expense.
2. Deflection: In accordance with OAC 252:656-5-5(a), CONTRACTOR shall perform deflection tests on all flexible pipe after the final backfill has been in place at least 30 days. Deflection must not exceed 5%. Tests must be run using a rigid ball or mandrel with a diameter equal to 95% of the inside diameter of the pipe, taking into account manufacturing tolerances. Tests must be performed without mechanical pulling devices. Tests must be in accordance with applicable ASTM standards.
3. Line Leakage Test: Leakage tests shall be required for all new construction in accordance with OAC 252:656-5-5(b). The leakage test shall be an exfiltration test, whereby a minimum positive head of two (2) feet shall be exerted on a section of line by plugging the lower end and filling the manhole upstream with water. The leakage outward shall not exceed 10 gallons per inch of pipe diameter per mile per day (10 gallons/inches/miles/day) for any section of the system. If infiltration is observed due to hydrostatic ground water leakage the infiltration shall be reduced so as not to exceed 10 gallons/inches/miles/day. The procedures listed in the Handbook of PVC Pipe, Uni-Bell PVC Pipe Association, 2001 may be used for PVC pipe. Pipe testing must meet the provisions for the applicable ASTM standard

for the test to be used.

4. Manhole Leakage Test: Leakage tests shall be required for all new construction in accordance with OAC 252:656-5-4(g)(7) and shall be performed per ASTM C1244.
5. Where test results, in the opinion of the ENGINEER, indicated construction deficiencies, the CONTRACTOR shall make all effort to locate same and make satisfactory corrections. Infiltration through manhole walls shall be corrected regardless of the results of these tests.

B. Water:

1. Hydrostatic and Leakage Test:
 - a. PVC: Shall be in accordance with AWWA C605 procedures. After the pipe has been laid and backfilled, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic gauge pressure of 200 psi, for a duration of two hours, said pressure not to vary more than five pounds, except that PVC pipe shall be tested a design working pressure.
 - b. HDPE: Shall be in accordance with AWWA C906 procedures. After the pipe has been laid and backfilled, subject the pipe to a pressure of 1.5 times the design working pressure at the lowest point in the test section is used as the test pressure. Acceptance is found by reducing the test pressure by 10 psi and monitoring the pressure for one hour. If the pressure remains steady – within five percent of the target value – for one hour, leakage is not indicated.
2. Each valved section of pipe shall be slowly filled with water and the specified test pressure, based on the elevation of the lowest point of the line of lowest point of the section under test, and corrected to the elevation of the test gauge shall be applied by means of a test pump connected to the pipe in a manner satisfactory to the ENGINEER. The CONTRACTOR shall make arrangements for metering the amount of water used during the test.
3. The CONTRACTOR shall backfill all pipe and provide all reaction blocking before hydrostatic testing. It shall be the CONTRACTOR'S responsibility to locate and repair any and all leaks that may develop. The ENGINEER may direct the CONTRACTOR to leave certain joints and connections uncovered until testing has been completed.
 - a. Before applying the specified test pressure, all air shall be expelled from the pipe. If hydrants or blow-offs are not available at high places taps at points of highest elevation shall be made before test is made and plugs inserted after the test has been completed. Any cracked or defective pipe, fittings, valves or hydrants discovered in consequence of this pressure test shall be removed and replaced with sound material and the test shall be repeated until satisfactory to the ENGINEER.
 - b. In conjunction with the hydrostatic test, a leakage test shall be conducted as detailed in Section 4 of ANSI/AWWA Specification C-600/605, a portion of which is stated below.
 - c. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within

5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{ND P^{1/2}}{7400}$$

in which "L" is the allowable leakage in gallons per hour; "N" is the number of joints in the length of pipe test; "D" is the nominal diameter of the pipe, in inches; and "P" is the average test pressure during the leakage test, in pounds per square inch gage. Allowable leakage per 1000 ft. of pipeline in gallons per hour at 200 psi for selected pipe diameters is listed below for 18-foot nominal lengths. Leakage tests for PVC pipe shall be at the design working pressure.

Nominal Pipe Diameter (Inches)	Allowable Leakage Per 1000 Feet of Pipeline (GPH)
2	0.22
3	0.33
4	0.44
6	0.65
8	0.87
10	1.09
12	1.31
Nominal Pipe Diameter (Inches)	Allowable Leakage Per 1000 Feet of Pipeline (GPH)
16	1.74
18	1.96
20	2.18
24	2.61
30	3.27
36	3.92
42	4.58
48	5.23
54	5.88

- d. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons/hours/inches of nominal valve size shall be allowed. When hydrants are in the test section, the test shall be made against the closed hydrant. Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than that specified, the CONTRACTOR shall, at his own expense, locate and repair the defect until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.
- e. In accordance with OAC 252:626-19-2 (e), leakage must not exceed 10 gal/inch diameter per mile of pipe per 24 hours at 150 psi testing pressure.
4. Disinfection of Waterlines: All waterlines shall be flushed and disinfected, after testing and before being placed in service, by the methods detailed in AWWA C-601 except as modified herein.
 - a. Chlorine shall be introduced into the main in a liquid solution or as dry gas in a

continuous feed unless otherwise approved by the ENGINEER.

- b. The results of the disinfection procedure shall produce a residual of a minimum of ten parts per million (10 ppm) of chlorine in the portion of the main farthest from the point of application, after a period of twenty-four (24) hours has elapsed, as well as any other portion of the main. Samples shall be taken at location determined by the ENGINEER for tests of residual chlorine.
5. Water and sewer lines shall be constructed at the locations shown on the plans or as directed by the ENGINEER. Planned locations, grades or depths shall be adhered to unless, in the opinion of the ENGINEER, actual field conditions dictate revisions thereof. When the ENGINEER considers it necessary to deviate from planned locations, the CONTRACTOR shall construct said water or sewer lines to new alignment and/or grades established by the ENGINEER or as directed by the ENGINEER, such directions, construction stakes showing alignment and depth of cut, or revised construction plans issued by the ENGINEER.

15.3 BASIS OF PAYMENT

- A. No extra payment will be made for construction to revised locations other than increased or decreased quantities of pipe, fittings, manholes, or other items tabulated on the proposal. No extra payment will be made for additional excavation required by deviations from planned alignment or grades. Leakage tests will not be measured for payment, but the cost shall be included in other bid items. The CONTRACTOR'S bid price for waterlines to include all costs of hydrostatic and leakage test and sterilization as no separate payment will be made for these items.

END OF SECTION 33 11 00

SECTION 33 31 30 - PIPE BURSTING**PART 1 – GENERAL****1.1 DESCRIPTION**

- A. It is the intent of this portion of the specification to provide for replacement of sewer mains via the trenchless technology of pipe-bursting. Pipe-bursting for sewer main rehabilitation/replacement shall be reviewed and approved by the OWNER on a case-by-case basis.

1.2 WORK INCLUDED

- A. Scope of Work shall be per the design submittal and the Contract Documents.
- B. Work may include installation of equipment and incidentals required for sanitary sewer system improvements, including sewer mains, laterals, manholes, flushing inlets, grease traps and interceptors, and pumping facilities in accordance with the requirements of the Contract Documents.
- C. Any and all work to be performed on the Collection System shall be inspected and approved by the OWNER.
- D. The CONTRACTOR shall be certified by the particular pipe-bursting system manufacturer, and personnel shall be certified as fusion technicians by a manufacturer of HDPE pipe.
- E. The CONTRACTOR shall perform a pre-construction Closed Circuit Television (CCTV) inspection to evaluate the condition of the existing pipe and determine whether the pipe-bursting method is a valid alternative for repair. Inspection video shall be made available to the OWNER.
- F. The CONTRACTOR shall comply with the OWNER'S NPDES Discharge permit, as updated, for discharges to the storm drain system, including adherence to all applicable Best Management Practices to prevent pollutants, including sediment, from entering the storm drains.

1.3 RELATED SECTIONS

Section 33 11 00 – Waterline and Sanitary SS Specifications

1.4 REFERENCE STANDARDS

- A. ASTM D3035 "Standard Specification for Polyethylene Plastic Pipe (SDR-PR). Based on Controlled Outside Diameter."
- B. ASTM D 3350 "Standard Specification for Polyethylene Plastic Pipe and Fitting".
- C. ASTM F714-13 "Standard Specification for Polyethylene Plastic Pipe (DR-PR). Based on Outside Diameter".

