



Department of Management Services  
Purchasing Division  
241 West South Street  
Kalamazoo, MI 49007-4796  
Phone: 269.337.8020  
Fax: 269.337.8500  
[www.kalamazoocity.org](http://www.kalamazoocity.org)  
[purchasing@kalamazoocity.org](mailto:purchasing@kalamazoocity.org)

### **INVITATION FOR BIDS (IFB)**

The City of Kalamazoo, Michigan is soliciting sealed bids for:

**Project Name: Newton Ct. & Fellows Ave. Improvements      Bid Reference #: 91350-006.0**

**IFB ISSUE DATE: May 24, 2023**

**BID DUE/OPENING DATE: June 21, 2023 at 3:00 p.m. Local Time (ET)**

*Facsimile Bids Will Not Be Accepted.*

#### **MAILING ADDRESS & INSTRUCTIONS**

**Mail To:**

Purchasing Division  
241 W. South Street  
Kalamazoo, MI 49007

**Questions for this IFB should be directed to:**

Department Contact: Sohil Manjiyani, PE,  
Senior Civil Engineer at  
[manjiyanis@kalamazoocity.org](mailto:manjiyanis@kalamazoocity.org) or  
(269) 337-8595

***Include on the Envelope the Project Name and Bid Reference Number. All Envelopes Must Be Sealed.***

You are invited to submit a bid for this project. Specifications, terms, conditions and instructions for submitting bids are contained herein. This Invitation for Bids with all pages, documents and attachments contained herein, or subsequently added to and made a part hereof, submitted as a fully and properly executed bid shall constitute the contract between the City and the successful bidder when approved and accepted on behalf of the City by an authorized official or agent of the City. Please review the bid document as soon as possible and note the **DEADLINE FOR QUESTIONS** in the Instructions to Bidders.

All bidders shall complete and return the Bid and Award page(s) and submit all information requested herein in order for a bid to be responsive. The bid document shall be returned in its entirety, in a properly identified and sealed envelope to the Purchasing Division at the above address. **BIDS MUST BE RECEIVED BEFORE THE DUE DATE - LATE BIDS WILL NOT BE CONSIDERED.** The City reserves the right to postpone the bid opening for its own convenience.

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### STATEMENT OF NO BID

**NOTE: If you DO NOT intend to bid on this commodity or service, please complete and return this form immediately.** Your response will assist us in evaluating all responses for this important project and to improve our bid solicitation process.

The Purchasing Division of the City of Kalamazoo wishes to keep its bidders list file up-to-date. If, for any reason you cannot supply the commodity/service noted in this bid solicitation, this form must be completed and returned to remain on the particular bid list for future projects of this type.

**If you do not respond to this inquiry within the time set for the bid opening date and time noted, we will assume that you can no longer supply this commodity/service, and your name will be removed from this bid list.**

- \_\_\_\_\_ Specifications too "tight", i.e. geared toward one brand/ manufacturer only (explain below).
- \_\_\_\_\_ Specifications are unclear (explain below).
- \_\_\_\_\_ We are unable to meet specifications.
- \_\_\_\_\_ Insufficient time to respond to the Invitation for Bid.
- \_\_\_\_\_ Our schedule would not permit us to perform.
- \_\_\_\_\_ We are unable to meet bond requirements.
- \_\_\_\_\_ We are unable to meet insurance requirements.
- \_\_\_\_\_ We do not offer this product or service.
- \_\_\_\_\_ Remove us from your bidders list for this commodity or service.
- \_\_\_\_\_ Other (specify below).

REMARKS: \_\_\_\_\_

\_\_\_\_\_

SIGNED: \_\_\_\_\_ NAME: \_\_\_\_\_  
(Type or Print)

TITLE: \_\_\_\_\_ DATE: \_\_\_\_\_

FIRM NAME: \_\_\_\_\_  
(if any)

ADDRESS: \_\_\_\_\_  
(Street address) (City) (State) (Zip)

PHONE: \_\_\_\_\_ FAX: \_\_\_\_\_

EMAIL: \_\_\_\_\_

## SECTION I INSTRUCTIONS FOR BIDDERS

### 1. EXAMINATION OF BID DOCUMENT

Before submitting a bid, bidders shall carefully examine the specifications and shall fully inform themselves as to all existing conditions and limitations. The bidder shall indicate in the bid the sum to cover the cost of all items included on the bid form.

### 2. PREPARATION OF BID

The bid shall be legibly prepared in ink or typed. If a unit price or extension already entered by the bidder on the Bid and Award form is to be altered, it shall be crossed out and the new unit price or extension entered above or below and initialed by the bidder with ink. The bid shall be legally signed and the complete address of the bidder given thereon.

All bids shall be tightly sealed in an envelope plainly marked SEALED BID and identified by project name, bid opening date and time. Bids opened by mistake, due to improper identification, will be so documented and resealed. The Purchasing Division will maintain and guarantee confidentiality of the contents until the specified opening date and time. Bids submitted electronically will not be accepted.

### 3. EXPLANATION TO BIDDERS

Any binding explanation desired by a bidder regarding the meaning or interpretation of the Invitation for Bid (IFB) and attachments must be requested in writing, **at least 5 business days before the bid opening** so a reply may reach all prospective bidders before the submission of bids. Any information given to a prospective bidder concerning the IFB will be furnished to all prospective bidders as an amendment or addendum to the IFB if such information would be prejudicial to uninformed bidders. Receipt of amendments or addenda by a bidder must be acknowledged in the bid by attachment, or by letter or fax received before the time set for opening of bids. Oral explanation or instructions given prior to the opening will not be binding.

### 4. CASH DISCOUNTS

Discount offered for payment of less than thirty (30) days will not be considered in evaluating bids for award. Offered discounts of less than thirty (30) days will be taken if payment is made within the discount period, even though not considered in evaluation of the bid.

### 5. WITHDRAWAL OF BIDS

Bids may be withdrawn in person by a bidder or authorized representative, provided their identity is made known and a receipt is signed for the bid, but only if the withdrawal is made prior to the exact time set for receipt of bid. No bid may be withdrawn for at least ninety (90) days after bid opening.

### 6. ALTERNATE BIDS

bidders are cautioned that any alternate bid, unless specifically requested or any changes, insertions or omissions to the terms and conditions, specifications or any other requirement of this IFB may be considered non-responsive, and at the option of the City, result in rejection of the alternate bid.

## **7. LATE BIDS**

Any bid received at the office designated herein after the exact time specified for receipt will not be considered. (Note: The City reserves the right to consider bids that have been determined by the City to be received late due to mishandling by the City after receipt of the bid and no award has been made).

## **8. UNIT PRICES**

If there is a discrepancy between unit prices and their extension, unit prices shall prevail.

## **9. BID SUBMITTAL**

- 9.1. **Mail your bid**, to be received before the bid due date and time indicated in the bid document, to the City of Kalamazoo at the following address:

City of Kalamazoo  
Purchasing Division  
241 West South Street  
Kalamazoo, MI 49007

- 9.2. **Deliver your bid to City Hall In-Person** before the bid due date and time indicated in the bid document.
- 9.3. **Deliver your bid to the Treasurer’s Office Payment Drop Box** located in the northwest corner of City Hall (see photos on the following page) before the bid due date and time indicated in the bid document.

## **10. BID TABULATIONS**

The Purchasing Division makes an effort to post bid tabulations to the City of Kalamazoo website within 24 hours after the bid opening date and time at: <https://www.kalamazoocity.org/bidopportunities>. However, in certain cases the posting of the bid tabulation may extend beyond the 24-hour window.



1. Open drop box located at City Hall.

2. Insert SEALED BID here.



## SECTION II BID AND AWARD

The undersigned having become thoroughly familiar with all of the bid/contract documents incorporated herein, the project site and the location conditions affecting the work, hereby proposes to perform everything required to be performed in strict conformity with the requirements of these documents, and to provide and furnish all the equipment, labor and materials necessary to complete, in a professional manner, the furnishing and installing of all of the following, meeting or exceeding the specifications as set forth herein for the prices as stated below.

### NEWTON CT. & FELLOWS AVE. IMPROVEMENTS- PROJECT BASE BID

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	General Conditions/Mobilization, 10% Max	1	LSUM		
2	Traffic Control	1	LSUM		
3	Audio/Video Recording	1	LSUM		
4	Clearing and Grubbing/General Removal	1	LSUM		
5	Pavt, Rem, Mod	1687	SY		
6	Sidewalk, Rem	174	SY		
7	Curb and Gutter, Rem	185	FT		
8	Valve Box, Rem	1	EA		
9	Fence Removal	200	FT		
10	Structure, Rem	6	EA		
11	Sawcutting	2	LSUM		
12	Direct Bury Power Lines	1	LSUM		
12a	Relocate Power Pole (Item Bid Alternate)	1	LSUM		
13	Subbase, CIP	2260	CY		
14	Aggregate Base, 8", MDOT 21AA	1561	SY		
15	Aggregate Base, 12", MDOT 21AA	116	SY		
16	MDOT P-NC Concrete, 6"	116	SY		
17	HMA MDOT 13A - 2" Leveling Course	56	TON		
18	HMA MDOT 13A - 1.5" Leveling Course	10	TON		
19	HMA MDOT 36A - 1.5" Top Course	53	TON		
20	8" Brick Stamped Concrete Pavement	267	SY		
21	8" Concrete Pavement	784	SY		
22	Dumpster Pad	1	EA		
23	Guard Post	2	EA		
24	Sidewalk, Conc, 6"	1026	SFT		
25	Sidewalk Ramp, Conc, 6"	366	SFT		
26	MDOT F4 Curb and Gutter	185	FT		
27	Mountable Curb & Gutter	200	FT		
28	WM - 2", Rem	216	FT		
29	WM - 4", Rem	492	FT		
30	WM - 4" Cut & Cap	3	EA		
31a	WM – 6" D.I.	30	FT		
31b	WM - 8" D.I.	732	FT		
34	WM - Water Service	16	EA		

35	WM – Water Service, Yard	16	EA		
36	WM – 24” x 8” Tapping Sleeve and Valve	1	EA		
37	WM – 6” x 6” Tapping Sleeve and Valve	1	EA		
38	WM - 8" x 8" Tapping Sleeve and Valve	1	EA		
39	Fire Hydrant Assembly	2	EA		
40	Fire Hydrant Removal	1	EA		
41	SAN - 6" Sewer, Rem	587	FT		
43a	SAN - 8" SDR 26	215	FT		
43b	SAN – 8” C900	332	FT		
44	SAN - Service Connection	16	EA		
45	SAN - Manhole, 4' Dia.	3	EA		
46	SAN - Tie-In To Existing Manhole	2	EA		
47	Gas Relocate	1	LSUM		
48	Storm Sewer, 12" RCP	147	FT		
49	STORM - Catch Basin, 4' Dia.	2	EA		
51	Restoration	1	LSUM		
52	Materials Testing	1	LSUM		
53	Construction Staking	1	LSUM		
<b>PROJECT BASE BID TOTAL</b>					

**NEWTON CT. & FELLOWS AVE. IMPROVEMENTS – PROJECT BID ALTERNATE  
12-31-2024 COMPLETION DATE**

<b>Item No.</b>	<b>Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Amount</b>
1	General Conditions/Mobilization, 10% Max	1	LSUM		
2	Traffic Control	1	LSUM		
3	Audio/Video Recording	1	LSUM		
4	Clearing and Grubbing/General Removal	1	LSUM		
5	Pavt, Rem, Mod	1687	SY		
6	Sidewalk, Rem	174	SY		
7	Curb and Gutter, Rem	185	FT		
8	Valve Box, Rem	1	EA		
9	Fence Removal	200	FT		
10	Structure, Rem	6	EA		
11	Sawcutting	2	LSUM		
12	Direct Bury Power Lines	1	LSUM		
12a	Relocate Power Pole (Item Bid Alternate)	1	LSUM		
13	Subbase, CIP	2260	CY		
14	Aggregate Base, 8", MDOT 21AA	1561	SY		
15	Aggregate Base, 12", MDOT 21AA	116	SY		
16	MDOT P-NC Concrete, 6"	116	SY		
17	HMA MDOT 13A - 2" Leveling Course	56	TON		
18	HMA MDOT 13A - 1.5" Leveling Course	10	TON		
19	HMA MDOT 36A - 1.5" Top Course	53	TON		
20	8" Brick Stamped Concrete Pavement	267	SY		
21	8" Concrete Pavement	784	SY		
22	Dumpster Pad	1	EA		

23	Guard Post	2	EA		
24	Sidewalk, Conc, 6"	1026	SFT		
25	Sidewalk Ramp, Conc, 6"	366	SFT		
26	MDOT F4 Curb and Gutter	185	FT		
27	Mountable Curb & Gutter	200	FT		
28	WM - 2", Rem	216	FT		
29	WM - 4", Rem	492	FT		
30	WM - 4" Cut & Cap	3	EA		
31a	WM – 6" D.I.	30	FT		
31b	WM - 8" D.I.	732	FT		
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35	WM – Water Service, Yard	16	EA		
36	WM – 24" x 8" Tapping Sleeve and Valve	1	EA		
37	WM – 6" x 6" Tapping Sleeve and Valve	1	EA		
38	WM - 8" x 8" Tapping Sleeve and Valve	1	EA		
39	Fire Hydrant Assembly	2	EA		
40	Fire Hydrant Removal	1	EA		
41	SAN - 6" Sewer, Rem	587	FT		
43a	SAN - 8" SDR 26	215	FT		
43b	SAN – 8" C900	332	FT		
44	SAN - Service Connection	16	EA		
45	SAN - Manhole, 4' Dia.	3	EA		
46	SAN - Tie-In To Existing Manhole	2	EA		
47	Gas Relocate	1	LSUM		
48	Storm Sewer, 12" RCP	147	FT		
49	STORM - Catch Basin, 4' Dia.	2	EA		
51	Restoration	1	LSUM		
52	Materials Testing	1	LSUM		
53	Construction Staking	1	LSUM		
<b>PROJECT BID ALTERNATE TOTAL</b>					

**PLEASE NOTE: The only difference between the Project Base Bid and the Project Bid Alternate is the extension of the project completion date to 12/31/2024 for the Project Bid Alternate.**

Bidder shall provide all of the information as requested herein with their bid. Failure to do so and/or failure to provide post-bid requested information may be cause for rejecting the bid as non-responsive.

After receipt of Notice to Proceed by Contractor, work shall start within 10 business days, unless otherwise agreed to by the Project Manager, and shall be completed by **December 31, 2023**. Project Bid Alternate completion date will be December 31, 2024.

Bidder/Contractor has examined and carefully studied the bidding documents and attachments, and acknowledges receipt of the following addenda:

Addendum No: \_\_\_\_\_

Date: \_\_\_\_\_

By my signature below, I certify that the firm bidding on this contract, when making hiring decisions, does not use a past criminal conviction as a bar to or preclude a person with a criminal conviction from being considered for employment with the bidding firm unless otherwise precluded by federal or state law. I further certify that I have read and agree to be bound by the provisions of the City’s Non-Discrimination Clause found in Appendix A as updated by City Ordinance 1856.

Signed: \_\_\_\_\_ Name: \_\_\_\_\_

Title: \_\_\_\_\_



## CITY OF KALAMAZOO EX-OFFENDER POLICY CHECKLIST

As part of the City’s commitment to reducing unacceptable poverty, encouraging rehabilitation, reducing recidivism and strengthening families in Kalamazoo, the City has updated its Purchasing Policy to ensure that firms with whom the City does business share in this commitment by utilizing hiring practices that do not unfairly deny people with arrest and conviction records gainful employment. *(Important: This requirement also extends to any subcontractors the bidder intends to use to fulfill the contract for goods or services being sought from the City.)*

### **Part I: Proof that the bidder does not inquire about an individual’s past arrest or criminal history on the bidder’s employment application form**

- Attach a copy of the current application for employment being used by the bidder

### **Part II: Certification that the bidder does not use an individual’s past arrest or criminal history to unlawfully discriminate against them by checking one or more of the following:**

- That pursuant to federal or state law bidder is precluded from hiring persons with certain criminal records from holding particular positions or engaging in certain occupations by providing a cite to the applicable statute or regulation; if checking this box, provide a citation to the applicable statute or rule upon which the bidder is relying: \_\_\_\_\_
- That bidder conducts criminal history background checks only as necessary, and only after making a conditional offer of employment; that any withdrawal of an offer of employment to an individual because of a past criminal history is job-related and consistent with business necessity after the individual has been provided an individualized assessment opportunity to review and challenge or supplement the history of past criminal conduct being relied upon by the bidder.
- That the use by bidder of criminal history background checks complies with the U.S. Equal Employment Opportunity Commission’s Enforcement Guidance on the Consideration of Arrest and Conviction Records in Employment Decisions and that the bidder has not had a determination rendered against it in past 7 years that it discriminated against a person through the use of an individual’s arrest or criminal history

I CERTIFY THAT THE ABOVE STATEMENTS ARE TRUE.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Position

## **CITY OF KALAMAZOO LOCAL PREFERENCE POLICY AND CERTIFICATION**

The lowest responsive Kalamazoo County bidder whose bid is not low but falls within 2% of the lowest responsive bid is afforded the opportunity to become the successful bidder if it agrees to reduce its bid to match the lowest responsive bid. The City of Kalamazoo is the sole determiner whether a bidder is responsible, qualifies as a Kalamazoo County bidder, and if its bid is responsive to the City’s specifications, terms and conditions.