D. ASTM D 3350 "Standard Specification for Polyethylene Plastic Pipe and Fitting".

1.5 QUALITY ASSURANCE

A. All materials and equipment furnished under this Section shall be:

1. From a manufacturer who has been regularly engaged in the design and manufacture of the materials and equipment for at least five (5) years; and
2. Approved by the ENGINEER before installation. The ENGINEER shall verify that the quality is equal to the materials and equipment made by those manufacturers specifically named herein, if an alternate product manufacturer is proposed.

1.6 SUBMITTALS

- A. Shop Drawings: Submit data to show that the product conforms to the specification requirements.
- B. Materials List: Submit a list of all materials proposed to be used on the project, showing manufacturer's name, product trade name, type, grade, and weight. Materials list shall be submitted and approved before any installation occurs.
- C. Manufacturer's Warranty: Submit manufacturer's warranty on the product and a certificate showing compliance with applicable ASTM Standards.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Only HDPE SDR 17 and butt-fusion joints shall be used for pipe bursting applications.

2.2 CONSTRUCTION

At a minimum, the CONTRACTOR shall adhere to the following requirements during construction:

A. Defects and Obstructions

1. CONTRACTOR shall perform all necessary point repairs and remove all obstructions when pre-construction CCTV inspection reveal heavy solids, offset joints, sags in the pipe, or collapsed pipe that will prevent the completion of the pipe bursting process.

2. If preconstruction CCTV inspection reveals a sag in the lateral that is greater than one-quarter of an inch (1/4"), CONTRACTOR shall excavate and replace those sections of pipe to result in acceptable grade without the sag.

B. Utility Location and Required Clearances

1. New pipe shall maintain a thirty-inch (30") minimum clearance for parallel utilities, sixty inches (60") for parallel high-risk utilities, and a twelve inch (12") minimum vertical clearance for perpendicular (or crossing) utilities.
2. Due to the hazards associated with pipe-bursting near natural gas lines, all natural gas lines, including but not limited to distribution mains, transmission mains, and service lines, marked within four feet (4') of the existing sewer main, shall be uncovered (pot-holed) to confirm the required clearance exists. If the existing gas line is installed parallel and within four feet (4') horizontally to the existing sewer main, the gas line shall be uncovered a minimum of once every 100 feet along the length of the sewer main.

C. Pipe Relaxation

1. After the pipe has been installed, allow pipe manufacturer's recommended amount of time, but not less than four (4) hours, for cooling and relaxation due to tensile stressing prior to reconnecting to the lateral or sewer.

D. Reconnections to Existing Laterals

1. Connections to existing laterals shall be made with a watertight non-shear coupling.

E. Bedding and Backfill Requirements

1. Bedding and backfill for all point repairs or connections to the existing lateral shall be in accordance with Standard Specifications Section 31 23 33 TRENCHING, BACKFILLING, AND COMPACTION.

F. Post-Construction CCTV Inspection

1. CONTRACTOR shall perform a post-construction Closed Circuit TV (CCTV) inspection to verify the new pipe was functional and acceptable. CONTRACTOR shall repair any sections of pipe that do not meet the requirements of this Section. The inspection video shall be provided to the OWNER.

2.3 DESIGN REQUIREMENTS

A. Conveyance Capacity

1. New pipe installation by pipe-bursting shall provide the maximum conveyance capacity possible and in no case shall provide less capacity than currently exists.

B. Design Criteria

1. In addition to the requirements for submittals set forth in the construction contracts and the requirements for submittals contained in companion sections of these specifications, CONTRACTOR shall submit the following:
 - a. Manufacturer's literature for new HDPE pipe, fittings, and materials.
 - b. Test results and certification of compliance for materials.
 - c. Proposed plan for bypassing sewage during installation, if applicable.
 - d. Proposed method of reconnecting service laterals.
 - e. Details identifying proposed installation method, equipment, and location of access and receiving pits.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Cleaning and Inspection

1. Prior to the pipe-bursting operation, CONTRACTOR shall thoroughly clean the sewer main designated for pipe bursting to be followed by Closed Circuit Television Inspection (CCTV) to identify the location of all laterals and other connections. CONTRACTOR shall inspect the sewer main in accordance with Standard Specifications Section 33 01 29 Television Inspection of Sewer Lines.

B. Sewage Flow Control

1. CONTRACTOR shall provide for maintenance of flow in the affected portions of the sewer system during pipe-bursting.
2. Unless otherwise specifically required, CONTRACTOR shall locate excavation(s) for insertion of new pipe to cause the least disruption to existing utilities, traffic, and area businesses. If CONTRACTOR locates insertion pit at an existing precast concrete manhole location, CONTRACTOR shall remove manhole frame, cover, cone, riser, and manhole sections as necessary and store for reinstallation upon completion.
3. Sections of new HDPE pipe shall be field connected above the insertion pit using butt-fused joints.

C. Service Connections

1. CONTRACTOR shall reconnect all service connections to the sewer unless the ENGINEER deems connection to be inactive or abandoned. CONTRACTOR shall comply with the following connection procedures:
 - a. CONTRACTOR shall excavate and install a heat-fused saddle configured to the outside diameter of the new pipe of tee length necessary to connect existing service or lateral.
 - b. To join pipes of dissimilar material, CONTRACTOR shall joint plain ends and connect the existing pipes and services using flexible pipe connectors

equipped with stainless steel bands and fastening devices as specified.

D. Manholes

1. Where existing manhole locations have been used as access or receiving pit sites, CONTRACTOR shall reconstruct manholes using salvaged materials. If existing manhole materials are not suitable for salvage, CONTRACTOR shall reconstruct manhole in accordance with OWNER Standard Specifications and Detail Drawings.

3.2 TESTING AND ACCEPTANCE

- A. After all work is completed, CONTRACTOR shall conduct a post-construction CCTV Inspection of the new pipe and provide the OWNER with a DVD or flash drive showing both the pre- and post-installation conditions, including the restored connections. All defects discovered during the post-installation television inspection shall be corrected by the CONTRACTOR at no expense to the OWNER before the work under the Contract will be considered for Substantial Completion. After the defects, if any, are corrected, the affected sewer segment(s) shall be video inspected again. The post-installation television inspection shall be submitted in sufficient time to allow the OWNER to review the video prior to the Substantial Completion milestone.

PART 4 - MEASUREMENT AND PAYMENT

- A. Payment shall include all bypass pumping, cleaning, pre- and post- construction televising, labor, equipment, material, supervision, sheeting, shoring, bracing, installation, manhole reconstruction at access and pit locations, safety, dust/erosion control, testing, site restoration and all other work specified or not which is reasonably required to provide a completed installation. Any item not specified shall be considered incidental to the work. CONTRACTOR shall include all incidental cost in the unit price for the slip liner.
- B. CONTRACTOR shall receive payment for building sewer lateral reinstatement on a unit price basis per lateral connection reinstated in accordance with the unit prices contained in the Contract Documents.
- C. CONTRACTOR shall receive payment for Mobilization/Demobilization and Traffic Control on a lump sum basis in accordance with the prices contained in the Contract Documents.

END OF SECTION 33 31 30

Sanitary Sewer Pipe Bursting

Quest eBidDoc™ Number: 8556116

Closing Date: Mon, 09/18/2023 04:00 PM CDT **Posting Type:** Construction Project **Owner Name:** City of Shawnee **Solicitor Name:** Cowan Group Engineering, LLC **Contact:** Michael Taylor **Phone:** 4054633369 **Email:** michael@cowangroup.co

Company Name & Address	Contact Name/Email Address	Phone/Fax	Bus. Cert	Bus. Desig	Entry Date	Doc Type	Comments
Cowan Group Engineering, LLC 7100 N. Classen, Suite 500, Oklahoma City, OK-73116	Michael Taylor michael@cowangroup.co	4054633369 4054633381		A/E Consultant	08/27/2023	eBidDoc	
Dodge Data & Analytics 2860 S State Hwy 161, Grand Prairie, TX-75052	Daedri Cavuoto daedri.cavuoto@construction.com	513.666.3354 800-768-5594		Plan Room	08/28/2023	eBidDoc	
Horseshoe Construction, Inc. 853 Innovation Drive, Bryan, TX-77808	Chad Wall chad@horseshoe-inc.com	713-344-3645 281-478-6436		Prime Bidder	08/28/2023	eBidDoc	
Orr Construction, Inc. 510 North Broadway, Davenport, OK-74026	Orr Staff projects@orrconstructionok.com	918-377-4362		Prime Bidder	08/28/2023	eBidDoc	
Bennett, Inc 103 NE 15th Ln, Lamar, MO-64759	Ron Bennett bandkexcavation@sbcglobal.net	417-682-6826 417-682-2775		Prime Bidder	08/29/2023	eBidDoc	
ConstructConnect 3825 Edwards Rd, Cincinnati, OH-45209	Eric Mills content@constructconnect.com	800-364-2059 866-570-8187		Plan Room	08/29/2023	eBidDoc	
Tri-Star Utilities, Inc. P.O Box 903, Independence, KS-67301	Ben Chism indyunderground@outlook.com	620-331-7159 620-331-7455		Prime Bidder	08/30/2023	eBidDoc	
Krapff-Reynolds Construction Co. 2400 N.E. 4th Street, Oklahoma City, OK-73117	Jim King jking@krapff-reynolds.com	405-733-9682 405-516-0081		Prime Bidder	09/06/2023	eBidDoc	
OKLAHOMA CONTRACTORS SUPPLY 7216 sw 3rd, OKC, OK-73099	JOSH LILES ibuildnoleaks@gmail.com	405-495-6161/405-787-5008		Supplier	09/07/2023	eBidDoc	
Circle B Underground LLC PO Box 868, Bristow, OK-74010	Darin Dean ddean@cbruok.com	918-367-8881 918-367-8882		Prime Bidder	09/07/2023	eBidDoc	
UTILITY TECHNOLOGY SERVICES 9636 west reno, oklahoma city, OK-73127	DAVID MOORE domoore0562@gmail.com	4058854131		Supplier	09/11/2023	eBidDoc	



Addendum #1

Date: September 13, 2023

Project: City of Shawnee
Sewer Pipe Bursting
Bid Closing Date: September 18, 2023
Shawnee, Oklahoma

The Items contained below now become a part of the referenced contract documents and specifications. Please read the following items and acknowledge receipt (see attached sheet) of this addendum on the proposal form when submitting bids.

- Please fax or e-mail Acknowledgement Page to Cowan Group Engineering, LLC, at 405-463-3369.
- If submitting a hard copy bid, bidders shall acknowledge receipt of this Addendum by signing and submitting the Acknowledgement Page with bid. Failure to do so may subject the Bidder to disqualification.
- Please find the attached revised specification documents and contract documents and replace the corresponding outdated documents with them.

SPECIFICATIONS

1. Changed project duration from 90 days to 150 days.
2. Updated bid schedule.

PLAN SHEETS

1. Changed pay quantity note 8 from 15ft increment for sags to 20ft on sheet 2.
2. Updated Pay Quantities in response to service reconnections demo on sheet 2.
3. Added sewer service detail on sheet 23.
4. Removed asphalt removal on sheet 12.

CLARIFICATIONS

1. The project is tax exempt.
2. Pipe size shall be DIPS.
3. All bids shall be typewritten or in blue ink pen.
4. Unit costs & total costs shall be provided.
5. The city does not have a dumping location for excess dirt. Hauling will need to be included in bid and incidental.
6. Street bonds shall be provided with the length of five years. The first year shall cover 100 percent of the cost with the remaining four years being 10 percent of the cost.
7. Utility bonds shall be provided with the length of two years. The first year shall cover 100 percent of the cost with the second year covering 10 percent.
8. This project is not designated under AIS or Davis Bacon wage requirements.
9. Replacement manholes were chosen to facilitate the bursting process. If any existing manhole is to be improved, it has been called out on the plans.
10. Sewer services do not necessarily need to be taken to the property line. Services need to be connected to the new main and have enough horizontal width to properly install a backflow preventer before the service hits the main in a vertical fashion.
11. Estimated overall project cost is \$1,250,000.00.
12. City will not provide means and methods of bursting. Entry and receiving pits shall be brought back to existing condition and incidental to the manhole.
13. Services shall be backfilled per the backfill detail on the plans.

Thank you for your attention. Should you have any questions, please contact the undersigned at 405.463.3369.

Cowan Group Engineering, LLC

Michael Taylor
Michael Taylor, P.E.
Team Lead



Attachment: Acknowledgement Page
Pages 2, 12, 23 of construction documents
Bid Proposal

Acknowledgement Page

Addendum #1 September 13, 2023

Project: City of Shawnee
Shawnee Sewer Bursting
Project Number: ARP-23-0092-G
Bid Closing Date: September 18, 2023
Shawnee, Oklahoma

Company: _____

Name: _____

Signature: _____

Title: _____

Date: _____

BID PROPOSAL FORM

CITY OF SHAWNEE **BID NOTICE: ARP 23-0092-G**

THE UNDERSIGNED BIDDER, having examined the plans, specifications, the locations, arrangements, and conditions of roads, street, utilities and other facilities or appurtenances which affect or may be affected by the proposed work, the actual sites of the proposed improvements and being acquainted with and fully understanding: (1) the extent and character of the work covered by this proposal; (2) the locations and specified requirements of and for the proposed improvements and other items of work appurtenant thereto; and (3) the normal existing and probable construction difficulties, hazards or all other factors or conditions which may or may not be apparent, which may affect or be affected by the specified work.

HEREBY PROPOSES to furnish all required materials, supplies, equipment, tools, and plant; to perform all necessary labor; and to construct, erect, equip, and complete all work stipulated in, required by, and in accordance with the contract documents hereto attached and the specifications referred to therein (as altered, changed, or modified by any and all addenda thereto), for and in connection with the Contract for which this proposal is herein submitted for and in consideration of the prices set out herein.

The undersigned bidder hereby agrees to furnish the required Performance Bond, Statutory Bond, Maintenance Bond, and evidence of insurance and to enter into a contract within fifteen (15) days after the acceptance of this proposal, and further agrees to complete the work in **150** days (stipulated in the Contract Agreement) from the date of the issuance by the City's Engineer of a Work Order authorizing commencement of work.

Attached hereto is a Certified Check, Cashier's Check or Bidder's Surety Bond in the amount of: _____ DOLLARS \$ _____ which the undersigned agrees is to be forfeited to and become the property of the City of Shawnee, as liquidated damages, should this proposal be accepted and the Contract be awarded to him, he fails to enter into a Contract in the form prescribed and to furnish the required bonds and evidence of insurance within fifteen (15) days as above stipulated, but otherwise the proposal guarantee shall be returned to the undersigned upon the signing of the Contract and delivery of the approved bonds and evidence of insurance to the City of Shawnee.

DATED this _____ day of _____ 20 _____.

Signature: _____

Name and Title: _____

Company: _____ Circle One: Corporation Partnership Individual

Address: _____

Phone: _____ Fax: _____

E-mail Address: _____

Federal Tax I.D. _____

Attest: _____

Secretary

Corporate Seal

(if applicable)

SEWER PIPE BURSTING
BID SCHEDULE: ARP 23-0092-G

BASE BID

ITEM #	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
1	MOBILIZATION	LSUM	1		
2	8-INCH HDPE DR-17 SANITARY SEWER (BURSTING AND TRENCHING)	LF	2766		
3	10-INCH HDPE DR-17 SANITARY SEWER (BURSTING AND TRENCHING)	LF	2222		
4	12-INCH HDPE DR-17 SANITARY SEWER (BURSTING AND TRENCHING)	LF	2151		
5	SERVICE CONNECTION	EA	214		
6	CEMENTITIOUS MANHOLE COATING	VF	69		
7	1' MANHOLE GRADE ADJUSTMENT WITH SEAL AND REPLACE FRAME, COVER AND SEAL	EA	1		
8	4' DIAMETER MANHOLE GRADE ADJUSTMENT WITH SEAL AND REPLACE FRAME. COVER AND SEAL	EA	1		
9	STANDARD 4' DIAMETER MANHOLE REMOVAL AND REPLACEMENT	EA	16		
10	CONSTRUCT 4' DIAMETER MANHOLE	EA	2		
11	ASPHALT REMOVAL AND REPLACEMENT	SY	446		
12	CONCRETE REMOVAL AND REPLACEMENT	SY	105		
13	GRAVEL REMOVAL AND REPLACEMENT	SY	2332		
14	SOLID SLAB SODDING	SY	912		
15	EXTRA DEPTH MANHOLE	VF	80		
16	PRE INSTALLATION VIDEO INSPECTION	LF	7139		
17	POST INSTALLATION VIDEO INSPECTION	LF	7139		
18	TESTING	LSUM	1		
19	BYPASS PUMPING	EA	27		
20	TEMPORARY EROSION AND SEDIMENT CONTROL	LSUM	1		
21	CONSTRUCTION SIGNING & TRAFFIC CONTROL	LSUM	1		
22	SPOT REPAIRS	EA	4		

ALL ITEMS TO INCLUDE ALL APPURTENANCES NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM AS DESCRIBED IN THE PLANS AND SPECIFICATIONS.