If the lowest Kalamazoo County bidder chooses not to match the lowest bid, the next lowest responsive Kalamazoo County bidder whose bid falls within 2% of the lowest bid, is given the opportunity to match the lowest responsive bid.

To qualify as a Kalamazoo County bidder, the bidder must meet both the following criteria:

1. Have a physical presence in Kalamazoo County by maintaining a permanent office, factory or other facility in Kalamazoo County with employees working in Kalamazoo County.
2. Have paid real or personal property taxes related to said business to the City of Kalamazoo, County of Kalamazoo or other municipal corporation within Kalamazoo County in the previous tax year, except that a non-profit entity need not meet this requirement.

This local preference policy applies only to purchases for materials, supplies, capital outlay, and services for maintenance, repair or operation of City facilities that are over \$25,000. If more than 50% of the contract is sub-contracted to firms located outside of Kalamazoo County that bid does not qualify for the local preference policy outlined above. The local preference policy will not apply if prohibited by law. The Purchasing Agent has the authority to finally determine if the bidder qualifies as a Kalamazoo County bidder as set forth herein. The Purchasing Agent may take into account the permanency of the business in Kalamazoo, and whether the business appears to be claiming to be a Kalamazoo County business solely or primarily to qualify as a Kalamazoo County business under this Resolution, and any other material factors.

### **CERTIFICATION**

If you qualify as a Kalamazoo County bidder and wish to be considered for the local preference provisions as provided above please certify that fact by providing the information requested below and attesting to its accuracy.

Firm Name: \_\_\_\_\_

Street Address of Business: \_\_\_\_\_

City, State, and Zip Code: \_\_\_\_\_

Number of employees working in Kalamazoo County: \_\_\_\_\_

Name the city or township to which business real and/or personal property taxes are paid or provide non-profit status: \_\_\_\_\_  
\_\_\_\_\_

The above information is accurate:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_

Revised April 2008

## SUB-CONTRACTING INFORMATION

Using the table below provide information regarding the sub-contractors that will be working to fulfill the requirements of this contract. Submit as complete a list as possible at the time of your bid. You will have two business days after the bid opening to update the list as needed. The information provided will be used for evaluating your bid and to assist in determining if you qualify as a Kalamazoo County Bidder.

**INSTRUCTIONS:**

**Nature of Contract** - State a brief description of the work or product that will be provided.

**BIDDER** – Provide the percentage of services or construction activity that will be provided by your firm.

**Subcontractors:**

- Provide the Name and Address for each subcontractor providing services or construction activities for this contract.
- Indicate with **YES** or **NO** under the “Local?” box if they qualify as a “Kalamazoo County bidder” (see local preference certification page)
- Provide the percentage for the dollar amount of the contract work they will be performing.

If there are not enough lines in the table below make additional copies as needed.

<b>Nature of Contract:</b>		
<b>Subcontractor Name/Address</b>	<b>Local?</b>	<b>% Of Total Contract</b>
<b>BIDDER</b>		

Does this List of Subcontractors need to be updated after the bid opening? **Yes** \_\_\_ **No** \_\_\_

## REFERENCE QUESTIONNAIRE

Please answer the following questions completely.

1. Firm name: \_\_\_\_\_
2. Established: Year \_\_\_\_\_ Number of Employees: \_\_\_\_\_
3. Type of organization:
  - a. Individual: \_\_\_\_\_
  - b. Partnership: \_\_\_\_\_
  - c. Corporation: \_\_\_\_\_
  - d. Other: \_\_\_\_\_
4. Former firm name(s) if any, and year(s) in business:  
\_\_\_\_\_  
\_\_\_\_\_
5. Include at least 3 references of contracts for similar work performed over the last five (5) years. Include: owner, contact person and phone number and description of work performed.
  - a. Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Type of work or contract: \_\_\_\_\_
  - b. Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Type of work or contract: \_\_\_\_\_
  - c. Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Type of work or contract: \_\_\_\_\_

I hereby certify that all of the information provided is true and answered to the best of my ability.

Signed: \_\_\_\_\_ Name: \_\_\_\_\_  
(type or print)

Title: \_\_\_\_\_ Date: \_\_\_\_\_

I hereby state that all of the information I have provided is true, accurate and complete. I hereby state that I have the authority to submit this bid which will become a binding contract if accepted by the City of Kalamazoo. I hereby state that I have not communicated with nor otherwise colluded with any other bidder, nor have I made any agreement with nor offered/accepted anything of value to/from an official or employee of the City of Kalamazoo that would tend to destroy or hinder free competition.

The firm's identification information provided will be used by the City for purchase orders, payment and other contractual purposes. If the contractual relationship is with, or the payment made to, another firm please provide a complete explanation on your letterhead and attach to your bid. Please provide for accounts payable purposes:

Tax Identification Number (Federal ID): \_\_\_\_\_

Remittance Address: \_\_\_\_\_

Financial Contact Name: \_\_\_\_\_ Financial Contact Phone Number: \_\_\_\_\_

Financial Contact Email Address: \_\_\_\_\_

I hereby state that I have read, understand and agree to be bound by all terms and conditions of this bid document.

SIGNED: \_\_\_\_\_ NAME: \_\_\_\_\_  
(Type or Print)

TITLE: \_\_\_\_\_ DATE: \_\_\_\_\_

FIRM NAME: \_\_\_\_\_  
(if any)

ADDRESS: \_\_\_\_\_  
(Street address) (City) (State) (Zip)

PHONE: \_\_\_\_\_ FAX: \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

---

**FOR CITY USE ONLY - DO NOT WRITE BELOW**

### SECTION III CITY OF KALAMAZOO INDEMNITY AND INSURANCE

Contractor, or any of their subcontractors, shall not commence work under this contract until they have obtained the insurance required under this paragraph, and shall keep such insurance in force during the entire life of this contract. All coverage shall be with insurance companies licensed and admitted to do business in the State of Michigan and acceptable to the City of Kalamazoo within ten (10) days of the Notice of Award. The requirements below should not be interpreted to limit the liability of the Contractor. All deductibles and SIR's are the responsibility of the Contractor.

The Contractor shall procure and maintain the following insurance coverage:

Workers' Compensation Insurance including Employers' Liability Coverage, in accordance with all applicable statutes of the State of Michigan.

Commercial General Liability Insurance on an "Occurrence Basis" with limits of liability not less than \$1,000,000 per occurrence and aggregate. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractors Coverage; (D) Broad Form General Liability Extensions or equivalent, if not already included and (E) XCU coverage if the nature of the contract requires XC or U work.

Automobile Liability in accordance with all applicable statutes of the State of Michigan, with limits of liability not less than \$1,000,000 per occurrence, combined single limit for Bodily Injury, and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and all hired vehicles.

Additional Insured: Commercial General Liability and Automobile Liability, as described above, shall include an endorsement stating that the following shall be *Additional Insureds*: The City of Kalamazoo, all elected and appointed officials, all employees and volunteers, all boards, commissions, and/or authorities and board members, including employees and volunteers thereof. It is understood and agreed that by naming the City of Kalamazoo as additional insured, coverage afforded is considered to be primary and any other insurance the City of Kalamazoo may have in effect shall be considered secondary and/or excess.

To the fullest extent permitted by law the Contractor agrees to pay on behalf of, indemnify, and hold harmless the City of Kalamazoo, its elected and appointed officials, and employees against any claims, demands, suits, or loss, including all costs connected therewith, and for any damages which may be asserted, claimed, or recovered against or from the City of Kalamazoo, by reason of personal injury, including bodily injury or death and/or property damage, including loss of use thereof, caused in whole or part by any negligent act or omission by the Contractor, its employees, agents, or officers which arises out of, or is in any way connected or associated with, this contract.

**INDEMNITY AND INSURANCE**

*Continued*

Cancellation Notice: All policies, as described above, shall include an endorsement stating that it is understood and agreed that thirty (30) days, or ten (10) days for non-payment of premium, Advance Written Notice of Cancellation, Non-Renewal, Reduction, and/or Material Change shall be sent to: City of Kalamazoo, Purchasing Division, 241 W. South Street, Kalamazoo, MI 49007.

Proof of Insurance Coverage: The Contractor shall provide the City of Kalamazoo at the time that the contracts are returned by him/her for execution, or within 10 days of Notice of Award, whichever is earlier, a Certificate of Insurance as well as the required endorsements. In lieu of required endorsements, if applicable, a copy of the policy sections where coverage is provided for additional insured and cancellation notice would be acceptable. Copies or certified copies of all policies mentioned above shall be furnished, if so requested. If any of the above coverages expire during the term of this contract, the Contractor shall deliver renewal certificates and/or policies to City of Kalamazoo at least ten (10) days prior to the expiration date.

Scope of Coverage: The above requirements and conditions shall not be interpreted to limit the liability of the Contractor under this Contract, but shall be interpreted to provide the greatest benefit to the City and its officers and employees. The above listed coverages shall protect the Contractor, its employees, agents, representatives and subcontractors against claims arising out of the work performed. It shall be the Contractor's responsibility to provide similar insurance for each subcontractor or to provide evidence that each subcontractor carries such insurance in like amount prior to the time such subcontractor proceeds to perform under the contract.



## SECTION IV SPECIAL REQUIREMENTS

### 1. BID BOND/GUARANTEE

The bid must be accompanied by a bid bond which shall not be less than five (5%) percent of the total amount of the bid. No bid will be considered unless it is accompanied by the required guarantee. The bid guarantee shall ensure the execution of the bid and award, and the furnishing of a performance bond and a labor and material bond (A and B below) by the successful bidder. (Contractors Note: A cashier's or certified check in lieu of a bid bond is **NOT** acceptable.)

#### A. PERFORMANCE BOND

A performance bond shall be furnished in the full amount of the contract ensuring the City of faithful performance of all the provisions of the contract, and the satisfactory performance of any equipment required hereunder. The bond shall also ensure the City against defective workmanship and/or materials.

#### B. LABOR AND MATERIAL (PAYMENT) BOND

A labor and material (payment) bond shall be furnished for the period covered by the contract, in the full amount of the contract for the protection of labor and material suppliers and sub-contractors.

Bonds shall be secured by a guaranty or a surety company listed in the latest issue of the U.S. Treasury, circular 570, and licensed to do business in the State of Michigan, and written in favor of the City of Kalamazoo. The amount of such bonds shall be within the maximum amount specified for such company in said circular 570. The bonds shall be accompanied by a power of attorney showing authority of the bonding agent to sign such bonds on behalf of the guaranty or surety company. The cost of the bonds shall be borne by the Contractor.

Failure of the Contractor to supply the required bonds within ten (10) days after Notice of Award, or within such extended period as the Purchasing Agent may agree to, shall constitute a default and the City of Kalamazoo may either award this contract to the next lowest bidder or re-advertise for bids and may charge against the Contractor for the difference between the amount of the bid and the amount for which a contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the bid bond. If a more favorable bid is received by re-advertising, the defaulting bidder shall have no claim against the City of Kalamazoo for a refund.

### 2. WAIVERS OF LIEN

Upon completion of all work and request for final payment, the Contractor shall furnish a 100% waiver of lien from each supplier and sub-contractor covering all items of the work. Failure to supply waivers of lien for the entire job upon completion and final payment request will be considered grounds for withholding final payment.

### 3. SUBCONTRACTORS

- A. Contractors shall state on the Bid and Award page any and all subcontractors to be associated with their bid, including the type work to be performed. Any and all subcontractors shall be bound by all of the terms, conditions and requirements of the contract; however, the prime contractor shall be responsible for the performance of the total work requirements.
- B. The Contractor shall cooperate with the City of Kalamazoo in meeting its commitments and goals with regard to maximum utilization of minority and women business enterprise, and shall use its best efforts to ensure that minority and women business enterprises have maximum practicable opportunity to compete for subcontract work under this agreement.

### 4. PREVAILING WAGES

The successful bidder will be required to comply with Section 2-125 of the Code of Ordinances of the City of Kalamazoo regarding prevailing wages and Appendix B attached, incorporated herein by reference. Special note: This provision applies only to projects in excess of \$100,000 for City (\$2,000 federal) funded projects.

The City's requirements as it relates to prevailing wages includes a meeting with the City's Purchasing Division **prior** to work and payroll and work monitoring during the duration of the contract. Please contact Purchasing at (269) 337-8020 if you have any questions regarding Davis-Bacon provisions.

## SECTION V SPECIAL CONDITIONS

### 1. INTENT

It is the intent of these plans and specifications to provide for a general contractor who shall provide all labor, materials, tools and equipment necessary to perform in a professional manner for the Newton Ct. & Fellows Ave. Improvements project as described in the specifications (*Appendix C*), plans (*Appendix D*), EGLE permit (*Appendix E*), special provisions (*Appendix F*), and bid document.

### 2. SCOPE OF WORK

The scope of work for this project shall consist of, but not be limited to, the excavation and full reconstruction of Newton Court and Fellows Avenue including new water main, sewer main, services and pavement as described in the specifications, plans, and bid document.

All necessary traffic control, labor, materials, tools, equipment, and other items incidental to the work being performed shall be included in the Contractor's unit price for this contract. Such items will not be bid or paid for separately but shall be included in the overall unit price.

The bidder shall furnish all labor, supervision, supplies, tools, equipment, and other means necessary or proper for performing and completing the work. The bidder shall be responsible for the cleaning up of the job site and shall repair or restore all structures and property that may be damaged or disturbed during performance of the work to the satisfaction of the Public Services Department for the City of Kalamazoo. Drainage structure covers shall be salvaged and reused if in usable condition; otherwise, they shall be replaced. Where needed, all traffic control used for such operations as defined by the MMUTCD will be the responsibility of the bidder.

**The bidder shall have all work completed by December 31, 2023. Project Bid Alternate completion date will be December 31, 2024.**

**PLEASE NOTE: The only difference between the Project Base Bid and the Project Bid Alternate is the extension of the project completion date to 12/31/2024 for the Project Bid Alternate.**

### 3. UNIT PRICING

The unit price, including its pro rata share of overhead, multiplied by the quantity shown shall represent the total bid and shall be held firm for the life of this contract. Any bid not conforming to this requirement may be rejected as non-responsive.

### 4. TEMPORARY UTILITIES

- A. Temporary or construction water will NOT be available on the sites. The Contractor must provide for drinking water.
- B. Temporary toilets: To be supplied by the Contractor as may be necessary.

### 5. PROGRESS SCHEDULE

- 5.1 After receipt of notification by Contractor of Notice to Proceed work shall start within 10 business days, unless otherwise agreed to by the Project Manager.

- 5.2 Project shall have a final completion date of **December 31, 2023**. Project Bid Alternate completion date will be December 31, 2024.
- 5.3 Work of a similar nature may be added to this contract if agreed to by the City and the Contractor. In the event that work is added, the progress schedule for the existing work will remain unchanged. Any contract time added for additional work will be applied to that additional work only and cannot be added to items in the original contract. Any work done on the items in the original contract past the number of working days stated herein will be subject to liquidated damages regardless of any work that may be added at a later date.
- 5.4 The Contractor will be required to meet with the Public Services representatives to work out a detailed progress schedule. The schedule for this meeting will be within two weeks after contract award has been made.
- 5.5 The named sub contractor(s) for all items shall also be present at the scheduled meeting and be required to sign the Progress Schedule to indicate their approval of the scheduled dates of work set forth in the Progress Schedule. If unable to attend the scheduled meeting, the sub-contractor shall, at a minimum, sign the Progress Schedule to indicate their approval of the dates of work. MDOT Form 1130 shall be used for schedule submission and signature of all parties.
- 5.6 The Progress Schedule shall include, as a minimum, the starting and completion dates for major items, and where specified in the bid document the date the project is to be opened to traffic as well as the final project completion date specified in the bid document. The Progress Schedule shall be coordinated with all aspects of the work occurring at the site.
- 5.7 Failure on the part of the Contractor to carry out the provisions of the Progress Schedule as established may be considered sufficient cause to prevent bidding future projects until a satisfactory rate of progress is again established.
- 5.8 The starting date and the contract time to the completion date for this project may be adjusted by Public Services without imposing liquidated damages upon the receipt of satisfactory documented evidence that unforeseen delayed delivery of critical materials will prevent the orderly prosecution of the work.
- 5.9 Any request extension of the completion date and satisfactory documented evidence of unforeseen delays shall be submitted via MDOT Form 1100A – Extension of Contract Time.
- 5.10 MDOT Standard Specifications for Construction Section 501.03.I.1, Weather Limitations, shall apply.

## **6. LIQUIDATED DAMAGES**

Liquidated Damages will be assessed per Section 108.10C of the MDOT Standard Specifications for Construction.

## **7. MAINTAINING TRAFFIC**

- 7.1 This work shall be in accordance with the requirements of Section 812 of the MDOT Standard Specifications for Construction, the Maintaining Traffic special provision, and as specified herein. The Contractor is advised that the current Michigan Manual of Uniform Traffic Control Devices (MMUTCD) is hereby established as governing all work in connection with traffic control devices, barricade lighting, etc. required on this project.