TOTAL BASE BID \$ _____

TOTAL BASE BID IN WORDS _____

Tuesday, September 12, 2023 5:18:34 PM



SUMMARY OF QUANTITIES

PAY ITEM	DESCRIPTION	NOTES	UNIT	QUANTITY	AS-BUILT
1	MOBILIZATION		LSUM	1	
2	8-INCH HDPE DR-17 SANITARY SEWER (BURSTING AND TRENCHING)	(1)(2)(3)(4)	LF	2766	
4	10-INCH HDPE DR-17 SANITARY SEWER (BURSTING AND TRENCHING)	(1)(2)(3)(4)	LF	2222	
5	12-INCH HDPE DR-17 SANITARY SEWER (BURSTING AND TRENCHING)	(1)(2)(3)(4)	LF	2151	
6	SERVICE CONNECTION	(5)	EA	214	
7	CEMENTITIOUS MANHOLE COATING		VF	69	
8	1' MANHOLE GRADE ADJUSTMENT WITH SEAL AND REPLACE FRAME, COVER AND SEAL		EA	1	
9	4' DIAMETER MANHOLE GRADE ADJUSTMENT WITH SEAL AND REPLACE FRAME, COVER AND SEAL		EA	1	
10	STANDARD 4' DIAMETER MANHOLE REMOVAL AND REPLACEMENT	(6)(7)	EA	16	
11	CONSTRUCT 4' DIAMETER MANHOLE	(6)(7)	EA	2	
12	ASPHALT REMOVAL AND REPLACEMENT		SY	446	
13	CONCRETE REMOVAL AND REPLACEMENT	(1)	SY	105	
14	GRAVEL REMOVAL AND REPLACEMENT		SY	2332	
15	SOLID SLAB SODDING		SY	912	
16	EXTRA DEPTH MANHOLE		VF	80	
17	PRE INSTALLATION VIDEO INSPECTION		LF	7139	
18	POST INSTALLATION VIDEO INSPECTION		LF	7139	
19	TESTING		LSUM	1	
20	BYPASS PUMPING		EA	27	
21	TEMPORARY EROSION AND SEDIMENT CONTROL		LSUM	1	
22	CONSTRUCTION SIGNING & TRAFFIC CONTROL		LSUM	1	
23	SPOT REPAIRS	(8)	EA	4	

PAY QUANTITY NOTES

- CONCRETE USED FOR DRIVE REPLACEMENT AND PAVING PATCH SHALL BE 3,500 PSI HIGH EARLY STRENGTH CONCRETE.
- HDPE PIPE SHALL HAVE AN ENTIRELY LIGHT COLOR (NATURAL, WHITE, GREEN, ETC.) INSIDE SURFACE TO ALLOW LIGHT REFLECTION FOR ROBOTIC TELEVISION INSPECTIONS AND SHALL CONFORM TO DIPS PIPE SIZING WITH A DR RATING OF 17.
- IF PRE-INSTALLATION VIDEO REVEALS A SAG IN THE EXISTING SEWER THAT IS GREATER THAN ONE-HALF THE DIAMETER OF THE EXISTING PIPE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL THE REPLACEMENT PIPE TO RESULT IN AN ACCEPTABLE GRADE WITHOUT THE SAG.
- CONTRACTOR TO TELEVISION INSPECT EXISTING LINES PRIOR TO CONSTRUCTION TO VERIFY SERVICE LINE PIPE SIZE. AND LOCATION. COST SHALL INCLUDE CLEANING EXPENSES.
- APPLIES TO ALL SERVICE RECONNECTIONS REGARDLESS OF SIZE, MATERIAL, OR LENGTH. INCLUDES MATERIAL AND LABOR FOR THE REROUTING OF SERVICE LINES TO THE TRUNK LINE ON ALL NEW AND/OR REPLACED MANHOLES. SERVICE RECONNECTIONS SHALL INCLUDE A BACKFLOW PREVENTER AT THE EASEMENT OR R.O.W. LINE AND SHALL BE INCIDENTAL TO THE COST OF THIS ITEM.
- STANDARD DEPTH FOR ALL MANHOLES SHALL BE 6'. BID ITEM SHALL INCLUDE ANY NECESSARY GRAVEL REMOVAL & REPLACEMENT.
- MANHOLE GRADE ADJUSTMENTS FOR MANHOLE RINGS WHICH REQUIRE LEVEL ADJUSTMENTS TO GRADE ARE INCIDENTAL AND SHALL BE INCLUDED IN COSTS.
- TO BE USED IN 20FT INCREMENTS FOR ANY SAGS FOUND DURING PRE INSTALLATION VIDEO INSPECTION, AS COORDINATED WITH THE ENGINEER.

STRUCTURE TABLE				
STRUCTURE NAME:	LINE #:	RIM:	PIPE INVERTS	DESCRIPTION:
30228	LINE 1	1048.44	8" 1038.94	REMOVE AND REPLACE 4' DIA. MH
1	LINE 1	1050.20	8" 1040.49	EX. 4' DIA. MH
30202	LINE 2	1096.60	10" 1084.46	REHAB EX. 4' DIA. MH
30207	LINE 2	1100.74	10" 1094.83	REMOVE AND REPLACE 4' DIA. MH
30218	LINE 3	1077.53	10" 1070.33	REHAB EX. 4' DIA. MH
30223	LINE 3	1084.52	10" 1068.79	REMOVE AND REPLACE 4' DIA. MH
2	LINE 4	1071.78	10" 1065.65	EX. 4' DIA. MH
20033	LINE 4	1073.94	10" 1064.49	REMOVE AND REPLACE 4' DIA. MH
3	LINE 5	1062.18	8" 1058.20	CONST. 4' DIA. MH
30008	LINE 5	1064.21	8" 1057.25 8" 1056.87	EX. 4' DIA. MH
30013	LINE 5	1066.05	8" 1058.97 8" 1059.02	REMOVE AND REPLACE 4' DIA. MH
30028	LINE 5	1068.81	8" 1060.93	EX. 4' DIA. MH
30005	LINE 6	1065.31	12" 1056.07	EX. 4' DIA. MH
30006	LINE 6	1066.51	12" 1054.21 12" 1054.18	REMOVE AND REPLACE 4' DIA. MH
30007	LINE 6	1068.58	12" 1058.10 12" 1058.08	EX. 4' DIA. MH
4	LINE 6	1071.16	12" 1058.81	CONST. 4' DIA. MH
30001	LINE 7	1065.75	8" 1056.91	REMOVE AND REPLACE 4' DIA. MH
30003	LINE 7	1066.76	8" 1057.48 8" 1057.38	REMOVE AND REPLACE 4' DIA. MH
30002	LINE 7	1068.64	8" 1054.91 8" 1054.88	REHAB EX. 4' DIA. MH
30004	LINE 7	1070.67	8" 1058.88	REHAB EX. 4' DIA. MH

STRUCTURE TABLE				
STRUCTURE NAME:	LINE #:	RIM:	PIPE INVERTS	DESCRIPTION:
5	LINE 8	1022.63	12" 1013.55	REHAB AND RAISE LID- EX.4' DIA. MH
20028	LINE 8	1034.62	12" 1017.32	CONST. 4' DIA. MH W/ DROP
30073	LINE 9	1020.60	10" 1008.60	EX. 4' DIA. MH
30085	LINE 9	1023.94	10" 1010.06	REMOVE AND REPLACE 4' DIA. MH
30104	LINE 10	1011.73	10" 1001.47	EX. 4' DIA. MH
30097	LINE 10	1020.55	10" 1011.71	REMOVE AND REPLACE 4' DIA. MH
6	LINE 11	1033.82	8" 1025.00	EX. 4' DIA. MH (PAVED OVER, TO FIELD VERIFY)
30122	LINE 11	1033.90	8" 1025.90 8" 1025.75	REMOVE AND REPLACE 4' DIA. MH
30139	LINE 11	1034.07	8" 1026.13	REHAB EX. 4' DIA. MH
30167	LINE 12	1072.70	8" 1063.65	REHAB EX. 4' DIA. MH
30156	LINE 12	1078.16	8" 1070.22	REMOVE AND REPLACE 4' DIA. MH
30193	LINE 13	1059.76	10" 1053.62	REHAB EX. 4' DIA. MH
30178	LINE 13	1071.04	10" 1062.32	REMOVE AND REPLACE 4' DIA. MH
2019	LINE 14	1053.68	12" 1041.08	EX. 4' DIA. MH
7	LINE 14	1061.79	12" 1046.04 12" 1046.36	REMOVE AND REPLACE 4' DIA. MH
1894	LINE 14	1063.93	12" 1050.00	EX. 4' DIA. MH