- 7.2 The Contractor shall furnish, erect, maintain and, upon completion of the work, remove all traffic control devices and barricade lights within the project and around the perimeter of the project for the safety and protection of through and local traffic. This includes, but is not limited to: Advance, regulatory and warning signs; barricades and channeling devices at intersecting streets on which traffic is to be maintained; barricades at the ends of the project and at right of way lines for intersecting streets which are to be closed with the first usable street on each side of the project. Traffic regulators, where required by the Engineer, are included.
- 7.3 Where the existing pavement or partial widths of new pavement are to be utilized for the maintenance of through and local traffic, channelizing devices will be required at 50' intervals or as directed by the Engineer for channeling and directing traffic through the construction area.
- 7.4 Through traffic shall be maintained utilizing sidewalk closures with detours and traffic shifts per MDOT traffic and safety details.
- 7.5 Protection of all pedestrian traffic shall be maintained at all times in accordance with the MMUTCD. Type II barricades and sidewalk detour signs shall be used in accordance with the MMUTCD at all intersections and ramps. Sidewalk detours shall direct pedestrians safely around closed sidewalk locations and shall be placed at the nearest pedestrian crossing locations still open to traffic.
- 7.6 Payment for furnishing and operating all temporary traffic control devices and traffic regulators shall be paid as pay items included in this contract and shall include all the temporary traffic control measures on all road segments.
- 7.7 Under Article 812.04.D "Operated Pay Items" the term 'Relocating' shall include the relocating of the item from any street covered by the contract to any other street covered by the contract.
- 7.8 No work shall be allowed on the following dates:
- |          |                        |
|----------|------------------------|
| 4/17/23  | Good Friday            |
| 5/29/23  | Memorial Day Holiday   |
| 6/19/23  | Juneteenth             |
| 7/4/23   | Fourth of July Holiday |
| 9/4/23   | Labor Day Holiday      |
| 11/10/23 | Veteran's Day          |
| 11/24/23 | Thanksgiving           |
| 12/25/23 | Christmas              |
| 1/1/24   | New Year's Day         |
- 7.9 Milled surfaces will not be allowed on travel lanes for longer than 72 hours unless approved by the Project Manager. Any traffic surface within the construction area containing a drop off at the edge of a pavement greater than two (2) inches shall not be allowed to be opened to the public without proper wedging of the edges according to the COK standard detail. Any areas not conforming to the road levelness and profile shall be signed appropriately in accordance with the MMUTCD and best management practices.
- 7.10 Once work is initiated that includes lane restrictions or detours, that work shall be continuous until complete. If work is suspended for more than three (3) continuous working days all lane restrictions and detours shall be removed at the Contractor's expense.

Special Restrictions: Access to frontage properties shall be maintained as much as practical. Emergency access shall be maintained at all times. The Contractor shall maintain two way traffic with flag control as needed when the road is restricted to only one traffic lane.

## **8. COORDINATING**

The Contractor's attention is called to Article 104.08 of the MDOT Standard Specifications for Construction entitled "Cooperation by Contractor" and the special provisions contained within this contract.

## **9. WORK HOURS**

All work shall be done between the hours of 7 am to 7 pm (Monday – Saturday). Work done outside of these times will be at the discretion of the Project Manager.

No work shall be done on Sunday, unless otherwise approved by the Project Manager in writing.

The Contractor shall conduct their work in such a manner that no excavations are left open overnight. If this is not possible, the Contractor shall provide and install a temporary fence to protect the excavation, at the Contractor's expense.

## SECTION VI GENERAL CONDITIONS

### 1. PROJECT MANAGER'S STATUS

The City Engineer (Engineer) or his/her duly authorized representative shall be the City's Project Manager and shall have the duties and responsibilities as provided in the contract.

The Project Manager shall have the authority to reject any work or materials which do not conform to the contract and to decide questions or interpretations which may arise from the contract documents.

The Contractor shall immediately report to the Project Manager any questionable or obvious error or omission which may be apparent in the contract documents and shall not proceed with work until the Project Manager has resolved the error or omission.

### 2. CONSTRUCTION SCHEDULE AND COORDINATION

- 2.1 The Contractor shall supply the City with an agreeable construction schedule before commencing work on this contract. This schedule shall detail beginning and completion dates for each major component of the project.
- 2.2 The Contractor shall coordinate and cooperate with all other contractors who may be working on the site, to allow for the orderly progress of work being done.
- 2.3 The Contractor is required to keep the Project Manager fully informed of any proposed work which will tend to interfere with the existing operations at the site.
- 2.4 The Contractor shall schedule all work to accommodate the City's schedule. In the event the Contractor's schedule falls on weekends, nights or overtime work is required, no additional compensation will be allowed. All work shall be part of this contract without regard to when it is done.
- 2.5 The Contractor shall coordinate with other construction projects and contractors adjacent to the location of this project.
- 2.6 The Contractor shall notify, by door hanger/written flier (pre-approved by the Project Manager), affected residents and business of work and areas to be disturbed by construction at least 72 hours in advance. Work shall not commence until the affected residents/business have been notified and given advanced notice. The Contractor shall work to minimize impacts to those affected by the construction while still maintaining project schedule and objectives. For impacts to driveways or property access points that affect residents or businesses, resident/business shall be notified 24 hours in advance of the work taking place and coordinated with for parking and property access.

### 3. PROTECTION OF WORK

The Contractor shall maintain adequate protection of all his/her work from damage and shall protect all public and private abutting property from injury or loss arising in connection with this contract.

#### **4. PROTECTION OF PROPERTY**

- 4.1 The Contractor shall confine his/her equipment and operations to those areas of the work site necessary for the completion of the work, or as authorized by the Project Manager. The Contractor shall protect and preserve from damage any facilities, utilities or features including trees, shrubs and turf which are not required to be disturbed by the requirements of the work.
- 4.2 The Contractor shall be responsible to determine the location of and to protect from damage any utilities or other improvements.

#### **5. REMOVAL OF RUBBISH**

The Contractor shall daily remove all rubbish and accumulated materials due to his/her construction.

#### **6. BRICK SIDEWALK OR PAVEMENT REMOVAL**

When brick is removed from City of Kalamazoo sidewalk or pavement it shall be salvaged, unless otherwise stated in the contract. Brick to be salvaged shall be placed within the right-of-way (ROW) for pickup by the City. Brick shall not be placed or stored on any pavement, sidewalk, bike, or pedestrian areas but in ROW green space only; salvaged brick shall not be placed on private property without written approval given by the owner.

#### **7. REMOVAL OF PERMANENT TRAFFIC SIGNS AND POSTS**

The Contractor shall notify the Project Manager five (5) working days in advance of the time permanent signs must be removed to accommodate the construction. The Contractor shall remove and salvage any permanent signs that must be removed for construction.

#### **8. PERMANENT TRAFFIC SIGN STAKING**

The City shall stake the field locations for the new permanent traffic signs that the Contractor shall install under this contract. The Contractor shall call MISS DIG to arrange for staking prior to sign installation.

#### **9. LAWN SPRINKLER SYSTEMS**

- 9.1 Owners of known lawn sprinkler systems shall be notified by the contractor a minimum of 72 hours in advance of any work to be done that will affect those systems. Modifications to the systems are the responsibility of the owners and are not a part of this contract.
- 9.2 Owners of lawn sprinkler systems that were unknown to the contractor at the beginning of work and uncovered during the work for this contract, shall be notified as soon as possible and no later than 24 hours after discovery of the system. The Contractor shall coordinate with the owner for placement outside the immediate work area until modifications can take place. Modifications to the systems are the responsibility of the owners and are not a part of this contract.

#### **10. SALVAGING DRAINAGE STRUCTURE COVERS**

The City of Kalamazoo reserves the right to salvage any drainage structure covers or portions thereof which are to be removed as a result of work done under this contract. Any covers which are to be salvaged will be identified by the City. The contractor will set those items identified aside for pick up by City personnel.



### **11. REMOVING AND REPLACING CURB AND GUTTER**

When the contract provides for streets to be milled and resurfaced, or when the existing base course is to remain in place, and replacement of curb and gutter is called for, milling or other surface removal operations will not take place until placement of the new curb and gutter, and adjacent concrete base course has been completed.

### **12. DRAINAGE INLET COVERS (K COVERS)**

In compliance with the Clean Water Act, all inlet covers must have on their backs reminders against dumping waste into the drains.

### **13. FLY ASH USE IN CONCRETE ITEMS**

The use of fly ash, as described in Section 901.07 of the MDOT Standard Specifications for Construction, shall not be allowed.

### **14. EXISTING WATER MAINS**

The Contractor will be responsible for any damage to the existing water mains during the work required under this contract. This includes but is not limited to the construction of the proposed storm sewers, catch basins, leaching basins, leaching trenches, subgrade under drains, subgrade undercutting, full depth repairs, or other miscellaneous work.

### **15. GRADE INTERSECTIONS**

All intersections are to be considered as complete units and their grades determined before construction is started.

### **16. UNDERGROUND UTILITIES**

For protection of underground utilities, the Contractor shall dial Miss Dig at 1-800-482-7171 a minimum of 72 hours prior to excavating in the vicinity of utility lines. All “Miss Dig” participating members will thus be routinely notified. This does not relieve the Contractor of notifying utility owners who may not be part of the “Miss Dig” alert system.

### **17. ADJUSTING MONUMENT BOXES**

It is the intent that all government corners on this project be preserved and that, where necessary, monument boxes be placed or adjusted whether shown or not.

### **18. PAVEMENT REMOVAL QUANTITIES**

Pavement removal as called for in this proposal shall be at the discretion of the Project Manager. If, in his/her judgment, areas of pavement may be left in place or additional area added to provide the proper cross-section and base, adjustments can be made in the quantities.

### **19. COLD MILLING**

In those locations where cold milling is called for and the existing curb is to remain in place, the cold milling item shall cover removal of all asphalt up to the face of the curb. Any materials which are left due to the inability of the cold milling machine to work immediately adjacent to the face of the curb will be removed to the depth indicated on the typical cross-section by other means approved by the Project Manager. Any extra work involved in removing said HMA material shall be considered incidental to the item of Cold Milling HMA Surface.

## **20. SITE SECURITY**

The Contractor shall be responsible for job site security of all materials and tools provided by him/her and no claim for loss or damage will be considered by the City.

## **21. SITE ACCESS**

The City will provide fair and reasonable access to the job site within the working schedules of both parties.

## **22. MATERIALS INSPECTION AND RESPONSIBILITY**

- 22.1 The Project Manager shall have the right to inspect any materials to be used in carrying out the terms of the contract.
- 22.2 The City does not assume any responsibility for the contracted quality and standard of all materials, equipment, components or completed work furnished under this contract.
- 22.3 Any materials, equipment, components or completed work which does not comply with contract specifications, MDOT, or state codes may be rejected by the City, and shall be replaced by the Contractor at no cost to the City.
- 22.4 Any materials, equipment or components rejected shall be removed within a reasonable period of time from the premises of the City at the entire expense of the Contractor after written notice has been mailed by the City to the Contractor that such materials, equipment or components have been rejected.

## **23. GUARANTEE**

The Contractor shall guarantee all of his/her work for a period of one (1) year following the date of final acceptance of the completed work and shall repair, replace or make good any materials or work which fail to function or perform or be found defective, without cost to the city.

## **24. SAFETY**

The Contractor shall comply with all applicable OSHA and MIOSHA regulations.

## **25. SPECIFICATIONS FOR CONSTRUCTION**

The items of work in this contract shall conform to the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, MDOT Supplemental Specifications, and/or the City of Kalamazoo Standard Specifications unless superseded by a Special Provision contained in this document.

## **26. QUANTITIES**

The quantities shown on the Bid and Award pages are approximate only and may be subject to increase or decrease. No guarantee of maximum or minimum is given.

## **27. PRICE**

The unit price, including its pro rata share of overhead, multiplied by the quantity shown shall represent the total bid and shall be held firm for the life of this contract. Any bid not conforming to this requirement may be rejected as non-responsive. Special attention of all bidders is called to this provision since if conditions make it necessary to revise the quantities, no limit will be fixed for such increased or decreased quantities, nor extra compensation allowed; provided the net monetary value of all such additive and subtractive changes in quantities of such items of work, i.e., difference in cost, shall not increase or decrease the original contract price by more than

twenty five (25) percent. Some items of work might be increased beyond the 25% limitations as spelled out previously, upon mutual agreement.

### **28. BASIS FOR PAYMENT**

Payment shall be based on the bid unit price for each work item and the approved constructed quantity for that work item. Due to potential differences in conditions between the plans and the field, final as built quantities may be different than contained in the bid document. The City does not guarantee quantities and will pay only for "as built" quantities approved by the Project Manager or his representative. Quantities in excess of those approved shall be at the Contractor's own expense, the City will not be responsible for excess quantities not approved. Should an item of work have to be redone, such as replacing new walk because the Contractor failed to adequately protect the wet concrete from rain or pedestrian or vehicular damage, such work shall be replaced at the Contractor's expense. Should changes in design result in the Project Manager directing the removal and reinstallation of already completed work prior to final completion and acceptance of the project, such removal and installation shall be paid for based on as-bid unit prices and the quantities removed and installed.

### **29. PAY ESTIMATES**

The Contractor shall be responsible for the generation of invoices for payment. Payment will be generated by the City based upon an approved invoice. Frequency of payment shall be monthly unless agreed to otherwise by the Project Manager, with the invoiced period ending on the last day of the month. However, if a different frequency is approved by the Project Manager, it shall not exceed bi-weekly invoicing.

### **30. PAYMENT TO CONTRACTOR**

The Project Manager will be responsible for approving all measured quantities of work. Once measured quantities are approved, the Contractor shall submit a pay invoice to the City of Kalamazoo Attn: Accounts Payable at 241 West South Street, Kalamazoo MI, 49007 or [apinvoice@kalamazoocity.org](mailto:apinvoice@kalamazoocity.org). The contractor is required to meet with the Project Manager to verify final constructed quantities within 60 days of project completion. In the event of a disagreement the Project Manager's measured quantities shall be considered final.

### **31. INSPECTION OF WORK**

The City may maintain inspectors on the job who shall, at all times, have access to work.

### **32. INSPECTION OF SITE**

Each bidder shall visit the site of the proposed work and fully acquaint himself/herself with the existing conditions relating to construction, labor, and shall fully inform himself/herself as to the facilities involved and the difficulties and restrictions attending the performance of this contract. The bidder shall thoroughly examine and become familiar with the drawings, specifications, and all other bid/contract documents. The Contractor, by the execution of this contract, shall in no way be relieved of any obligation under it due to his failure to receive or examine any form or legal instrument, or to visit the site and acquaint himself/herself with the conditions there existing. No allowance shall be made subsequently in this connection on behalf of the Contractor for any negligence of his/her part. For inspection call the Public Services Department, Wastewater Division.

### **33. LAYING OUT OF WORK**

Before submitting a bid, the Contractor shall verify all measurements and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of differences between actual dimensions and the measurements indicated on the drawings. Any difference that may be found shall be submitted to the City Engineer for consideration before proceeding.

### **34. SUPERVISION**

The Contractor shall employ an experienced superintendent or foreperson on the job at all times.

### **35. TARDINESS**

Construction delays resulting from tardiness on the part of the Contractor will be reviewed by the City in the event of any request for contract extension by the Contractor.

### **36. ADDITIONS**

Any modification to the contract shall be subject to prior approval by the Purchasing Agent. City Commission approval may also be required.

Prices for additional work required are not requested in the itemized listing contained herein for the base project. Should additional work be authorized, compensation shall be made on the basis of price or prices to be mutually agreed upon. Such additional work shall not begin until a Change Order has been approved.

### **37. INSPECTION AND TESTING**

The Contractor shall give the Project Manager timely notice of readiness of the work for all required inspections, tests or approvals, and shall cooperate with inspections and testing personnel to facilitate required inspections or tests.

### **38. QUESTIONS**

Bidders shall address questions regarding the specifications to Sohil Manjiyani, PE, Senior Civil Engineer at [manjiyanis@kalamazoo.org](mailto:manjiyanis@kalamazoo.org) and/or (269) 337-8595. (This does not relieve the requirements of Page 6, Item 3.) Questions regarding terms, conditions and other related bid requirements may be addressed to Craig Hull, Buyer, at (269) 337-8444.

## **SECTION VII TERMS AND CONDITIONS**

### **1. AWARD OF CONTRACT**

- 1.1 This contract will be awarded to that responsible bidder whose bid, conforming to this solicitation, will be most advantageous to the City, price and other factors considered. The City reserves the right to accept or reject any or all bids and waive informalities and minor irregularities in bids received. Other factors include, as an example but not limited to, delivery time, conformance to specifications, incidental costs such as demurrage and deposits, etc.
- 1.2 Notification of award will be in writing by the Purchasing Manager. Upon notification, the Contractor shall submit to the Purchasing Division all required insurance certificates (if required) and such other documentation as may be requested or required hereunder. Upon their receipt and subsequent approval by the City, the Purchasing Manager will forward to the Contractor a written NOTICE TO PROCEED. Work shall NOT be started until such NOTICE TO PROCEED is received by the Contractor.
- 1.3 Unilateral changes in bid prices by the bidder shall not be allowed. However, the City, at its sole option, reserves the right to negotiate with bidders in the event of, but not limited to:
  - 1) No bids received;
  - 2) A single bid being received; or
  - 3) Prices quoted are over budget and/or unreasonable.

### **2. COMPLETE CONTRACT**

This bid document together with its addenda, amendments, attachments and modifications, when executed, becomes the complete contract between the parties hereto, and no verbal or oral promises or representations made in conjunction with the negotiation of this contract shall be binding on either party.

### **3. SUBCONTRACTORS – NON-ASSIGNMENT**

- 3.1 Bidders shall state in writing any and all sub-contractors to be associated with this bid, including the type of work to be performed. The Contractor shall cooperate with the City of Kalamazoo in meeting its commitments and goals with regard to maximum utilization of minority and women-owned business enterprises.
- 3.2 The Contractor hereby agrees and understands that the contract resulting from this solicitation shall not be transferred, assigned or sublet without prior written consent of the City of Kalamazoo.

### **4. TAXES**

The City of Kalamazoo is exempt from all federal excise tax and state sales and use taxes.

## 5. INVOICING

All original invoice(s) will be sent to the Financial Services Division, 241 W. South Street, Kalamazoo, MI 49007 or via email at [apinvoice@kalamazoo-city.org](mailto:apinvoice@kalamazoo-city.org). The Finance Division processes payments after receipt of an original invoice from the Contractor and approval by the department. The City of Kalamazoo's policy is to pay invoice(s) within 30 days from the receipt of the original invoice, if the services or supplies are satisfactory and the proper paperwork and procedures have been followed. **In order to guarantee payment to the vendor on a timely basis, the vendor needs to receive a purchase order number before supplying the City of Kalamazoo with goods or services.** All original, and copies of original invoice(s), will clearly state which purchase order they are being billed against.

**The City of Kalamazoo is a government municipality and therefore is tax exempt from all sales tax.**

**The vendor is responsible for supplying the Finance Division with a copy of their W9 if they are providing a service to the City of Kalamazoo.**

## 6. PAYMENTS

- 6.1 Upon issuance of certificates of Payment by the Architect/Engineer for labor and material incorporated in the work and the materials suitably stored at the site payment shall be made up to ninety (90%) percent of the value thereof.
- 6.2 When the cumulative total of payment is equal to fifty (50%) percent of the contract sum, subsequent payments will be made in the full amount for labor and material certified by the Architect/Engineer.
- 6.3 The amount retained shall be held until final acceptance of the work, receipt of all payrolls, releases, and waiver of liens.

## 7. CHANGES AND/OR CONTRACT MODIFICATIONS

- 7.1 The City reserves the right to increase or decrease quantities, service or requirements, or make any changes necessary at any time during the term of this contract, or any negotiated extension thereof. Price adjustments due to any of the foregoing changes shall be negotiated and mutually agreed upon by the Contractor and the City.
- 7.2 Changes of any nature after contract award which reflect an increase or decrease in requirements or costs shall not be permitted without prior approval by the Purchasing Agent. City Commission approval may also be required.
- 7.3 ANY CHANGES PERFORMED IN ADVANCE OF PURCHASING AGENT APPROVAL, MAY BE SUBJECT TO DENIAL AND NON-PAYMENT.

## 8. LAWS, ORDINANCES, AND REGULATIONS

- 8.1 The Contractor shall keep himself/herself fully informed of all local, state and federal laws, ordinances and regulations in any manner affecting those engaged or employed in the work and the equipment used. Contractor and/or employees shall, at all times, serve and comply with such laws, ordinances and regulations.
- 8.2 Any permits, licenses, certificates, or fees required for the performance of the work shall be obtained and paid for by the Contractor.
- 8.3 This contract shall be governed by the laws of the State of Michigan.

## **9. RIGHT TO AUDIT**

The City or its designee shall be entitled to audit all of the Contractor's records, and shall be allowed to interview any of the Contractor's employees, throughout the term of this contract and for a period of three years after final payment or longer if required by law to the extent necessary to adequately permit evaluation and verification of:

- A. Contractor compliance with contract requirements,
- B. Compliance with provisions for pricing change orders, invoices or claims submitted by the Contractor or any of his payees.

## **10. HOLD HARMLESS**

If the negligent acts or omissions of the Contractor/Vendor or its employees, agents or officers, cause injury to person or property, the Contractor/Vendor shall indemnify and save harmless the City of Kalamazoo, its agents, officials, and employees against all claims, judgments, losses, damages, demands, and payments of any kind to persons or property to the extent occasioned from any claim or demand arising therefrom.

## **11. DEFAULT**

The City may at any time, by written notice to the Contractor, terminate this contract and the Contractor's right to proceed with the work, for just cause, which shall include, but is not limited to the following:

- A. Failure to provide insurance and bonds (when called for), in the exact amounts and within the time specified or any extension thereof.
- B. Failure to make delivery of the supplies, or to perform the services within the time specified herein, or any extension thereof.
- C. The unauthorized substitution of articles for those bid and specified.
- D. Failure to make progress if such failure endangers performance of the contract in accordance with its terms.
- E. Failure to perform in compliance with any provision of the contract.
- F. Standard of Performance
  - a. Contractor guarantees the performance of the commodities, goods or services rendered herein in accordance with the accepted standards of the industry or industries concerned herein, except that if this specification calls for higher standards, then such higher standards shall be provided.
  - b. Upon notice by the City of Contractor's failure to comply with such standards or to otherwise be in default of this contract in any manner following the Notice to Proceed, Contractor shall immediately remedy said defective performance in a manner acceptable to the City. Should Contractor fail to immediately correct said defective performance, said failure shall be considered a breach of this contract and grounds for termination of the same by the City.
  - c. In the event of any breach of this contract by Contractor, Contractor shall pay any cost to the City caused by said breach including but not limited to the replacement cost of such goods or services with another Contractor.
  - d. The City reserves the right to withhold any or all payments until any defects in performance have been satisfactorily corrected.
  - e. In the event the Contractor is in breach of this contract in any manner, and such breach has not been satisfactorily corrected, the City may bar the Contractor from being awarded any future City contracts.

- G. All remedies available to the City herein are cumulative and the election of one remedy by the City shall not be a waiver of any other remedy available to the City.

## **12. TERMINATION OF CONTRACT**

The City may, at any time and without cause, suspend the work of this contract for a period of not more than ninety days after providing notice in writing to the Contractor. The Contractor shall be allowed an adjustment in the contract price or an extension of the contract times, or both, directly attributable to the suspension if Contractor makes an approved claim.

The City may, without prejudice to any other right or remedy of the City, and with or without cause, terminate the contract by giving seven days written notice to the Contractor. In such case the Contractor shall be paid, without duplication, for the following items:

- A. Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such work;
- B. Expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the contract documents in connection with uncompleted work, plus fair and reasonable sums for overhead and profit on such expenses;
- C. All documented claims, costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and
- D. Reasonable expenses directly attributable to termination.

The Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

## **13. INDEPENDENT CONTRACTOR**

At all times, the Contractor, any of his/her employees, or his/her sub-contractors and their subsequent employees shall be considered independent contractors and not as City employees. The Contractor shall exercise all supervisory control and general control over all workers' duties, payment of wages to Contractor's employees and the right to hire, fire and discipline their employees and workers. As an independent contractor, payment under this contract shall not be subject to any withholding for tax, social security or other purposes, nor shall the Contractor or his/her employees be entitled to sick leave, pension benefit, vacation, medical benefits, life insurance or workers' unemployment compensation or the like.

## **14. PROJECT SUPERVISOR**

The Contractor shall employ an individual to act as Project Supervisor. The Project Supervisor shall be available to the Contractor's workers and the Project Manager at all times by use of a mobile phone or other reliable means. The Project Supervisor shall prepare daily work plans for the employees, monitor employee performance, attendance and punctuality; and work closely with the City's Project Manager in assuring contract compliance.

## **15. MEETINGS**

The Contractor and/or Project Supervisor shall be available to meet with the Department Head or Project Manager at a mutually agreeable time to discuss problems, issues or concerns relative to the contract. Either party may call a meeting at any time. When such a request for a meeting is made, the meeting date shall, in no case exceed five (5) working days after the request; and, if in the sole opinion of the Department Head, the severity of the circumstance warrants, no more than one (1) working day.



## **16. INSPECTION OF WORKSITE**

Before submitting bids or quotes for work, the Contractor shall be responsible for examining the work site and satisfying himself/herself as to the existing conditions under which he/she will be obligated to operate, or that in any way affects the work under this contract. No allowance shall be made subsequently, in behalf of the Contractor, for any negligence on his/her part.

## **17. CONTRACT PERIOD, EXTENSIONS, CANCELLATION**

- 17.1 The contract shall be in effect for the term stated in the specifications.
- 17.2 The City may opt to extend this contract upon mutual agreement of both parties. The number of extensions shall be limited to that stated in the specifications.
- 17.3 The City may, from time to time, find it necessary to continue this contract on a month-to-month basis only, not to exceed a six (6) month period. Such month-to-month extended periods shall be by mutual agreement of both parties, with all provisions of the original contract or any extension thereof remaining in full force and effect.
- 17.4 All contracts, extensions and cost increases are subject to availability of funds and the approval of the City Commission (if required).
- 17.5 The City reserves the right to cancel the contract due to non-appropriation of funds by the City with thirty (30) days written notice.
- 17.6 Either party may terminate the contract (or any extension thereof) without cause at the end of any twelve (12) month term by giving written notice of such intent at least 60 days prior to the end of said twelve (12) month term.
- 17.7 All notices are in effect commencing with the date of mailing. Written notices may be delivered in person or sent by First Class mail; faxed or emailed to the last known address.
- 17.8 If cancellation is for default of contract due to non-performance, the contract may be canceled at any time (see Item 11, DEFAULT).

## **APPENDIX A NON-DISCRIMINATION CLAUSE FOR ALL CITY OF KALAMAZOO CONTRACTS**

The Contractor agrees to comply with the Federal Civil Rights Act of 1964 as amended; the Federal Civil Rights Act of 1991 as amended; the Americans With Disabilities Act of 1990 as amended; the Elliott-Larson Civil Rights Act, Act. No. 453, Public Act of 1976 as amended; the Michigan Handicappers Civil Rights Act, Act No. 220, Public Act of 1976 as amended, City Ordinance 1856 and all other applicable Federal and State laws. The Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, age, height, weight, marital status, physical or mental disability, family status, sexual orientation or gender identity that is unrelated to the individual's ability to perform the duties of the particular job or position. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment advertising, layoff or termination; rates of pay or other forms of compensations; and selection for training, including apprenticeship.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, sex, age, height, weight, marital status, physical or mental disability family status, sexual orientation or gender identity that is unrelated to the individual's ability to perform the duties of the particular job or position.
3. If requested by the City, the Contractor shall furnish information regarding practices, policies and programs and employment statistics for the Contractor and subcontractors. The Contractor and subcontractors shall permit access to all books, records and accounts regarding employment practices by agents and representatives of the City duly charged with investigative duties to assure compliance with this clause.
4. Breach of the covenants herein may be regarded as a material breach of the contract or purchasing agreement as provided in the Elliott-Larsen Civil Rights Act and City Ordinance 1856.
5. The Contractor will include or incorporate by reference the provisions of the foregoing paragraphs 1 through 4 in every subcontract or purchase order unless exempted by the rules, regulations or orders of the Michigan Civil Rights Commission\* and will provide in every subcontract or purchase order that said provision will be binding upon each subcontractor or seller.
6. The Contractor will not preclude a person with a criminal conviction from being considered for employment unless otherwise precluded by federal or state law. (for contracts over \$25,000)

The Elliott-Larson Civil Rights Act, Sec. 202 of Act. No. 453 of 1976 reads in part as follows:

Sec. 202. (1) An employer shall not:

- (a) Fail or refuse to hire, or recruit, or discharge or otherwise discriminate against an individual with respect to employment, compensation, or a term condition or privilege of employment because of religion, race, color, national origin, age, sex, height, weight or marital status.
- (b) Limit, segregate or classify an employee or applicant for employment in a way which deprives or tends to deprive the employee or applicant of an employment opportunity or otherwise adversely affects the status of an employee or applicant because of religion, race, color, national origin, age, sex, height, weight or marital status.
- (c) Segregate, classify or otherwise discriminate against a person on the basis of sex with respect to a term, condition or privilege of employment, including a benefit plan or system.

\* Except for contracts entered into with parties employing less than three employees.  
1-2010

## APPENDIX B PREVAILING WAGES

Prevailing wages are applicable to this contract, therefore, rates will apply as follows:

(XX) Project is funded by City of Kalamazoo monies and is estimated to be in excess of \$100,000.00. The applicable prevailing wage rates are attached.

Specifications for projects in which the City of Kalamazoo is party for construction, alterations and/or repair including painting and decorating of public buildings or public works in or for the City of Kalamazoo and which requires or involves the employment of mechanics and/or laborers shall contain the following provisions stating the minimum wages to be paid the various classes of laborers and mechanics for the project. Prevailing wage rates determined by the U.S. Department of Labor under Davis Bacon and related acts will be used for City of Kalamazoo construction projects.

By the incorporation of prevailing wage rates within this specification, the City of Kalamazoo stipulates that:

- ✓ Contractor or his/her subcontractor shall pay all mechanics and laborers employed directly upon the site of the work, unconditionally and not less than once a week and without subsequent deduction or rebate on any account the full amount, accrued at the time of payment, computed at wage rates as incorporated herein regardless of any contractual relationship which may be alleged to exist between the contractor or subcontractor and such laborers and mechanics;
- ✓ The scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work;
- ✓ The Prime Contractor and all subcontractors shall submit weekly certified payrolls documenting the hours worked and wages paid by work classification. NOTE: Contactor shall not include Social Security numbers of employees on certified payrolls.
- ✓ There may be withheld from the contractor's accrued payments the amount considered necessary by the City's Contracting Official to pay to laborers and mechanics employed by the contractor or any subcontractor on the work for the difference between the rates of wages required by the contract and the rates of wages received by such laborers and mechanics except those amounts properly deducted or refunded pursuant to the terms of the Davis-Bacon Act (USC, Title 40, Sec. 276a) and interpretations thereof.

Special Note: The City's requirements as it relates to prevailing wages includes a meeting with the City's Purchasing Agent prior to starting work and the submission of weekly certified payrolls by prime contractors and all subcontractors. The City will monitor certified payrolls, work progress, and conduct interviews with the mechanics and labors employed directly upon the site during the duration of the contract Please contact the Purchasing Department at (269) 337-8020 if you have any questions regarding prevailing wage provision.

The overtime pay to which a laborer or mechanic is entitled under this contract shall be that overtime pay to which he/she is entitled by any agreement made with the contractor or subcontractor or by any applicable provision of law; but in no event shall such amount be less than the prevailing wage in the Kalamazoo community for such overtime.

Revised 4-08



***PREVAILING WAGE RATES***

**NEWTON CT. & FELLOWS AVE.  
IMPROVEMENTS**

**Bid Reference #: 91350-006.0**

**MAY 2023**

"General Decision Number: MI20230001 05/19/2023

Superseded General Decision Number: MI20220001

State: Michigan

Construction Types: Highway (Highway, Airport & Bridge xxxxx and Sewer/Incid. to Hwy.)

Counties: Michigan Statewide.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p>. Executive Order 14026 generally applies to the contract.</p> <p>. The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.</p>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p>. Executive Order 13658 generally applies to the contract.</p> <p>. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.</p>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/06/2023
1	02/03/2023
2	02/17/2023

3	03/17/2023
4	05/12/2023
5	05/19/2023

CARP0004-004 06/01/2019

REMAINDER OF STATE

	Rates	Fringes
CARPENTER ( Piledriver).....	\$ 27.62	20.59

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CARP0004-005 06/01/2018

LIVINGSTON (Townships of Brighton, Deerfield, Genoa, Hartland, Oceola & Tyrone), MACOMB, MONROE, OAKLAND, SANILAC, ST. CLAIR AND WAYNE COUNTIES

	Rates	Fringes
CARPENTER (Piledriver).....	\$ 30.50	27.28

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ELEC0017-005 06/01/2022

STATEWIDE

	Rates	Fringes
Line Construction		
Groundman/Driver.....	\$ 29.57	7.20+32%
Journeyman Signal Tech, Communications Tech, Tower Tech & Fiber Optic Splicers.	\$ 43.90	7.20+32%
Journeyman Specialist.....	\$ 50.49	7.20+32%
Operator A.....	\$ 37.13	7.20+32%
Operator B.....	\$ 34.67	7.20+32%

Classifications

Journeyman Specialist: Refers to a crew of only one person working alone.  
 Operator A: Shall be proficient in operating all power equipment including: Backhoe, Excavator, Directional Bore and Boom/Digger truck.  
 Operator B: Shall be proficient in operating any 2 of the above mentioned pieces of equipment listed under Operator A.