GENERAL CONSTRUCTION NOTES

- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF SHAWNEE STANDARDS AND SPECIFICATIONS AND THE REQUIREMENTS OF THE OKLAHOMA DEPARTMENT OF TRANSPORTATION, AND OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY WHERE IN CONFLICT THE MOST STRINGENT REQUIREMENT SHALL APPLY.
- ANY CONSTRUCTION ITEMS THAT ARE NOT LISTED IN THE SUMMARY OF QUANTITIES SHALL BE CONSIDERED INCIDENTAL CONSTRUCTION ITEMS. THE COST OF INCIDENTAL CONSTRUCTION ITEMS SHALL BE INCLUDED IN THE COST OF OTHER BID ITEMS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH ALL PUBLIC AND/OR PRIVATE UTILITY COMPANIES IN THE VICINITY OF CONSTRUCTION.
- EXISTING UTILITIES AND THEIR LOCATIONS, AS SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION OBTAINABLE FOR DESIGN. LOCATION INFORMATION HAS BEEN OBTAINED FROM THE VARIOUS UTILITY COMPANIES AND IS EITHER FROM COMPANY RECORD DRAWINGS OR COMPANY PROVIDED FIELD LOCATIONS. THE PLAN LOCATIONS SHOWN ARE NOT GUARANTEED. ADDITIONAL EXISTING UTILITIES MAY ALSO BE ENCOUNTERED.
- RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES AND EXCESS EXCAVATION SHALL BE WASTED ON SITES TO BE PROVIDED BY THE CONTRACTOR. THESE SITES SHALL BE APPROVED BY THE ENGINEER AS TO SUITABILITY. ALL DISPOSAL SITES MUST BE APPROVED BY THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOOD PLAIN SHALL REQUIRE THE NECESSARY PERMITS. ANY MATERIAL DUMPED IN THE WATERS OF THE UNITED STATES OR WETLANDS IS SUBJECT TO U.S. CORP OF ENGINEERS PERMITTING REGULATIONS. ANY MATERIAL BURIED OR STOCKPILED BEYOND APPROVED CONSTRUCTION LIMITS WOULD REQUIRE ADDITIONAL ARCHAEOLOGICAL INVESTIGATIONS AND STATE APPROVAL.
- A COPY OF THE EROSION CONTROL SITE PLANS AND THE STORM WATER POLLUTION PREVENTION PLAN MUST BE ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE INSPECTOR UPON REQUEST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION, MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL EROSION CONTROL DEVICES DAMAGED DUE TO CONSTRUCTION.
- ALL DISTURBED AREAS SHALL BE SODDED WITH SOLID SLAB PER CITY OF SHAWNEE STANDARD SPECIFICATIONS, INCLUDES WATER AT 40 GALLONS PER S.Y. AND FERTILIZE PER TOWN STANDARD. THE CITY OF SHAWNEE TO PAY PLAN QUANTITIES ONLY, ANY EXCESS WILL BE RESPONSIBILITY OF CONTRACTOR.
- CONTRACTOR SHALL PROVIDE BONDS AND PROOF OF INSURANCE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
- CONSTRUCTION STAKING AND TESTING SHALL BE PROVIDED BY THE CONTRACTOR.
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROMPT REPLACEMENT AND/OR REPAIR OF ALL TRAFFIC CONTROL DEVICES AND APPURTENANCES DAMAGED OR DISTURBED DUE TO CONSTRUCTION.
- THE CONTRACTOR SHALL GIVE ALL PROPERTY OWNERS AND/OR TENANTS OF DEVELOPED PROPERTY DIRECTLY ABUTTING CONSTRUCTION OF THIS PROJECT MINIMUM OF TEN (10) DAYS NOTICE PRIOR TO START OF CONSTRUCTION.
- THE CONTRACTOR SHALL AVOID TREE DAMAGE IF AT ALL POSSIBLE AND SHALL PRUNE ALL ROOTS DAMAGED DURING CONSTRUCTION ACTIVITIES.
- ALL MANHOLE RIMS SHALL BE 6-INCHES ABOVE SURROUNDING GRADE UNLESS LOCATED IN LOW-LYING AREA SUBJECT TO FLOODING SPECIFIED BY ENGINEER.
- TEMPORARY EROSION AND SEDIMENT CONTROL SHALL CONSIST OF TEMPORARY MEASURES WITHIN THE PROJECT LIMITS AND MINIMIZE POLLUTION OF RIVERS, STREAMS, AND PRIVATE PROPERTIES. SUCH MEASURES MAY INCLUDE BERMS, DIKES, SLOPE DRAINS, BALE BARRIERS, SEDIMENT FILTERS, SEDIMENT BASINS, MULCHES, AND GRASSES. ALL UNPAVED AND DISTURBED AREAS SHALL RECEIVE SOLID SLAB SOD TREATMENT IN ACCORDANCE WITH SECTION 31 25 00 OF THE PROJECT SPECIFICATIONS.
- CONSTRUCTION SIGNING AND TRAFFIC CONTROL SHALL CONSIST OF FURNISHING AND ERECTING SIGNS, LIGHTS, BARRICADES, AND DEVICES IN ACCORDANCE WITH CITY STANDARD SPECS AND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- CONTRACTOR TO PHOTOGRAPH EACH MANHOLE PRIOR TO, AND AFTER REHABILITATION.
- DEFLECTION TESTS SHALL BE IN ACCORDANCE WITH OAC 252:656-5-5(A). PERFORM DEFLECTION TESTS ON ALL FLEXIBLE PIPE AFTER FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. DEFLECTION MUST NOT EXCEED 5%. TEST MUST BE RUN USING A RIGID BALL OR MANDREL WITH A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE TAKING INTO ACCOUNT MANUFACTURING TOLERANCES. TESTS MUST BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES. TESTING MUST ADHERE ASTM F2160.
- LEAKAGE TESTS SHALL BE IN ACCORDANCE WITH OAC 252:656-5-5(B). LEAKAGE TESTS ARE REQUIRED FOR ALL GRAVITY LINES. HYDROSTATIC TESTS MUST USE A 2-FOOT TEST HEAD AND LEAKAGE INWARD OR OUTWARD MUST NOT EXCEED 10 GALLONS PER INCH OF PIPE DIAMETER PER MILE PER DAY. TESTING MUST ADHERE ASTM F2164. THE PROCEDURES LISTED IN THE HANDBOOK OF PVC PIPE, UNI-BELL PVC PIPE ASSOCIATION, 2001 MAY BE USED FOR PVC PIPE. AN AIR TEST RESULT MUST ASSURE A LEAKAGE LIMIT EQUIVALENT TO THE HYDROSTATIC TEST LIMIT.
- CONTRACTOR SHALL CONSTRUCT ALL MANHOLES IN ACCORDANCE TO THE MANHOLE SCHEDULES ON SHEET 3 PER SPECIFICATIONS 33 01 30 & 33 05 61. RIM ELEVATIONS AND SURFACE SHOWN IN ALL PROFILE VIEWS ARE APPROXIMATE AND SHALL NOT BE CONSIDERED FINAL GRADE.

SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

PAY QUANTITES
& NOTES

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	23-153
DATE	5/8/2023

REVISIONS

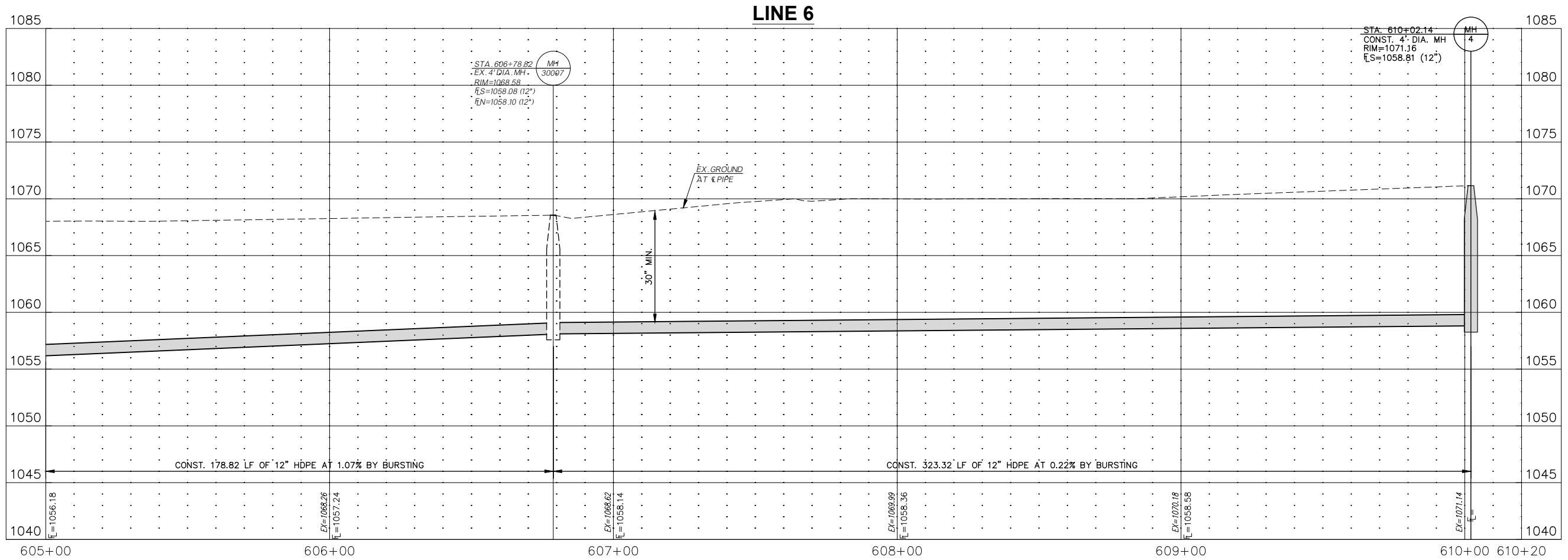
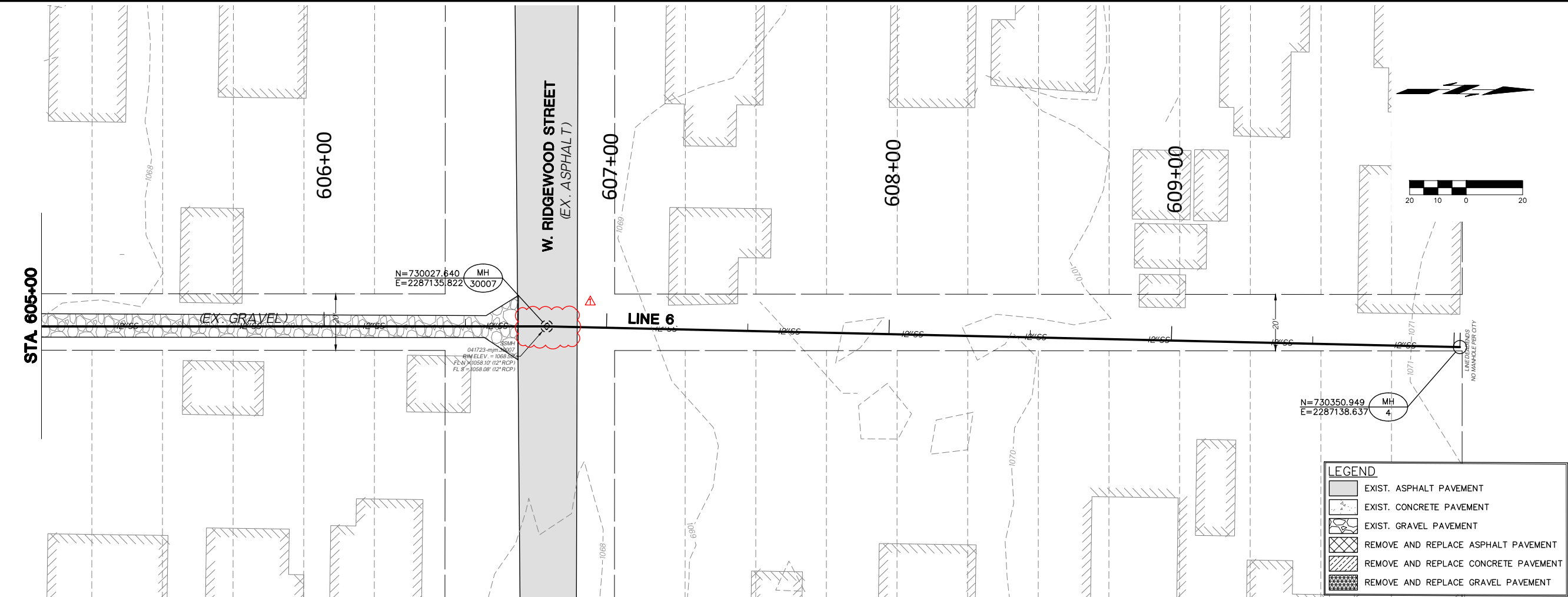
SHEET NUMBER

2

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COWAN GROUP ENGINEERING
7100 N GLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
405-463-3369 O 405-463-3381 F
WWW.COWANGROUP.CO
CA# 6414 EXPIRES 6/30/2024

Tuesday, September 12, 2023 10:44:37 AM



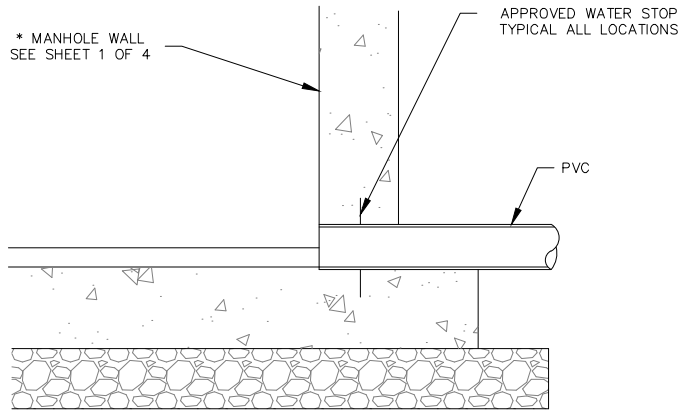
COWAN GROUP ENGINEERING
7100 N GLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
405-463-3369
WWW.COWANGROUP.COM
CA# 6414 EXPIRES 6/30/2024

PRELIMINARY
NOT FOR CONSTRUCTION

SANITARY SEWER PIPE BURSTING
CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

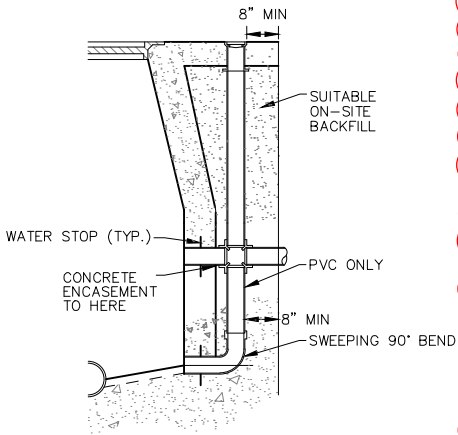
LINE 6 P&P (2 OF 2)	
DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	23-153
DATE	5/8/2023
REVISIONS	
SHEET NUMBER	
12	