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ENGI0324-003 06/01/2022

ALCONA, ALPENA, ARENAC, BAY, CHEBOYGAN, CLARE, CLINTON, CRAWFORD, GENESEE, GLADWIN, GRATIOT, HURON, INGHAM, IOSCO, ISABELLA, JACKSON, LAPEER, LENAWEE, LIVINGSTON, MACOMB, MIDLAND, MONROE, MONTMORENCY, OAKLAND, OGEMAW, OSCODA, OTSEGO, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLAIR, SANILAC, SHIAWASSEE, TUSCOLA, WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment (Steel Erection)		
GROUP 1.....	\$ 51.02	24.85

GROUP 2.....	\$ 52.02	24.85
GROUP 3.....	\$ 49.52	24.85
GROUP 4.....	\$ 50.52	24.85
GROUP 5.....	\$ 48.02	24.85
GROUP 6.....	\$ 49.02	24.85
GROUP 7.....	\$ 47.75	24.85
GROUP 8.....	\$ 48.75	24.85
GROUP 9.....	\$ 47.30	24.85
GROUP 10.....	\$ 48.30	24.85
GROUP 11.....	\$ 46.57	24.85
GROUP 12.....	\$ 47.57	24.85
GROUP 13.....	\$ 46.21	24.85
GROUP 14.....	\$ 47.21	24.85
GROUP 15.....	\$ 45.57	24.85
GROUP 16.....	\$ 42.37	24.85
GROUP 17.....	\$ 27.89	12.00
GROUP 18.....	\$ 31.38	24.85

## FOOTNOTE:

Paid Holidays: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

## POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Engineer when operating combination of boom and jib 400' or longer

GROUP 2: Engineer when operating combination of boom and jib 400' or longer on a crane that requires an oiler

GROUP 3: Engineer when operating combination of boom and jib 300' or longer

GROUP 4: Engineer when operating combination of boom and jib 300' or longer on a crane that requires an oiler

GROUP 5: Engineer when operating combination of boom and jib 220' or longer

GROUP 6: Engineer when operating combination of boom and jib 220' or longer on a crane that requires an oiler

GROUP 7: Engineer when operating combination of boom and jib 140' or longer

GROUP 8: Engineer when operating combination of boom and jib 140' or longer on a crane that requires an oiler

GROUP 9: Tower crane & derrick operator (where operator's work station is 50 ft. or more above first sub-level)

GROUP 10: Tower crane & derrick operator (where operator's work station is 50 ft. or more above first sub-level) on a crane that requires an oiler

GROUP 11: Engineer when operating combination of boom and jib 120' or longer

GROUP 12: Engineer when operating combination of boom and jib 120' or longer on a crane that requires an oiler

GROUP 13: Crane operator; job mechanic and 3 drum hoist and excavator



GROUP 14: Crane operator on a crane that requires an oiler

GROUP 15: Hoisting operator; 2 drum hoist and rubber tired backhoe

GROUP 16: Forklift and 1 drum hoist

GROUP 17: Compressor or welder operator

GROUP 18: Oiler

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ENGI0324-004 06/01/2022

AREA 1: ALLEGAN, BARRY, BERRIEN, BRANCH, CALHOUN, CASS, EATON, HILLSDALE, IONIA, KALAMAZOO, KENT, LAKE, MANISTEE, MASON, MECOSTA, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH, VAN BUREN

AREA 2: ANTRIM, BENZIE, CHARLEVOIX, EMMET, GRAND TRAVERSE, KALKASKA, LEELANAU, MISSAUKEE AND WEXFORD COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment (Steel Erection)		
AREA 1		
GROUP 1.....	\$ 51.02	24.85
GROUP 2.....	\$ 47.75	24.85
GROUP 3.....	\$ 46.21	24.85
GROUP 4.....	\$ 42.37	24.85
GROUP 5.....	\$ 27.89	12.00
GROUP 6.....	\$ 31.38	24.85
AREA 2		
GROUP 1.....	\$ 51.02	24.85
GROUP 2.....	\$ 47.75	24.85
GROUP 3.....	\$ 46.21	24.85
GROUP 4.....	\$ 42.37	24.85
GROUP 5.....	\$ 27.89	12.00
GROUP 6.....	\$ 31.38	24.85

FOOTNOTES:

Crane operator with main boom and jib 300' or longer: \$1.50 additional to the group 1 rate. Crane operator with main boom and jib 400' or longer: \$3.00 additional to the group 1 rate.

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS:

GROUP 1: Crane Operator with main boom & jib 400', 300', or 220' or longer.

GROUP 2: Crane Operator with main boom & jib 140' or longer, Tower Crane; Gantry Crane; Whirley Derrick.

GROUP 3: Regular Equipment Operator, Crane, Dozer, Loader, Hoist, Straddle Wagon, Mechanic, Grader and Hydro Excavator.

GROUP 4: Air Tugger (single drum), Material Hoist Pump 6" or over, Elevators, Brokk Concrete Breaker.

GROUP 5: Air Compressor, Welder, Generators, Conveyors

GROUP 6: Oiler and fire tender

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 ENGI0324-005 09/01/2022

AREA 1: GENESEE, LAPEER, LIVINGSTON, MACOMB, MONROE, OAKLAND, ST. CLAIR, WASHTENAW AND WAYNE COUNTIES

AREA 2: ALCONA, ALLEGAN, ALGER, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KWEENAW, LAKE, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

Rates Fringes

OPERATOR: Power Equipment  
 (Underground construction  
 (including sewer))

AREA 1:		
GROUP 1.....	\$ 39.38	24.85
GROUP 2.....	\$ 34.65	24.85
GROUP 3.....	\$ 33.92	24.85
GROUP 4.....	\$ 33.35	24.85
GROUP 5.....	\$ 24.90	12.05
AREA 2:		
GROUP 1.....	\$ 37.67	24.85
GROUP 2.....	\$ 32.78	24.85
GROUP 3.....	\$ 32.28	24.85
GROUP 4.....	\$ 32.00	24.85
GROUP 5.....	\$ 24.90	12.05

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Backfiller tamper; Backhoe; Batch plant operator (concrete); Clamshell; Concrete paver (2 drums or larger); Conveyor loader (Euclid type); Crane (crawler, truck type or pile driving); Dozer; Dragline; Elevating grader; Endloader; Gradall (and similar type machine); Grader; Mechanic; Power shovel; Roller (asphalt); Scraper (self-propelled or tractor drawn); Side boom tractor (type D-4 or equivalent and larger); Slip form paver; Slope paver; Trencher (over 8 ft. digging capacity); Well drilling rig; Concrete pump with boom operator; Hydro Excavator

GROUP 2: Boom truck (power swing type boom); Crusher; Hoist; Pump (1 or more - 6-in. discharge or larger - gas or diesel- powered or powered by generator of 300 amperes or more - inclusive of generator); Side boom tractor (smaller than type D-4 or equivalent); Tractor (pneu-tired, other than backhoe or front end loader); Trencher (8-ft. digging capacity and smaller); Vac Truck and End dump operator;

GROUP 3: Air compressors (600 cfm or larger); Air compressors

(2 or more-less than 600 cfm); Boom truck (non-swinging, non-powered type boom); Concrete breaker (self-propelled or truck mounted - includes compressor); Concrete paver (1 drum-1/2 yd. or larger); Elevator (other than passenger); Maintenance person; Pump (2 or more-4-in. up to 6-in. discharge-gas or diesel powered - excluding submersible pumps); Pumpcrete machine (and similar equipment); Wagon drill (multiple); Welding machine or generator (2 or more-300 amp. or larger - gas or diesel powered)

GROUP 4: Boiler; Concrete saw (40 hp or over); Curing machine (self-propelled); Farm tractor (with attachment); Finishing machine (concrete); Hydraulic pipe pushing machine; Mulching equipment; Pumps (2 or more up to 4-in. discharge, if used 3 hours or more a day, gas or diesel powered - excluding submersible pumps); Roller (other than asphalt); Stump remover; Trencher (service); Vibrating compaction equipment, self-propelled (6 ft. wide or over); Sweeper (Wayne type); Water wagon and Extend-a boom forklift

Group 5: Fire Person, Oiler

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 \* ENGI0324-006 06/01/2022

GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW, WAYNE, ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

Rates Fringes

Power equipment operators:  
 (AIRPORT, BRIDGE & HIGHWAY  
 CONSTRUCTION)

GROUP 1.....	\$ 38.86	24.85
GROUP 2.....	\$ 32.13	24.85
GROUP 3.....	\$ 31.57	24.85
GROUP 4.....	\$ 31.40	24.85

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt plant operator; Crane operator (does not include work on bridge construction projects when the crane operator is erecting structural components); Dragline operator; Shovel operator; Locomotive operator; Paver operator (5 bags or more); Elevating grader operator; Pile driving operator; Roller operator (asphalt); Blade grader operator; Trenching machine operator (ladder or wheel type); Auto-grader; Slip form paver; Self-propelled or tractor-drawn scraper; Conveyor loader operator (Euclid type); Endloader operator (1 yd. capacity and over); Bulldozer; Hoisting engineer; Tractor operator; Finishing machine operator (asphalt); Mechanic; Pump operator (6-in. discharge or over, gas, diesel powered or generator of 300

amp. or larger); Shouldering or gravel distributing machine operator (self-propelled); Backhoe (with over 3/8 yd. bucket); Side boom tractor (type D-4 or equivalent or larger); Tube finisher (slip form paving); Gradall (and similar type machine); Asphalt paver (self-propelled); Asphalt planer (self-propelled); Batch plant (concrete-central mix); Slurry machine (asphalt); Concrete pump (3 in. and over); Roto-mill; Swinging boom truck (over 12 ton capacity); Hydro demolisher (water blaster); Farm-type tractor with attached pan; Vacuum truck operator; Batch Plant (concrete dry batch); Concrete Saw Operator (40h.p. or over; Tractor Operator (farm type); Finishing Machine Operator (concrete); Grader Operator (self-propelled fine grade or form (concrete)).

GROUP 2: Screening plant operator; Washing plant operator; Crusher operator; Backhoe (with 3/8 yd. bucket or less); Side boom tractor (smaller than D-4 type or equivalent); Sweeper (Wayne type and similar equipment); Greese Truck; Air Compressor Operator (600 cu.ft. per min or more); Air Compressor Operator (two or more, less than 600 cfm);

GROUP 3: Boiler fire tender; Tractor operator (farm type with attachment); Concrete Breaker; Wagon Drill Operator;

GROUP 4: Oiler; Fire tender; Trencher (service); Flexplane operator; Cleftplane operator; Boom or winch hoist truck operator; Endloader operator \*under 1 yd. capacity); Roller Operator (other than asphalt); Curing equipment operator (self-propelled); Power bin operator; Plant drier (6 ft. wide or over); Guard post driver operator (power driven); All mulching equipment; Stump remover; Concrete pump (under 3-in.); Mesh installer (self-propelled); End dump; Skid Steer.

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 ENGI0324-007 05/01/2022

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment		
(Steel Erection)		
Compressor, welder and forklift.....	\$ 37.40	24.60
Crane operator, main boom & jib 120' or longer.....	\$ 43.87	24.60
Crane operator, main boom & jib 140' or longer.....	\$ 44.17	24.60
Crane operator, main boom & jib 220' or longer.....	\$ 44.17	24.60
Mechanic with truck and tools.....	\$ 43.00	24.60
Oiler and fireman.....	\$ 35.86	24.60
Regular operator.....	\$ 41.22	24.60

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 ENGI0324-008 10/01/2022

ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA,

DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MACOMB, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MONROE, MUSKEGON, NEWAYGO, OAKLAND, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN, WASHTENAW, WAYNE AND WEXFORD COUNTIES

	Rates	Fringes
OPERATOR: Power Equipment (Sewer Relining)		
GROUP 1.....	\$ 35.37	14.77
GROUP 2.....	\$ 33.33	14.77

SEWER RELINING CLASSIFICATIONS

GROUP 1: Operation of audio-visual closed circuit TV system, including remote in-ground cutter and other equipment used in connection with the CCTV system

GROUP 2: Operation of hot water heaters and circulation systems, water jettors and vacuum and mechanical debris removal systems

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\* ENGI0325-012 05/01/2023

	Rates	Fringes
Power equipment operators - gas distribution and duct installation work:		
GROUP 1.....	\$ 36.18	25.25
GROUP 2.....	\$ 33.45	25.25

SCOPE OF WORK: The construction, installation, treating and reconditioning of pipelines transporting gas vapors within cities, towns, subdivisions, suburban areas, or within private property boundaries, up to and including private meter settings of private industrial, governmental or other premises, more commonly referred to as "distribution work," starting from the first metering station, connection, similar or related facility, of the main or cross country pipeline and including duct installation.

Group 1: Backhoe, crane, grader, mechanic, dozer (D-6 equivalent or larger), side boom (D-4 equivalent or larger), trencher(except service), endloader (2 yd. capacity or greater).

GROUP 2: Dozer (less than D-6 equivalent), endloader (under 2 yd. capacity), side boom (under D-4 capacity), backfiller, pumps (1 or 2 of 6-inch discharge or greater), boom truck (with powered boom), tractor (wheel type other than backhoe or front endloader). Tamper (self-propelled), boom truck (with non-powered boom), concrete saw (20 hp or larger), pumps (2 to 4 under 6-inch discharge), compressor (2 or more or when one is used continuously into the second day) and trencher(service). Oiler, hydraulic pipe pushing machine, grease person and hydrostatic testing operator.

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 IRON0008-007 06/01/2022

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON,  
 IRON, KEWEENAW, LUCE, MACKINAC MARQUETTE, MENOMINEE, ONTONAGON  
 AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
Ironworker - pre-engineered metal building erector.....	\$ 23.70	6.95
IRONWORKER		
General contracts		
\$10,000,000 or greater.....	\$ 38.14	28.70
General contracts less		
than \$10,000,000.....	\$ 38.14	28.70

Paid Holidays: New Year's Day, Memorial Day, July 4th, Labor  
 Day, Thanksgiving Day & Christmas Day.

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 IRON0025-002 06/01/2022

ALCONA, ALPENA, ARENAC, BAY, CHEBOYGAN, CLARE, CLINTON,  
 CRAWFORD, GENESEE, GLADWIN, GRATIOT, HURON, INGHAM, IOSCO,  
 ISABELLA, JACKSON, LAPEER, LIVINGSTON, MACOMB, MIDLAND,  
 MONTMORENCY, OAKLAND, OGEAW, OSCODA, OTSEGO, PRESQUE ISLE,  
 ROSCOMMON, SAGINAW, SANILAC, SHIAWASSEE, ST. CLAIR, TUSCOLA,  
 WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
Ironworker - pre-engineered metal building erector		
ALLEGAN, ANTRIM, BARRY, BENZIE, BRANCH, CALHOUN, CHARLEVOIX, EATON, EMMET, GRAND TRAVERSE, HILLSDALE, IONIA, KALAMAZOO, KALKASKA, KENT, LAKE, LEELANAU, MANISTEE, MASON, MECOSTA, MISSAUKEE, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH, VAN BUREN AND WEXFORD COUNTIES:..	\$ 24.59	25.43
Bay, Genesee, Lapeer, Livingston (east of Burkhardt Road), Macomb, Midland, Oakland, Saginaw, St. Clair, The University of Michigan, Washtenaw (east of U.S. 23) & Wayne...	\$ 25.81	26.43
IRONWORKER		
Ornamental and Structural...	\$ 34.50	38.44
Reinforcing.....	\$ 31.43	34.77

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 IRON0055-005 07/01/2022

LENAWEE AND MONROE COUNTIES:

Rates	Fringes
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IRONWORKER

Pre-engineered metal buildings.....	\$ 23.59	19.35
All other work.....	\$ 33.00	27.20

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IRON0292-003 06/01/2020

BERRIEN AND CASS COUNTIES:

	Rates	Fringes
IRONWORKER (Including pre-engineered metal building erector).....	\$ 31.75	22.84

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LAB00005-006 10/01/2022

	Rates	Fringes
Laborers - hazardous waste abatement: (ALCONA, ALPENA, ANTRIM, BENZIE, CHARLEVOIX, CHEBOYGAN, CRAWFORD, EMMET, GRAND TRAVERSE, IOSCO, KALKASKA, LEELANAU, MISSAUKEE, MONTMORENCY, OSCODA, OTSEGO, PRESQUE ISLE AND WEXFORD COUNTIES - Zone 10)		
Levels A, B or C.....	\$ 17.45	12.75
class b.....	\$ 18.64	12.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....	\$ 16.45	12.75
class a.....	\$ 17.64	12.90

Zone 10

Laborers - hazardous waste abatement: (ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES - Zone 11)		
Levels A, B or C.....	\$ 25.18	12.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....	\$ 22.58	12.90

Laborers - hazardous waste abatement: (ALLEGAN, BARRY, BERRIEN, BRANCH, CALHOUN, CASS, IONIA COUNTY (except the city of Portland); KALAMAZOO, KENT, LAKE, MANISTEE, MASON, MECOSTA, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH AND VAN BUREN COUNTIES

- Zone 9)		
Levels A, B or C.....	\$ 21.88	13.26
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....	\$ 20.80	12.90
Laborers - hazardous waste abatement: (ARENAC, BAY, CLARE, GLADWIN, GRATIOT, HURON, ISABELLA, MIDLAND, OGEMAW, ROSCOMMON, SAGINAW AND TUSCOLA COUNTIES - Zone 8)		
Levels A, B or C.....	\$ 23.74	12.95
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....	\$ 20.80	12.90
Laborers - hazardous waste abatement: (CLINTON, EATON AND INGHAM COUNTIES; IONIA COUNTY (City of Portland); LIVINGSTON COUNTY (west of Oak Grove Rd., including the City of Howell) - Zone 6)		
Levels A, B or C.....	\$ 26.33	12.95
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....	\$ 24.64	12.90
Laborers - hazardous waste abatement: (GENESEE, LAPEER AND SHIAWASSEE COUNTIES - Zone 7)		
Levels A, B or C.....	\$ 24.20	13.80
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....	\$ 23.20	13.80
Laborers - hazardous waste abatement: (HILLSDALE, JACKSON AND LENAWEE COUNTIES - Zone 4)		
Levels A, B or C.....	\$ 27.13	14.95
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....	\$ 24.17	12.90
Laborers - hazardous waste abatement: (LIVINGSTON COUNTY (east of Oak Grove Rd. and south of M-59, excluding the city of Howell); AND WASHTENAW COUNTY - Zone 3)		
Levels A, B or C.....	\$ 29.93	14.20
Work performed in		



conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 28.93	14.20
Laborers - hazardous waste abatement: (MACOMB AND WAYNE COUNTIES - Zone 1) Levels A, B or C.....\$ 29.93	16.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 28.93	16.90
Laborers - hazardous waste abatement: (MONROE COUNTY - Zone 4) Levels A, B or C.....\$ 31.75	14.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 31.75	14.90
Laborers - hazardous waste abatement: (OAKLAND COUNTY and the Northeast portion of LIVINGSTON COUNTY bordered by Oak Grove Road on the West and M-59 on the South - Zone 2) Level A, B, C.....\$ 29.93	16.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 28.93	16.90
Laborers - hazardous waste abatement: (SANILAC AND ST. CLAIR COUNTIES - Zone 5) Levels A, B or C.....\$ 26.21	16.62
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 24.75	16.35

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 LAB00259-001 09/01/2022

AREA 1: MACOMB, OAKLAND AND WAYNE COUNTIES  
 AREA 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA,  
 BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX,  
 CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA,  
 DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND  
 TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA,  
 IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT,  
 KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE,  
 MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE,  
 MIDLAND, MISSAUKEE, MONROE, MONTCALM, MONTMORENCY, MUSKEGON,  
 NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO,  
 OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST.  
 JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN,

## WASHTENAW AND WEXFORD COUNTIES

	Rates	Fringes
Laborers - tunnel, shaft and caisson:		
AREA 1		
GROUP 1.....	\$ 23.62	16.95
GROUP 2.....	\$ 23.73	19.95
GROUP 3.....	\$ 23.79	16.95
GROUP 4.....	\$ 23.97	16.95
GROUP 5.....	\$ 24.22	16.95
GROUP 6.....	\$ 24.55	16.95
GROUP 7.....	\$ 17.83	16.95
AREA 2		
GROUP 1.....	\$ 25.15	12.95
GROUP 2.....	\$ 25.24	12.95
GROUP 3.....	\$ 25.34	12.95
GROUP 4.....	\$ 25.50	12.95
GROUP 5.....	\$ 25.76	12.95
GROUP 6.....	\$ 26.07	12.95
GROUP 7.....	\$ 18.34	12.95

SCOPE OF WORK: Tunnel, shaft and caisson work of every type and description and all operations incidental thereto, including, but not limited to, shafts and tunnels for sewers, water, subways, transportation, diversion, sewerage, caverns, shelters, aquifers, reservoirs, missile silos and steel sheeting for underground construction.

## TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Tunnel, shaft and caisson laborer, dump, shanty, hog house tender, testing (on gas) and watchman

GROUP 2: Manhole, headwall, catch basin builder, bricklayer tender, mortar machine and material mixer

GROUP 3: Air tool operator (jackhammer, bush hammer and grinder), first bottom, second bottom, cage tender, car pusher, carrier, concrete, concrete form, concrete repair, cement invert laborer, cement finisher, concrete shoveler, conveyor, floor, gasoline and electric tool operator, gunite, grout operator, welder, heading dinky person, inside lock tender, pea gravel operator, pump, outside lock tender, scaffold, top signal person, switch person, track, tugger, utility person, vibrator, winch operator, pipe jacking, wagon drill and air track operator and concrete saw operator (under 40 h.p.)

GROUP 4: Tunnel, shaft and caisson mucker, bracer, liner plate, long haul dinky driver and well point

GROUP 5: Tunnel, shaft and caisson miner, drill runner, key board operator, power knife operator, reinforced steel or mesh (e.g. wire mesh, steel mats, dowel bars, etc.)

GROUP 6: Dynamite and powder

GROUP 7: Restoration laborer, seeding, sodding, planting, cutting, mulching and top soil grading; and the restoration of property such as replacing mailboxes, wood chips, planter boxes, flagstones, etc.

LAB00334-001 09/01/2022

	Rates	Fringes
Laborers - open cut:		
ZONE 1 - MACOMB, OAKLAND AND WAYNE COUNTIES:		
GROUP 1.....	\$ 23.47	16.72
GROUP 2.....	\$ 23.58	16.72
GROUP 3.....	\$ 23.63	16.72
GROUP 4.....	\$ 23.71	16.72
GROUP 5.....	\$ 24.17	16.72
GROUP 6.....	\$ 22.00	16.72
GROUP 7.....	\$ 17.84	16.72
ZONE 2 - LIVINGSTON COUNTY (east of M-151 (Oak Grove Rd.)); MONROE AND WASHTENAW COUNTIES:		
GROUP 1.....	\$ 25.20	16.72
GROUP 2.....	\$ 24.91	16.72
GROUP 3.....	\$ 25.03	16.72
GROUP 4.....	\$ 25.10	16.72
GROUP 5.....	\$ 25.25	16.72
GROUP 6.....	\$ 22.55	16.72
GROUP 7.....	\$ 22.11	16.72
ZONE 3 - CLINTON, EATON, GENESEE, HILLSDALE AND INGHAM COUNTIES; IONIA COUNTY (City of Portland); JACKSON, LAPEER AND LENAWEE COUNTIES; LIVINGSTON COUNTY (west of M-151 Oak Grove Rd.); SANILAC, ST. CLAIR AND SHIAWASSEE COUNTIES:		
GROUP 1.....	\$ 23.39	16.72
GROUP 2.....	\$ 23.13	16.72
GROUP 3.....	\$ 23.25	16.72
GROUP 4.....	\$ 23.30	16.72
GROUP 5.....	\$ 23.44	16.72
GROUP 6.....	\$ 20.74	16.72
GROUP 7.....	\$ 22.23	16.72
ZONE 4 - ALCONA, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE, GRATIOT AND HURON COUNTIES; IONIA COUNTY (EXCEPT THE CITY OF PORTLAND); IOSCO, ISABELLA, KALAMAZOO, KALKASKA, KENT, LAKE, LEELANAU, MANISTEE, MASON, MECOSTA, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGE MAW, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST.		

JOSEPH, TUSCOLA, VAN BUREN  
AND WEXFORD COUNTIES:

GROUP 1.....	\$ 22.42	16.72
GROUP 2.....	\$ 22.15	16.72
GROUP 3.....	\$ 22.26	16.72
GROUP 4.....	\$ 22.33	16.72
GROUP 5.....	\$ 22.45	16.72
GROUP 6.....	\$ 19.67	16.72
GROUP 7.....	\$ 22.30	16.72

ZONE 5 - ALGER, BARAGA,  
CHIPPEWA, DELTA,  
DICKINSON, GOGEBIC,  
HOUGHTON, IRON,  
KEWEENAW, LUCE, MACKINAC,  
MARQUETTE, MENOMINEE,  
ONTONAGON AND SCHOOLCRAFT  
COUNTIES:

GROUP 1.....	\$ 22.24	16.72
GROUP 2.....	\$ 22.38	16.72
GROUP 3.....	\$ 22.51	16.72
GROUP 4.....	\$ 22.56	16.72
GROUP 5.....	\$ 22.64	16.72
GROUP 6.....	\$ 19.99	16.72
GROUP 7.....	\$ 22.45	16.72

SCOPE OF WORK:

Open cut construction work shall be construed to mean work which requires the excavation of earth including industrial, commercial and residential building site excavation and preparation, land balancing, demolition and removal of concrete and underground appurtenances, grading, paving, sewers, utilities and improvements; retention, oxidation, flocculation and irrigation facilities, and also including but not limited to underground piping, conduits, steel sheeting for underground construction, and all work incidental thereto, and general excavation. For all areas except the Upper Peninsula, open cut construction work shall also be construed to mean waterfront work, piers, docks, seawalls, breakwalls, marinas and all incidental work. Open cut construction work shall not include any structural modifications, alterations, additions and repairs to buildings, or highway work, including roads, streets, bridge construction and parking lots or steel erection work and excavation for the building itself and back filling inside of and within 5 ft. of the building and foundations, footings and piers for the building. Open cut construction work shall not include any work covered under Tunnel, Shaft and Caisson work.

OPEN CUT LABORER CLASSIFICATIONS

GROUP 1: Construction laborer

GROUP 2: Mortar and material mixer, concrete form person, signal person, well point person, manhole, headwall and catch basin builder, headwall, seawall, breakwall and dock builder

GROUP 3: Air, gasoline and electric tool operator, vibrator operator, driller, pump person, tar kettle operator, bracer, rodder, reinforced steel or mesh person (e.g., wire mesh, steel mats, dowel bars, etc.), welder, pipe jacking and boring person, wagon drill and air track operator and concrete saw operator (under 40 h.p.), windlass and tugger

person and directional boring person

GROUP 4: Trench or excavating grade person

GROUP 5: Pipe layer (including crock, metal pipe, multi-plate or other conduits)

GROUP 6: Grouting man, audio-visual television operations and all other operations in connection with closed circuit television inspection, pipe cleaning and pipe relining work and the installation and repair of water service pipe and appurtenances

GROUP 7: Restoration laborer, seeding, sodding, planting, cutting, mulching and top soil grading; and the restoration of property such as replacing mailboxes, wood chips, planter boxes, flagstones, etc.

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LAB00465-001 06/01/2022

LABORER: Highway, Bridge and Airport Construction

AREA 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

AREA 2: ALLEGAN, BARRY, BAY, BERRIEN, BRANCH, CALHOUN, CASS, CLINTON, EATON, GRATIOT, HILLSDALE, HURON, INGHAM, JACKSON, KALAMAZOO, LAPEER, LENAWEE, LIVINGSTON, MIDLAND, MUSKEGON, SAGINAW, SANILAC, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA AND VAN BUREN COUNTIES

AREA 3: ALCONA, ALPENA, ANTRIM, ARENAC, BENZIE, CHARLEVOIX, CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE, IONIA, IOSCO, ISABELLA, KALKASKA, KENT, LAKE, LEELANAU, MANISTEE, MASON, MECOSTA, MISSAUKEE, MONTCALM, MONTMORENCY, NEWAYGO, OCEANA, OGEMAW, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON AND WEXFORD COUNTIES

AREA 4: ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES

	Rates	Fringes
LABORER (AREA 1)		
GROUP 1.....	\$ 32.02	13.95
GROUP 2.....	\$ 32.15	13.95
GROUP 3.....	\$ 32.33	13.95
GROUP 4.....	\$ 32.41	13.95
GROUP 5.....	\$ 32.62	13.95
GROUP 6.....	\$ 32.92	13.95
LABORER (AREA 2)		
GROUP 1.....	\$ 26.92	12.90
GROUP 2.....	\$ 27.12	12.90
GROUP 3.....	\$ 27.36	12.90
GROUP 4.....	\$ 27.71	12.90
GROUP 5.....	\$ 27.58	12.90
GROUP 6.....	\$ 27.92	12.90
LABORER (AREA 3)		
GROUP 1.....	\$ 26.22	12.90
GROUP 2.....	\$ 26.43	12.90
GROUP 3.....	\$ 26.72	12.90
GROUP 4.....	\$ 27.16	12.90

GROUP 5.....	\$ 26.78	12.90
GROUP 6.....	\$ 27.21	12.90
LABORER (AREA 4)		
GROUP 1.....	\$ 26.22	12.90
GROUP 2.....	\$ 26.43	12.90
GROUP 3.....	\$ 26.72	12.90
GROUP 4.....	\$ 27.16	12.90
GROUP 5.....	\$ 26.78	12.90
GROUP 6.....	\$ 27.21	12.90

LABORER CLASSIFICATIONS

GROUP 1: Asphalt shoveler or loader; asphalt plant misc.; burlap person; yard person; dumper (wagon, truck, etc.); joint filling laborer; miscellaneous laborer; unskilled laborer; sprinkler laborer; form setting laborer; form stripper; pavement reinforcing; handling and placing (e.g., wire mesh, steel mats, dowel bars); mason's tender or bricklayer's tender on manholes; manhole builder; headwalls, etc.; waterproofing,(other than buildings) seal coating and slurry mix, shoring, underpinning; pressure grouting; bridge pin and hanger removal; material recycling laborer; horizontal paver laborer (brick, concrete, clay, stone and asphalt); ground stabilization and modification laborer; grouting; waterblasting; top person; railroad track and trestle laborer; carpenters' tender; guard rail builders' tender; earth retention barrier and wall and M.S.E. wall installer's tender; highway and median installer's tender(including sound, retaining, and crash barriers); fence erector's tender; asphalt raker tender; sign installer; remote control operated equipment.

GROUP 2: Mixer operator (less than 5 sacks); air or electric tool operator (jackhammer, etc.); spreader; boxperson (asphalt, stone, gravel); concrete paddler; power chain saw operator; paving batch truck dumper; tunnel mucker (highway work only); concrete saw (under 40 h.p.) and dry pack machine; roto-mill grounds person.

GROUP 3: Tunnel miner (highway work only); finishers tenders; guard rail builders; highway and median barrier installer; earth retention barrier and wall and M.S.E. wall installer's (including sound, retaining and crash barriers); fence erector; bottom person; powder person; wagon drill and air track operator; diamond and core drills; grade checker; certified welders; curb and side rail setter's tender.

GROUP 4: Asphalt raker

GROUP 5: Pipe layers, oxy-gun

GROUP 6: Line-form setter for curb or pavement; asphalt screed checker/screw man on asphalt paving machines.

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LAB01076-005 04/01/2023

MICHIGAN STATEWIDE

	Rates	Fringes
LABORER (DISTRIBUTION WORK)		
Zone 1.....	\$ 25.17	13.32
Zone 2.....	\$ 24.22	13.45

Zone 3.....	\$ 21.60	13.45
Zone 4.....	\$ 20.97	13.43
Zone 5.....	\$ 21.00	13.40

DISTRIBUTION WORK - The construction, installation, treating and reconditioning of distribution pipelines transporting coal, oil, gas or other similar materials, vapors or liquids, including pipelines within private property boundaries, up to and including the meter settings on residential, commercial, industrial, institutional, private and public structures. All work covering pumping stations and tank farms not covered by the Building Trades Agreement. Other distribution lines with the exception of sewer, water and cable television are included.

Underground Duct Layer Pay: \$.40 per hour above the base pay rate.

- Zone 1 - Macomb, Oakland and Wayne
- Zone 2 - Monroe and Washtenaw
- Zone 3 - Bay, Genesee, Lapeer, Midland, Saginaw, Sanilac, Shiawassee and St. Clair
- Zone 4 - Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon and Schoolcraft
- Zone 5 - Remaining Counties in Michigan

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PAIN0022-002 07/01/2008

HILLSDALE, JACKSON AND LENAWEЕ COUNTIES; LIVINGSTON COUNTY (east of the eastern city limits of Howell, not including the city of Howell, north to the Genesee County line and south to the Washtenaw County line); MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
PAINTER.....	\$ 25.06	14.75

FOOTNOTES: For all spray work and journeyman rigging for spray work, also blowing off, \$0.80 per hour additional (applies only to workers doing rigging for spray work on off the floor work. Does not include setting up or moving rigging on floor surfaces, nor does it apply to workers engaged in covering up or tending spray equipment. For all sandblasting and spray work performed on highway bridges, overpasses, tanks or steel, \$0.80 per hour additional. For all brushing, cleaning and other preparatory work (other than spraying or steeplejack work) at scaffold heights of fifty (50) feet from the ground or higher, \$0.50 per hour additional. For all preparatorial work and painting performed on open steel under forty (40) feet when no scaffolding is involved, \$0.50 per hour additional. For all swing stage work-window jacks and window belts-exterior and interior, \$0.50 per hour additional. For all spray work and sandblaster work to a scaffold height of forty (40) feet above the floor level, \$0.80 per hour additional. For all preparatorial work and painting on all highway bridges or overpasses up to forty (40) feet in height, \$0.50 per hour additional. For all steeplejack work performed where the elevation is forty (40) feet or more, \$1.25 per hour additional.

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PAIN0312-001 06/01/2018

EXCLUDES: ALLEGAN COUNTY (Townships of Dorr, Fillmore, Heath, Hopkins, Laketown, Leighton, Manlius, Monterey, Overisel, Salem, Saugatuck and Wayland); INCLUDES: Barry, Berrien, Branch, Calhoun, Cass, Hillsdale, Kalamazoo, St. Joseph, Van Buren

	Rates	Fringes
PAINTER		
Brush and roller.....	\$ 23.74	13.35
Spray, Sandblast, Sign		
Painting.....	\$ 24.94	13.35

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PAIN0845-003 05/10/2018

CLINTON COUNTY; EATON COUNTY (does not include the townships of Bellevue and Olivet); INGHAM COUNTY; IONIA COUNTY (east of Hwy. M 66); LIVINGSTON COUNTY (west of the eastern city limits of Howell, including the city of Howell, north to the Genesee County line and south to the Washtenaw County line); AND SHIAWASSEE COUNTY (Townships of Bennington, Laingsbury and Perry):

	Rates	Fringes
PAINTER.....	\$ 25.49	13.74

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PAIN0845-015 05/10/2018

MUSKEGON COUNTY; NEWAYGO COUNTY (except the Townships of Barton, Big Prairie, Brooks, Croton, Ensley, Everett, Goodwell, Grant, Home, Monroe, Norwich and Wilcox); OCEANA COUNTY; OTTAWA COUNTY (except the townships of Allendale, Blendone, Chester, Georgetown, Holland, Jamestown, Olive, Park, Polkton, Port Sheldon, Tallmadge, Wright and Zeeland):

	Rates	Fringes
PAINTER.....	\$ 25.49	13.74

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PAIN0845-018 05/10/2018

ALLEGAN COUNTY (Townships of Dorr, Fillmore, Heath, Hopkins, Laketown, Leighton, Manlius, Monterey, Overisel, Salem, Saugatuck and Wayland); IONIA COUNTY (west of Hwy. M-66); KENT, MECOSTA AND MONTCALM COUNTIES; NEWAYGO COUNTY (Townships of Barton, Big Prairie, Brooks, Croton, Ensley, Everett, Goodwell, Grant, Home, Monroe, Norwich and Wilcox); OSCEOLA COUNTY (south of Hwy. #10); OTTAWA COUNTY (Townships of Allendale, Blendone, Chester, Georgetown, Holland, Jamestown, Olive, Park, Polkton, Port Sheldon, Tallmadge, Wright and Zeeland):

	Rates	Fringes
PAINTER.....	\$ 25.49	13.74

FOOTNOTES: Lead abatement work: \$1.00 per hour additional.  
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PAIN1011-003 06/02/2022

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
PAINTER.....	\$ 24.66	14.99

FOOTNOTES: High pay (bridges, overpasses, watertower): 30 to 80 ft.: \$.65 per hour additional. 80 ft. and over: \$1.30 per hour additional.