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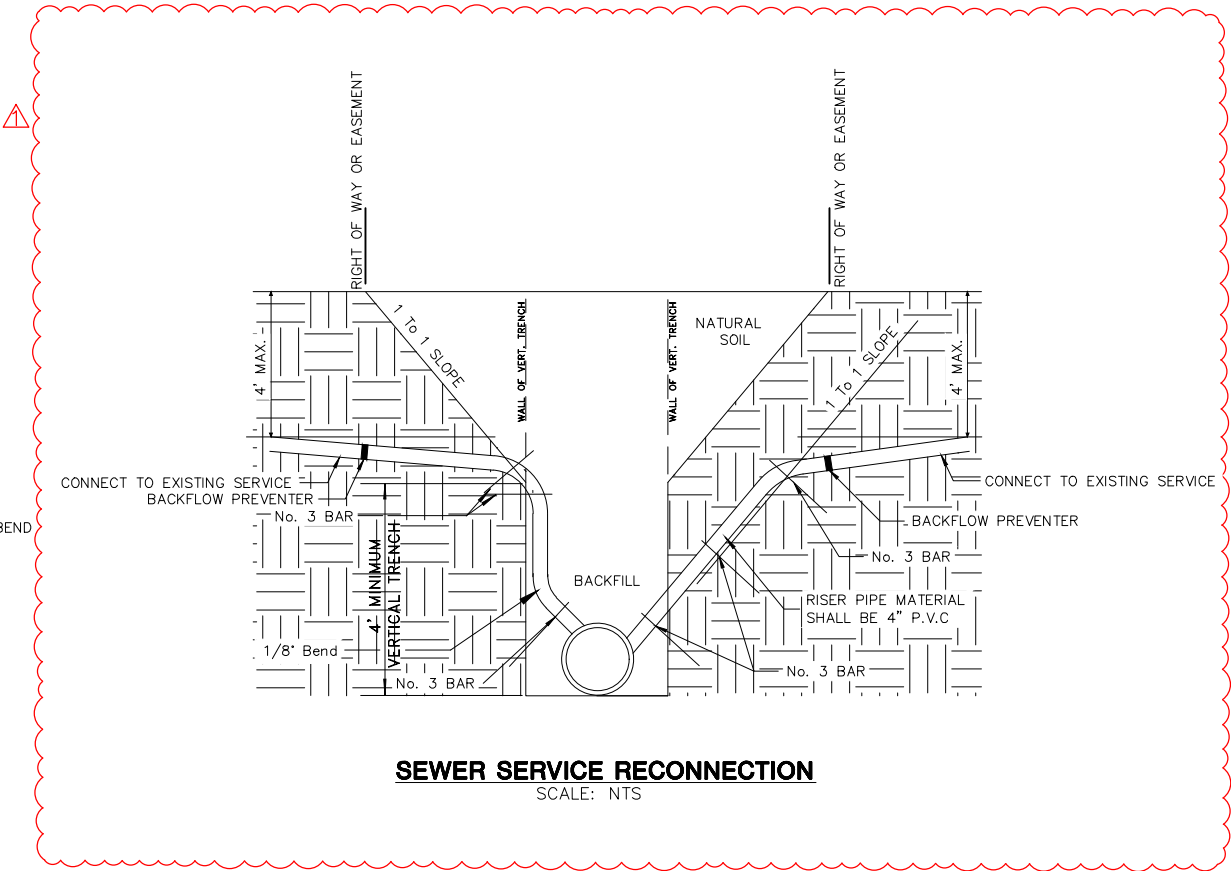


PVC PIPE DETAILS
SCALE: NTS

NOTE:
COMPRESSION JOINTS AND COUPLINGS SHALL BE ASSEMBLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. JOINTS AND COUPLINGS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH ASTM-D3212-92.



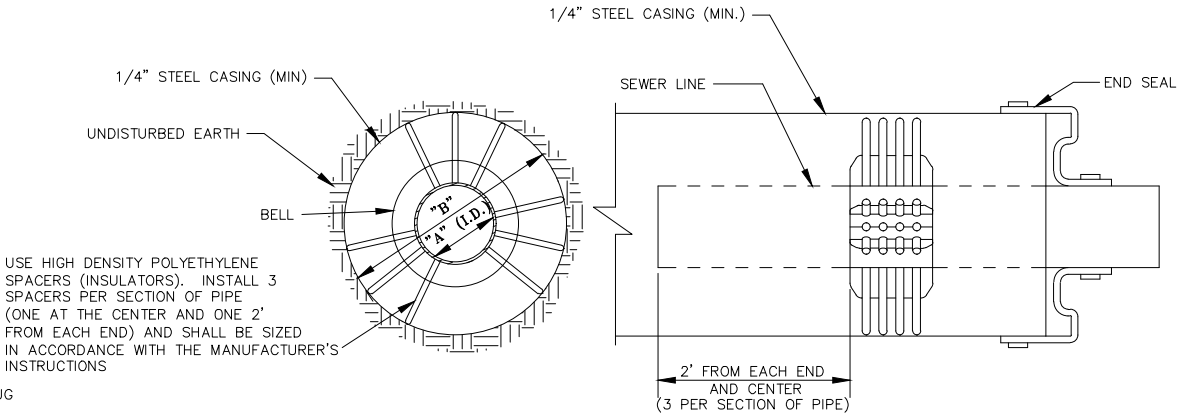
STANDARD DROP MANHOLE
SCALE: NTS



SEWER SERVICE RECONNECTION
SCALE: NTS

PIPE & STEEL CASING SCHEDULE	
PIPE DIA.	CASING DIA.
"A"	"B"
6"	12"
8"	14" OR 16"
10"	18"
12"	20"
16"	24"
18"	26"
24"	33"

NOTE: CONSTRUCT WATER TIGHT PLUG AT EACH END OF CASING



USE HIGH DENSITY POLYETHYLENE SPACERS (INSULATORS). INSTALL 3 SPACERS PER SECTION OF PIPE (ONE AT THE CENTER AND ONE 2' FROM EACH END) AND SHALL BE SIZED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS

NOTE: STEEL CASING PIPE SHALL CONFORM WITH ASTM A-139. STANDARD SPECIFICATION FOR ELECTRIC-FUSION(ARC)-WELDED STEEL PIPE (NPS4 AND OVER). THE STEEL MATERIAL SHALL BE NEW, SMOOTH WALL, CARBON STEEL, GRADE B, WITH A MINIMUM TENSILE STRENGTH, AND MINIMUM 35,000 PSI YIELD STRENGTH.

CASING DETAIL
SCALE: NTS



COWAN GROUP ENGINEERING
7100 N. CLASSEN, SUITE 500
OKLAHOMA CITY, OK 73116
405-463-3369 D 405-463-3381 F
WWW.COWANGROUP.CO
CA# 6414 EXPIRES 6/30/2024

PRELIMINARY
NOT FOR CONSTRUCTION

SANITARY SEWER PIPE BURSTING

CITY OF SHAWNEE
POTTAWATOMIE COUNTY, OKLAHOMA

**DETAIL SHEET
(3 OF 3)**

DESIGNED BY	GMT
DRAWN BY	HMH
REVIEWED BY	GMT
PROJECT NUMBER	23-153
DATE	5/8/2023

REVISIONS

SHEET NUMBER	25
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Finance Department
16 W. 9th St.
Shawnee, OK 74801
ShawneeOK.org

Date: September 18, 2023
To: City Commission
From: Lindsey McNabb-Fox, Finance Director
Subject: September 2023 Sales and Use Tax Deposit

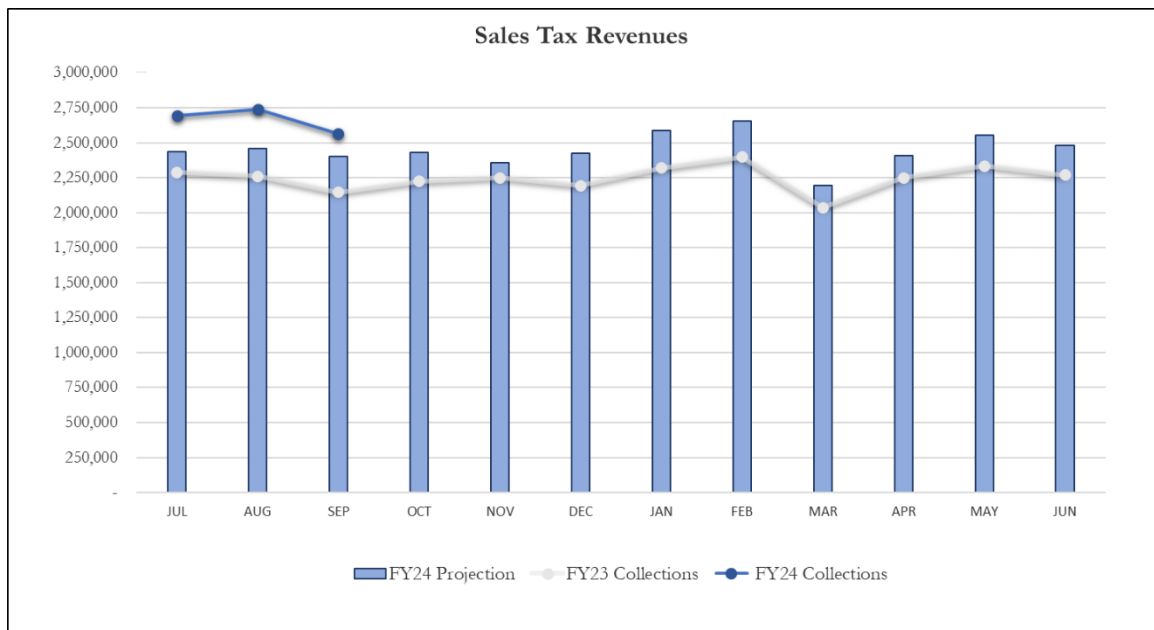
Background: The Oklahoma Tax Commission (the “OTC”) collects and enforces collection of sales and use taxes, including special earmarked taxes such as alcohol and tobacco, for the entities responsible for remitting taxes to the City of Shawnee. Entities with monthly tax liabilities exceeding \$2,500 are required to remit tax estimates each month by the 20th; in addition, entities are required to report their final tax collections for the previous month along with a final payment of taxes for the previous month on the 20th. To summarize, tax collections remitted to the City of Shawnee by the OTC in September consists of August estimates and July final reported collections. Any taxes collected for months prior to July will include accrued late penalties and interest.