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PAIN1474-002 06/01/2010

HURON COUNTY; LAPEER COUNTY (east of Hwy. M-53); ST. CLAIR, SANILAC AND TUSCOLA COUNTIES:

	Rates	Fringes
PAINTER.....	\$ 23.79	12.02

FOOTNOTES: Lead abatement work: \$1.00 per hour additional. Work with any hazardous material: \$1.00 per hour additional. Sandblasting, steam cleaning and acid cleaning: \$1.00 per hour additional. Ladder work at or above 40 ft., scaffold work at or above 40 ft., swing stage, boatswain chair, window jacks and all work performed over a falling height of 40 ft.: \$1.00 per hour additional. Spray gun work, pick pullers and those handling needles, blowing off by air pressure, and any person rigging (setting up and moving off the ground): \$1.00 per hour additional. Steeplejack, tanks, gas holders, stacks, flag poles, radio towers and beacons, power line towers, bridges, etc.: \$1.00 per hour additional, paid from the ground up.

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PAIN1803-003 06/01/2019

ALCONA, ALPENA, ANTRIM, ARENAC, BAY, BENZIE, CHARLEVOIX, CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE, GRATIOT, IOSCO, ISABELLA, KALKASKA, LAKE, LEELANAU, MANISTEE, MASON, MIDLAND, MISSAUKEE, MONTMORENCY AND OGEMAW COUNTIES; OSCEOLA COUNTY (north of Hwy. #10); OSCODA, OTSEGO, PRESQUE ISLE, ROSCOMMON, SAGINAW AND WEXFORD COUNTIES:

	Rates	Fringes
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PAINTER  
Work performed on water, bridges over water or moving traffic, radio and powerline towers, elevated tanks, steeples, smoke stacks over 40 ft. of falling heights, recovery of lead-based paints and any work associated with industrial plants, except maintenance of industrial

plants.....	\$ 25.39	14.68
All other work, including maintenance of industrial plant.....		
	\$ 25.39	14.68

FOOTNOTES: Spray painting, sandblasting, blowdown associated with spraying and blasting, water blasting and work involving a swing stage, boatswain chair or spider: \$1.00 per hour additional. All work performed inside tanks, vessels, tank trailers, railroad cars, sewers, smoke stacks, boilers or other spaces having limited egress not including buildings, opentop tanks, pits, etc.: \$1.25 per hour additional.

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 PLAS0514-001 06/01/2018

ZONE 1: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, SAGINAW, WASHTENAW AND WAYNE COUNTIES

ZONE 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER		
ZONE 1.....	\$ 31.47	13.81
ZONE 2.....	\$ 29.97	13.81

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 PLUM0190-003 05/01/2015

ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MACOMB, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MONROE, MUSKEGON, NEWAYGO, OAKLAND, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN, WASHTENAW, WAYNE AND WEXFORD COUNTIES

	Rates	Fringes
Plumber/Pipefitter - gas distribution pipeline:		
Welding in conjunction with gas distribution pipeline work.....	\$ 33.03	20.19
All other work:.....	\$ 24.19	12.28

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 TEAM0007-004 06/01/2020

AREA 1: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

AREA 2: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
TRUCK DRIVER		
AREA 1		
Euclids, double bottoms and lowboys.....	\$ 28.05	.50 + a+b
Trucks under 8 cu. yds.....	\$ 27.80	.50 + a+b
Trucks, 8 cu. yds. and over.....	\$ 27.90	.50 + a+b
AREA 2		
Euclids, double bottomms and lowboys.....	\$ 24.895	.50 + a+b
Euclids, double bottoms and lowboys.....	\$ 28.15	.50 + a+b
Trucks under 8 cu. yds.....	\$ 27.90	.50 + a+b
Trucks, 8 cu. yds. and over.....	\$ 28.00	.50 + a+b

Footnote:  
 a. \$470.70 per week  
 b. \$68.70 daily

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 TEAM0247-004 04/01/2013

AREA 1: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SANILAC, SCHOOLCRAFT, SHIAWASSEE, SAGINAW, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

AREA 2: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
Sign Installer		
AREA 1		

GROUP 1.....	\$ 21.78	11.83
GROUP 2.....	\$ 25.27	11.8375
AREA 2		
GROUP 1.....	\$ 22.03	11.83
GROUP 2.....	\$ 25.02	11.8375

FOOTNOTE:

a. \$132.70 per week, plus \$17.80 per day.

SIGN INSTALLER CLASSIFICATIONS:

GROUP 1: performs all necessary labor and uses all tools required to construct and set concrete forms required in the installation of highway and street signs

GROUP 2: performs all miscellaneous labor, uses all hand and power tools, and operates all other equipment, mobile or otherwise, required for the installation of highway and street signs

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TEAM0247-010 04/01/2018

AREA 1: LAPEER AND SHIAWASSEE COUNTIES

AREA 2: GENESEE, MACOMB, MONROE, OAKLAND, ST. CLAIR, WASHTENAW AND WAYNE COUNTIES

Rates Fringes

TRUCK DRIVER (Underground construction)

AREA 1		
GROUP 1.....	\$ 23.82	19.04
GROUP 2.....	\$ 23.91	19.04
GROUP 3.....	\$ 24.12	19.04
AREA 2		
GROUP 1.....	\$ 24.12	19.04
GROUP 2.....	\$ 24.26	19.04
GROUP 3.....	\$ 24.45	19.04

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

SCOPE OF WORK: Excavation, site preparation, land balancing, grading, sewers, utilities and improvements; also including but not limited to, tunnels, underground piping, retention, oxidation, flocculation facilities, conduits, general excavation and steel sheeting for underground construction. Underground construction work shall not include any structural modifications, alterations, additions and repairs to buildings or highway work, including roads, streets, bridge construction and parking lots or steel erection.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Truck driver on all trucks (EXCEPT dump trucks of 8 cubic yards capacity or over, pole trailers, semis, low boys, Euclid, double bottom and fuel trucks)

GROUP 2: Truck driver on dump trucks of 8 cubic yards

capacity or over, pole trailers, semis and fuel trucks

GROUP 3: Truck driver on low boy, Euclid and double bottom

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\* SUMI2002-001 05/01/2002

	Rates	Fringes
Flag Person.....	\$ 10.10 **	0.00
LINE PROTECTOR (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE)....	\$ 22.89	13.45
LINE PROTECTOR (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE).....	\$ 20.19	13.45
Pavement Marking Machine (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES) Group 1.....	\$ 30.52	13.45
Pavement Marking Machine (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE) Group 2.....	\$ 27.47	13.45
Pavement Marking Machine (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES) Group 1.....	\$ 26.92	13.45
Pavement Marking Machine (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE) Group 2.....	\$ 24.23	13.45

WORK CLASSIFICATIONS:

PAVEMENT MARKER GROUP 1: Drives or operates a truck mounted striper, grinder, blaster, groover, or thermoplastic melter for the placement or removal of temporary or permanent pavement markings or markers.

PAVEMENT MARKER GROUP 2: Performs all functions involved for the placement or removal of temporary or permanent pavement markings or markers not covered by the classification of Pavement Marker Group 1 or Line Protector.

LINE PROTECTOR: Performs all operations for the protection or removal of temporary or permanent pavement markings or markers in a moving convoy operation not performed by the classification of Pavement Marker Group 1. A moving convoy operation is comprised of only Pavement Markers Group 1 and Line Protectors.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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\*\* Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$16.20) or 13658 (\$12.15). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate

changes in the collective bargaining agreement (CBA) governing this classification and rate.

#### Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

#### Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

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#### WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"



"General Decision Number: MI20230061 02/17/2023

Superseded General Decision Number: MI20220061

State: Michigan

Construction Type: Heavy

County: Kalamazoo County in Michigan.

Heavy, Includes Water, Sewer Lines and Excavation (Excludes Hazardous Waste Removal; Coal, Oil, Gas, Duct and other similar Pipeline Construction)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p>. Executive Order 14026 generally applies to the contract.</p> <p>. The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.</p>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p>. Executive Order 13658 generally applies to the contract.</p> <p>. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.</p>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number      Publication Date  
0                              01/06/2023

1 02/03/2023  
2 02/17/2023

CARP0525-006 06/01/2021

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 25.94	20.59

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ELEC0131-006 06/01/2022

	Rates	Fringes
ELECTRICIAN.....	\$ 37.66	8.95+27%

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ENGI0325-009 09/01/2022

POWER EQUIPMENT OPERATORS: Underground Construction (Including Sewer)

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	\$ 37.67	24.85
GROUP 2.....	\$ 32.78	24.85
GROUP 3.....	\$ 32.28	24.85
GROUP 4.....	\$ 32.00	24.85

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Backhoe/ Excavator, Boring Machine, Bulldozer, Crane, Grader/ Blade, Loader, Roller, Scraper, Trencher (over 8 ft. digging capacity)

GROUP 2: Trencher (8-ft digging capacity and smaller)

GROUP 3: Boom Truck (non-swinging, non- powered type boom)

GROUP 4: Broom/ Sweeper, Fork Truck, Tractor, Bobcat/ Skid Steer /Skid Loader

-----  
ENGI0326-025 06/01/2022

EXCLUDES UNDERGROUND CONSTRUCTION

	Rates	Fringes
OPERATOR: Power Equipment		
GROUP 1.....	\$ 44.13	24.85
GROUP 2.....	\$ 40.83	24.85
GROUP 3.....	\$ 38.18	24.85
GROUP 4.....	\$ 36.47	24.85
GROUP 5.....	\$ 36.47	24.85
GROUP 6.....	\$ 30.61	24.85
GROUP 7.....	\$ 28.13	24.85

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Crane operator with main boom and jib 400', 300', or 220' or longer.

GROUP 2: Crane operator with main boom and jib 140' or longer, tower crane, gantry crane, whirley derrick

GROUP 3: Backhoe/Excavator; Boring Machine; Bulldozer; Crane; Grader/Blade; Loader; Roller; Scraper; Tractor; Trencher

GROUP 4: Bobcat/Skid Loader; Broom/Sweeper; Fork Truck (over 20' lift)

GROUP 5: Boom truck (non-swinging)

GROUP 6: Fork Truck (20' lift and under for masonry work)

GROUP 7: Oiler

FOOTNOTES:

Crane operator with main boom and jib 300' or longer: \$1.50 per hour above the group 1 rate.

Crane operator with main boom and jib 400' or longer: \$3.00 per hour above the group 1 rate.

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IRON0025-011 06/01/2022

	Rates	Fringes
IRONWORKER (REINFORCING).....	\$ 31.43	34.77
IRONWORKER (STRUCTURAL).....	\$ 34.50	38.44

-----  
\* LABO0334-011 09/01/2022

SCOPE OF WORK:

OPEN CUT CONSTRUCTION: Excavation of earth and sewer, utilities, and improvements, including underground piping/conduit (including inspection, cleaning, restoration, and relining)

	Rates	Fringes
LABORER		
(1) Common or General.....	\$ 22.42	12.95
(2) Mason Tender- Cement/Concrete.....	\$ 22.55	12.95
(4) Grade Checker.....	\$ 22.73	12.95
(5) Pipelayer.....	\$ 22.85	12.95

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LABO0355-010 06/01/2022

EXCLUDES OPEN CUT CONSTRUCTION

	Rates	Fringes
LABORER		
Common or General; Grade Checker; Mason Tender - Cement/Concrete.....	\$ 26.70	12.95
Pipelayer.....	\$ 20.34	12.85

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PAIN0312-014 06/12/2014

	Rates	Fringes
PAINTER		
Brush & Roller.....	\$ 21.75	11.94
Spray.....	\$ 22.75	11.94

-----  
 PLAS0016-020 04/01/2014

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 22.31	12.83

-----  
 \* PLUM0333-026 06/01/2022

Fort Custer

	Rates	Fringes
PLUMBER.....	\$ 42.29	23.94

-----  
 PLUM0357-012 07/01/2020

Excluding Fort Custer

	Rates	Fringes
PLUMBER.....	\$ 35.20	22.35

-----  
 TEAM0007-011 06/01/2020

	Rates	Fringes
TRUCK DRIVER		
Lowboy/Semi-Trailer Truck...	\$ 28.05	.50 + a+b
Tractor Haul Truck.....	\$ 27.80	.50 + a+b

FOOTNOTE:

- a. \$470.70 per week.
- b. \$68.70 daily.

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 \* SUMI2010-059 11/09/2010

	Rates	Fringes
LABORER: Landscape.....	\$ 12.25 **	0.00
TRUCK DRIVER: Dump Truck.....	\$ 18.00	6.43
TRUCK DRIVER: Off the Road Truck.....	\$ 20.82	3.69

-----  
 WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.  
 =====

\*\* Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$16.20) or 13658 (\$12.15). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any

solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

#### Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

#### Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates

the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

#### Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

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#### WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor

200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

**APPENDIX C  
TECHNICAL SPECIFICATIONS**



**THE CITY OF KALAMAZOO  
DEPARTMENT OF PUBLIC SERVICES**

**TECHNICAL SPECIFICATIONS**

**NEWTON CT. & FELLOWS AVE.  
IMPROVEMENTS**

**Bid Reference #: 91350-006.0**



# Technical Specifications

## Newton Ct. & Fellows Ave. Improvements



City of Kalamazoo

2023



**Jones & Henry**  
ENGINEERS, LTD.

4791 Campus Drive  
Kalamazoo, MI 49008  
269.353.9650



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**APPENDIX**

City of Kalamazoo - Standard Specifications for Water Main and Service Installation 2021

City of Kalamazoo - Standard Specifications for Wastewater Sewer Installation 2012

**NOTES:**

These Specifications include the full Newton Court, Fellows Avenue, and Brownell Court Improvements project. Only the Newton Court & Fellows Avenue portions of this project are to be bid.

The *City of Kalamazoo - Standard Specifications for Water Main and Service Installation 2021* and the *City of Kalamazoo - Standard Specifications for Wastewater Sewer Installation 2012* shall supersede these Technical Specifications where conflicting information occurs.

IF ANY OF THE PAGES LISTED ABOVE ARE NOT INCLUDED IN THESE CONTRACT DOCUMENTS, PLEASE ADVISE.

END OF SECTION

017-7628.001  
09/2022

Permit Set  
Kalamazoo, MI  
Newton Ct. & Fellows Ave. Improvements

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**SECTION 01010**  
**DEFINITION OF CONTRACT ITEMS**

**PART 1 GENERAL**

**1.01 FOREWORD**

- A. This Section describes the various Contract Items listed in the Bid.

**1.02 WORK INCLUDED**

- A. Under each Item the Contractor shall furnish all labor, materials, tools, equipment, supplies, maintenance of equipment, heating, lighting and power, insurance and bonds, coordination, and all Work and in accordance with the Specifications Divisions 1 through 16, the City of Kalamazoo *Standard Specifications for Water Main and Service Installation 2020*, and the City of Kalamazoo *Standard Specifications for Wastewater Sewer Installation 2012* necessary to complete the Work in accordance with the obvious or expressed intent of the Contract Documents.

**1.03 WORKMANSHIP AND MATERIALS**

- A. The quality of workmanship and materials entering into any and all of the Items and the Work included shall conform to pertinent sections, paragraphs, sentences, and clauses, both directly and indirectly applicable thereto, contained in the Contract Documents, whether or not direct reference to such occurs under each Item in this Section.

**1.04 PAYMENT**

- A. The lump sum and unit prices stated in the Bid shall be payment in full for the completion of all Work specified and described or required to be included in the Contract, complete, and ready for use.

**PART 2 PRODUCTS**

Not used.

**PART 3 EXECUTION**

Not used.

**PART 4 SPECIAL PROVISIONS**

**4.01 CONTRACT ITEMS**

- A. The contract items are defined on the following pages.

**ITEM 1**  
**GENERAL CONDITIONS/MOBILIZATION**

**1.01 DESCRIPTION**

- A. This Item is intended to pay non-recurring cost to the Contractor not recovered under other pay Items of the Contract.
- B. This Item shall include, but not be limited to, the cost for moving equipment in and out, performance and payment bonds, insurance, permits, utility connection cost, and other expenses associated with preparation for construction in accordance with the requirements of the Contract Documents.

**1.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.

**1.03 DEFINITION OF ITEM**

- A. Item 1 - Includes General Conditions/Mobilization.

**1.04 MEASUREMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 1.
- B. Mobilization for Contractor and any tier of subcontractor(s) shall be considered collectively and shall not exceed 10 percent of the Contract Price.
- C. Mobilization shall be those costs associated with the initiation of the project and site work, including but not limited to, transporting of personnel, equipment, materials, supplies, incidental items; establishment of the field offices, temporary facilities necessary for the project, bonds and insurances, submittal requirements, permits, field supervision, final cleanup and demobilization. Mobilization does not include such items as, contract negotiations and bid preparation.