- Sales Tax Collection Allocated by Fund - The September sales tax deposit was \$2,567,319.89 including interest of \$3,319.60, to be allocated as follows:

<u>Fund</u>	<u>Allocation</u>
General Fund	\$ 1,283,659.95
2018 Capital Improvements Fund	320,914.99
Capital Improvements Fund	248,709.11
Street Improvements Fund	280,800.61
Economic Development Fund	32,091.50
Police Sales Tax Fund	40,114.37
Fire Sales Tax Fund	40,114.37
2023 Capital Improvements Fund	320,914.99
Total Sales Taxes Collected	<u>\$ 2,567,319.89</u>

- Finance Department Report - Sales and use tax collections totaled \$2,915,732.50 for September 2023. Sales tax projections are based on an average of the most recent three years of sales tax history. For the year, sales tax collections are up \$707,900 or 9.7%, over the projected budget year-to-date. Use tax collections are up \$201,179 or 23.2%, above the projected budget year-to-date.

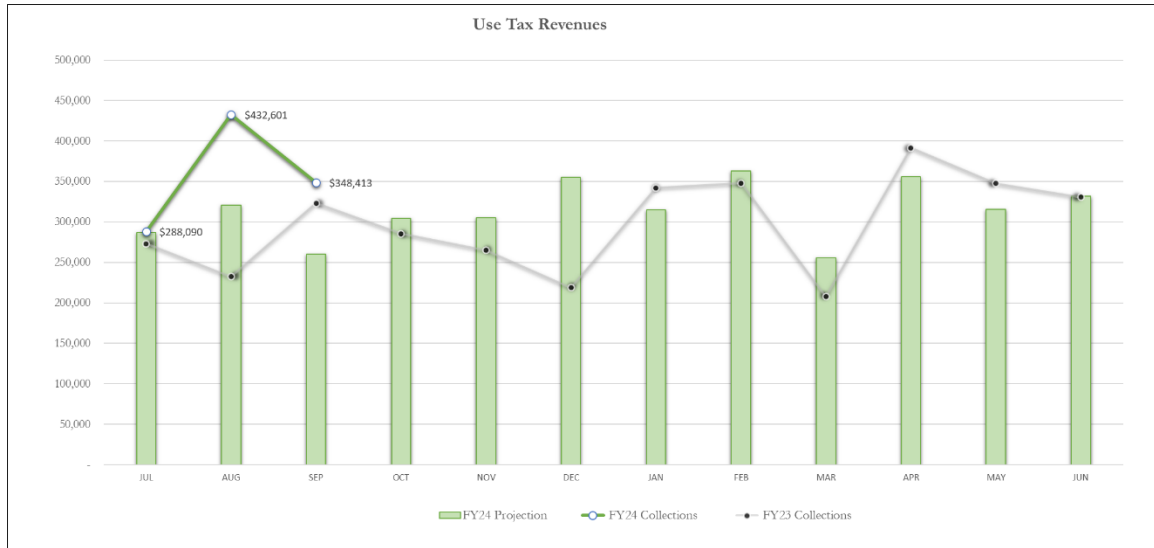
○ Fiscal Year 2024 Sales Tax Collections and Performance:



	Projected Budget	Actual	Amount Variance	Percentage Variance	
Sales Tax Receipts - September 2023	\$ 2,400,163	\$ 2,567,320	\$ 167,157	6.96%	
Sales Tax Receipts (year-to-date):	\$ 7,290,347	\$ 7,998,247	\$ 707,900	9.71%	
					% Variance w/ Rate Normalization
	September 2022	September 2023	Amount Variance	Percentage Variance	
Sales Tax Receipts (vs Prior Year):	\$ 2,146,092	\$ 2,567,320	\$ 421,227	19.63%	4.67%
					% Variance w/ Rate Normalization
	Year To Date FY 2023	Year To Date FY 2024	Amount Variance	Percentage Variance	
Sales Tax Receipts (vs Prior Year):	\$ 6,693,167	\$ 7,998,247	\$ 1,305,080	19.50%	4.56%

* City's Sales & Use Tax Rate increased from 3.5% to 4% effective April 1, 2023. The table above shows a "Percentage Variance with Rate Normalization" to compare the change in actual tax collections by removing the 0.5% rate increase.

○ Fiscal Year 2024 Use Tax Collections and Performance:



	Projected Budget	Actual	Amount Variance	Percentage Variance	
Use Tax Receipts (Sept 2023):	\$ 260,407	\$ 348,413	\$ 88,005	33.80%	
Use Tax Receipts (year-to-date):	\$ 867,925	\$ 1,069,104	\$ 201,179	23.18%	

	Sep 2022	Sep 2023	Amount Variance	Percentage Variance	% Variance w/ Rate Normalization
Use Tax Receipts (vs Prior Year):	\$ 323,116	\$ 348,413	\$ 25,296	7.83%	-5.65%

	Year To Date FY 2023	Year To Date FY 2024	Amount Variance	Percentage Variance	% Variance w/ Rate Normalization
Use Tax Receipts (vs Prior Year):	\$ 828,411	\$ 1,069,104	\$ 240,693	29.05%	12.92%

* City's Sales & Use Tax Rate increased from 3.5% to 4% effective April 1, 2023. The table above shows a “% Variance with Rate Normalization” to compare the change in actual tax collections by removing the 0.5% rate increase.

○ Fiscal Year 2024 – General Fund Sales & Use Tax – Above Projections:

General Fund Projections (year-to-date)

Sales Tax Above/(Below) Projections: \$ 353,514

Use Tax Above/(Below) Projections: \$ 201,179

Appropriated:

Total Appropriated \$ -

Total Unappropriated: \$ 554,693



Santa Fe Depot

Rian Harkins, Community Development Director

September 21, 2023

2022 Community Feedback



- Preserve the Santa Fe Depot!
- Use the Depot as a draw for downtown
- Continue to honor Shawnee's history
- Combine revenue generation with rail museum and community space

Preferred Functions

Based on community feedback, these 5 functions should be considered alongside a rail museum:

- 1) visitor center
- 2) community / venue space
- 3) arts space / performing arts center
- 4) farmers market
- 5) restaurant

Grant Application Status

- Transportation Alternatives (TA) Application submitted to ODOT on November 30, 2022
 - Included ~25 letters of support
- Oklahoma Transportation Commission met in April 2022
 - **Santa Fe Depot project was not selected**

Design Update

- Updated Design – Complete
- Review by OK State Historic Preservation Office – Complete
- Bid Packet – 95% Complete
- **NEXT STEP – Setting the bid date**

SECTION 00 1113

ADVERTISEMENT FOR BIDS

CITY OF SHAWNEE

Santa Fe Depot Roof & Exterior Stabilization

_____, 2023

Owner: City of Shawnee
16 West 9th Street
Shawnee, OK 74801

Architect: GH2 ARCHITECTS, LLC
320 South Boston, Suite 100
Tulsa, Oklahoma 74103
Project Manager: Mindy Gray
msg@gh2.com (E-mail)
918.587.6158 (Office)

A **MANDATORY** Pre-Bid Conference will be held on _____, 2023 at 10:00am at the Shawnee Commission Chambers, 16 West 9th Street, Shawnee, OK 74801 which is a prequalification.

Sealed bids will be **RECEIVED** by the City of Shawnee, Oklahoma at City Hall, 16 West 9th Street, Shawnee, OK 74801 until 4:00 PM local time on _____, 2023.

Cost Estimate

Item	Amount
Base Bid – Partial Roof/Masonry Repoint	\$417,939
Alternate 1 – Full Roof Replacement	\$129,583
Alt. 2 – Window/Door Repair	\$145,832
Alt. 3 – Building Exterior	\$148,481
Alt. 4 – Site Repair	\$196,010
Total	\$1,037,845

Based on previous envelope study and updated to reflect the current economic climate.

Not included in Cost Estimate

- Santa Fe Depot Interior Design
- Interior Rehabilitation/Construction



Available Funding

Funding Source	Amount
2018 Half-cent Sales Tax – Santa Fe Depot	\$351,054
2018 Half-cent Sales Tax – currently unallocated	\$621,188
Total	\$972,242

Funding is less than anticipated cost and, dependent on bids, **additional funding is likely needed.**

City Commission Questions