**1.05 PAYMENT**

- A. General Conditions/Mobilization shall be those costs associated with the initiation of the project and site work, including but not limited to, transporting of personnel, equipment, materials, supplies, incidental items; establishment of the field offices, temporary facilities necessary for the project, bonds and insurances, submittal requirements, permits, field supervision, final cleanup and demobilization.
- B. The Engineer may reduce the amount to be paid under Item 1 if the percentage requested is not represented by the actual amount performed.

**ITEM 2  
TRAFFIC CONTROL**

**2.01 DESCRIPTION**

- A. Under this Item, the Contractor shall provide, mobilize, and temporarily install all traffic signage and equipment necessary to complete the project as described in the specifications and plans.
- B. The Contractor shall provide a traffic control plan and obtain all permits as necessary and required by all local governing agencies with appropriate jurisdiction.

**2.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.

**2.03 DEFINITION OF ITEMS**

- A. Item 2 – Traffic Control includes traffic control for detour around street projects and closing streets to through traffic.

**2.04 MEASUREMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 2.

**2.05 PAYMENT**

- A. The lump sum unit price stated in the Bid shall be full compensation for traffic control as required.

**ITEM 3  
AUDIO/VIDEO RECORDING**

**3.01 DESCRIPTION**

- A. Under this item, the Contractor shall produce and deliver to the Owner, color audio-video recordings of existing topography within the zone of influence along all water main, sanitary sewer routes, and areas of pavement work and audio-video recordings of designated buildings and dwellings as specified and directed.

**3.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.

**3.03 DEFINITION OF ITEMS**

- A. Item 3 – Audio/Video Recording includes audio-video recording of the Zone of Influence (Construction Limits).

**3.04 MEASUREMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 3.

**3.05 PAYMENT**

- A. The lump sum unit price stated in the Bid for Item 3 shall be full compensation for audio-video recording production as specified and required.

**ITEM 4  
CLEARING & GRUBBING**

**4.01 DESCRIPTION**

- A. This Item shall include all clearing and grubbing of lands required to complete the Work as specified, shown in the Contract Documents, and as directed by the Engineer. This Work shall include, but not limited to, the complete removal of all vegetation including plants, shrubs, sod, agricultural crop residue, trimming and cutting of trees with trunk diameter less than 6-inches, removal of tree cuttings and stumps, scalping and the removal and disposal of all debris generated by the clearing and grubbing operation as specified and shown on the Drawings.

**4.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.

**4.03 DEFINITION OF ITEMS**

- A. Item 4 - Clearing and Grubbing includes the complete removal of all vegetation including plants, shrubs, sod, agricultural crop residue, removal of existing stumps, scalping, the removal of all debris generated by the clearing and grubbing operation.
  - 1. Tree removal of trees with trunk diameter of 6-inch and less shall be considered part of clearing and grubbing operations.

**4.04 MEASUREMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 4 - Clearing and Grubbing.



**4.05 PAYMENT**

- A. The lump sum unit price stated in the Bid for Item 4 - Clearing and Grubbing shall be made in the amount of a percent of the lump sum Bid price for Item 4 - Clearing and Grubbing consistent with the percentage of Work completed.

**ITEM 5  
PAVEMENT REMOVAL, MODIFIED**

**5.01 DESCRIPTION**

- A. Under this Item, the Contractor shall remove pavement, including the aggregate base as scheduled, shown on the Drawings, and specified herein.

**5.02 WORK NOT INCLUDED**

- A. Pavement removal required beyond specified construction limits and items included for payment under other items.
- B. Pavement and curb and gutters damaged or destroyed beyond specified pay limits shall be replaced at the Contractor's expense.
- C. Any work specifically included under other Bid Items.

**5.03 DEFINITION OF ITEMS**

- A. Item 5 - Pavt, Rem, Mod includes complete pavement removal including the aggregate base.

**5.04 MEASUREMENT**

- A. Quantities to be paid for under this item shall be the actual square yardage quantity removed, measured in place within the limits as scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

**5.05 PAYMENT**

- A. The unit price stated in the Bid for Item 5 shall be full compensation for each square yard of pavement removed within the prescribed limits as specified, so measured.

**ITEM 6  
SIDEWALK REMOVAL**

**6.01 DESCRIPTION**

- A. Under this item, the Contractor shall remove concrete sidewalk.

**6.02 WORK NOT INCLUDED**

- A. Sidewalks and driveways damaged or destroyed beyond the specified limits shall be replaced at the Contractor's expense.
- B. Any Work specifically included under other Bid Items.

**6.03 DEFINITION OF ITEMS**

- A. Item 6 – Sidewalk, Rem includes concrete sidewalk removal.

**6.04 MEASUREMENT**

- A. Quantities to be paid for under this item shall be the actual square yardage quantity removed, measured in place within the limits as scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

**6.05 PAYMENT**

- A. The unit price stated in the Bid for Item 6 shall be for each square yard of sidewalk removed within the prescribed limits as specified, so measured.

**ITEM 7  
CURB AND GUTTER REMOVAL**

**7.01 DESCRIPTION**

- A. Under this item, the Contractor shall remove curb and gutter.

**7.02 WORK NOT INCLUDED**

- A. Curbs and gutters damaged or destroyed beyond the specified limits shall be replaced at the Contractor's expense.
- B. Any Work specifically included under other Bid Items.

**7.03 DEFINITION OF ITEMS**

- A. Item 7 – Curb and Gutter, Rem includes curb and gutter removal.

**7.04 MEASUREMENT**

- A. Quantities to be paid for under this item shall be the actual linear footage quantity removed, measured in place within the limits as scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

**7.05 PAYMENT**

- A. The unit price stated in the Bid for Item 7 shall be for each linear foot of curb and gutter removed within the prescribed limits as specified, so measured.

**ITEM 8  
VALVE BOX REMOVAL**

**8.01 DESCRIPTION**

- A. Under this item, the Contractor shall remove valve boxes as shown and scheduled on the Drawings and in conformance with the Specifications.

**8.02 WORK NOT INCLUDED**

- A. Replacement of existing valve boxes removed or damaged as a result of sewer or water main construction shall be done at the Contractor's expense.
- B. Any Work specifically included under other Bid Items.

**8.03 DEFINITION OF ITEMS**

- A. Item 8 – Valve Box, Rem includes removal of valve boxes including removal of any associated concrete casting surround. Backfilling for valve box removals shall be incidental to this Item.

**8.04 MEASUREMENT**

- A. The quantities to be paid under Item 8 shall be full compensation for each valve box removed in accordance with the Specifications and Drawings.

**8.05 PAYMENT**

- A. The unit price stated in the Bid for Item 8 shall be full compensation for each item removed, as specified and required.

**ITEM 9  
FENCE REMOVAL**

**9.01 DESCRIPTION**

- A. Under this item, the Contractor shall remove fencing as shown and scheduled on the Drawings and in conformance with the Specifications.

**9.02 WORK NOT INCLUDED**

- A. Replacement of existing fence removed or damaged by the Contractor that is beyond the limits specified and shown on the Drawings shall be at the Contractor's expense.
- B. Any Work specifically included under other Bid Items.

**9.03 DEFINITION OF ITEMS**

- A. Item 9 – Fence Removal includes removal of fencing including but not limited to fence fabric, fence posts, concrete encasements, rails, rods, wires, and gates. Backfilling for fence removals shall be incidental to this Item.

**9.04 MEASUREMENT**

- A. Quantities to be paid for under this Item shall be the actual linear footage quantity removed, measured in place within the limits as scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

**9.05 PAYMENT**

- A. The unit price stated in the Bid for Item 9 shall be full compensation for each linear foot of fence removed within the prescribed limits as specified, so measured.

**ITEM 10  
STRUCTURE REMOVAL**

**10.01 DESCRIPTION**

- A. Under this Item, the Contractor shall perform all work as necessary to facilitate removal of existing manhole structures as shown and scheduled on the Drawings and in conformance with the Specifications.

**10.02 WORK NOT INCLUDED**

- A. Replacement of existing manholes or catch basins removed or damaged as a result of sewer or water main construction shall be done at the Contractor's expense.

- B. Any Work specifically included under other Bid Items.

**10.03 DEFINITION OF ITEMS**

- A. Item 10 - Structure, Rem includes removal of existing manhole structures including removal of associated concrete casting surround. Backfilling for the removal of manholes shall be incidental to this Item.

**10.04 MEASUREMENT**

- A. The quantities to be paid under Item 10 shall be full compensation for each manhole removed in accordance with the Specifications and Drawings.

**10.05 PAYMENT**

- A. The unit price stated in the Bid for Item 10 shall be full compensation for each item removed as specified and required.

**ITEM 11  
SAWCUTTING**

**11.01 DESCRIPTION**

- A. Under this Item, the Contractor shall perform all sawcutting of pavement as necessary to facilitate pavement removal and provide a clean edge adjacent to pavement scheduled to remain.

**11.02 WORK NOT INCLUDED**

- A. Sawcutting performed beyond specified construction limits and items included for payment under other items.
- B. Pavement replacement required beyond specified construction limits.
- C. Pavement and curb and gutters damaged or destroyed beyond specified pay limits shall be replaced at the Contractor's expense.

**11.03 DEFINITION OF ITEMS**

- A. Item 11 – Sawcutting includes sawcutting.

**11.04 MEASUREMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 11 - Sawcutting.

**11.05 PAYMENT**

- A. The lump sum unit price stated in the Bid for Item 11 - Sawcutting shall be made in the amount of a percent of the lump sum Bid price for Item 11 - Sawcutting consistent with the percentage of Work completed.

**ITEM 12(BASE BID) & 12A (BID ALT)  
DIRECT BURY POWER LINES  
& RELOCATE POWER POLE (BID ALTERNATE)**

**12.01 DESCRIPTION**

- A. Under this Item, the Contractor shall coordinate with the utility companies to direct bury all power lines, service lines, and other utility lines to adjacent houses as indicated on the drawings and perform all Work as necessary to facilitate limited utility shutdowns (Base Bid).
- B. Under this Item, the Contractor shall coordinate with the utility companies to relocate power poles as indicated on the drawings and reconnect existing utility lines or provide new utility lines as necessary to facilitate limited utility shutdowns (Bid Alternate).

**12.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.

**12.03 DEFINITION OF ITEMS**

- A. Item 12 – Direct Bury Power Lines includes all work necessary to coordinate with the utility companies and to bury existing overhead utility lines as indicated on the Drawings and in the Specifications.
- B. Item 12A – Relocate Power Pole (Bid Alternate) includes all work necessary to coordinate with the utility companies to relocate power poles and reconnect existing overhead utility lines as indicated on the Drawings and in the Specifications.

**12.04 MEASUREMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 12 – Direct Bury Power Lines (Base Bid).
- B. The lump sum stated in the Bid shall be full compensation for all Work required under Item 12A – Relocate Power Pole (Bid Alternate).

**12.05 PAYMENT**

- A. The lump sum unit price stated in the Bid for Item 12 - Direct Bury Power Lines shall be made in the amount of a percent of the lump sum Bid price for Item 12 - Direct Bury Power Lines consistent with the percentage of Work completed (Base Bid).
- B. The lump sum unit price stated in the Bid for Item 12A - Relocate Power Pole shall be made in the amount of a percent of the lump sum Bid price for Item 12 - Relocate Power Pole consistent with the percentage of Work completed (Alternate Bid).

**ITEM 13  
SUBBASE, CIP**

**13.01 DESCRIPTION**

- A. Under this Item, the Contractor shall construct a granular subbase on a surface approved by the Engineer. This Item includes providing, hauling, placing, compacting, and shaping the material.

**13.02 WORK NOT INCLUDED**

- A. Subbase required beyond specified construction limits and items included for payment under other Items.

**13.03 DEFINITION OF ITEMS**

- A. Item 13 - Includes Subbase, CIP.

**13.04 MEASUREMENT**

- A. Quantities to be paid for under this Item shall be the actual quantity constructed, measured in place within the limits as defined below, and/or scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits. When uniform courses are specified, the volume to be paid for shall not exceed the quantity calculated from plan lines and dimensions.
- B. Pay Limits:
  - 1. Depth - As specified, scheduled, or ordered.
  - 2. Length - The actual length ordered.
  - 3. Width - The actual width ordered.

**13.05 PAYMENT**

- A. The unit price stated in the Bid for Item 13 shall be full compensation for each cubic yard of subbase placed within the prescribed limits as specified, so measured.

**ITEMS 14 & 15  
AGGREGATE BASE, MDOT 21AA**

**14.01 DESCRIPTION**

- A. Under this Item, the Contractor shall construct aggregate base for new pavement as scheduled, shown on the Drawings and specified herein.
- B. No additional payment will be made for the following:
  - 1. Aggregate used for adjusting roadway shoulders and driveways to match new roadway surfaces.
  - 2. Machine grading
    - a. Machine grading shall be incidental to this item.

**14.02 WORK NOT INCLUDED**

- A. Aggregate required beyond specified construction limits and items included for payment under other Items.

**14.03 DEFINITION OF ITEMS**

- A. Item 14 - Includes Aggregate Base, 8 inch, MDOT 21AA.
- B. Item 15 - Includes Aggregate Base, 12 inch, MDOT 21AA.

**14.04 MEASUREMENT**

- A. Quantities to be paid for under this Item shall be the actual quantity constructed, measured in place within the limits as defined below, and/or scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits. When uniform courses are specified, the volume to be paid for shall not exceed the quantity calculated from plan lines and dimensions.
- B. Pay Limits:
  - 1. Depth - As specified, scheduled, or ordered.
  - 2. Length - The actual length ordered.
  - 3. Width - The actual width ordered.

**14.05 PAYMENT**

- A. The unit price stated in the Bid for Items 14 & 15 shall be full compensation for each square yard of aggregate base placed within the prescribed limits as specified, so measured.



**ITEM 16**  
**6-INCH MDOT-P-NC CONCRETE**

**16.01 DESCRIPTION**

- A. Under this Item, the Contractor shall place MDOT-P-NC concrete for HMA pavement base as scheduled, shown on the Drawings and specified herein.

**16.02 WORK NOT INCLUDED**

- A. Pavement replacement required beyond specified construction limits and items included for payment under other Items.
- A. Pavement damaged or destroyed beyond specified pay limits shall be replaced at the Contractor's expense.

**16.03 DEFINITION OF ITEMS**

- A. Item 16 - Includes 6" MDOT-P-NC Concrete.

**16.04 MEASUREMENT**

- A. Quantities to be paid for under this Item shall be the actual quantity constructed, measured in place within the limits as scheduled and shown on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

**16.05 PAYMENT**

- A. The unit price stated in the Bid for Item 16 shall be full compensation for each square yard of concrete placed within the prescribed limits as specified, so measured.

**ITEMS 17, 18, & 19**  
**HMA MDOT 13A & 36A**

**17.01 DESCRIPTION**

- A. Under Items 17, 18, & 19 the Contractor shall construct pavement courses as scheduled, shown on the Drawings and specified herein.
- B. Under Item 19, the Contractor shall adjust existing structure castings as required to set flush with new grades and casting adjustments shall be incidental to this Item.
- C. No additional payment will be made for the following:
  - 1. Asphalt surface course used for adjusting driveways to match new roadway surfaces.

**17.02 WORK NOT INCLUDED**

- A. Pavement replacement required beyond specified construction limits and items included for payment under other Items.
- B. Pavement damaged or destroyed beyond specified pay limits shall be replaced at the Contractor's expense.

**17.03 DEFINITION OF ITEMS**

- A. Item 17 - Includes HMA MDOT 13A - 2" Leveling Course.
- B. Item 18 - Includes HMA MDOT 13A - 1.5" Leveling Course.
- C. Item 19 - Includes HMA MDOT 36A - 1.5" Top Course.

**17.04 MEASUREMENT**

- A. Quantities to be paid for under Items 17, 18, & 19 shall be the actual quantity constructed, measured in place within the limits as defined below, and/or scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits. When uniform courses are specified, the volume to be paid for shall not exceed the quantity calculated from plan lines and dimensions.
- B. Pay Limits:
  - 1. Depth - As specified, scheduled, or ordered.
  - 2. Length - The actual length ordered.
  - 3. Width - The actual width ordered.

**17.05 PAYMENT**

- A. The unit prices stated in the Bid for Items 17, 18, & 19 shall be full compensation for each ton of pavement placed within the prescribed limits as specified, so measured

**ITEM 20  
8-INCH BRICK STAMPED CONCRETE PAVEMENT**

**20.01 DESCRIPTION**

- A. Under this Item, the Contractor shall place 8-inch thick concrete pavement and stamp and color concrete in a brick pattern as scheduled, shown on the Drawings and specified herein.

**20.02 WORK NOT INCLUDED**

- A. Brick pavement replacement required beyond specified construction limits and items included for payment under other Items.

- B. Brick pavement damaged or destroyed beyond specified pay limits shall be replaced at the Contractor's expense.

**20.03 DEFINITION OF ITEMS**

- A. Item 20 - Includes 8-Inch Brick Stamped Concrete Pavement.

**20.04 MEASUREMENT**

- A. Quantities to be paid for under this Item shall be the actual quantity constructed, measured in place within the limits as scheduled and shown on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

**20.05 PAYMENT**

- A. The unit price stated in the Bid for Item 20 shall be full compensation for each square yard of brick stamped concrete placed within the prescribed limits as specified, so measured.

**ITEM 21  
8-INCH CONCRETE PAVEMENT**

**21.01 DESCRIPTION**

- A. Under this Item, the Contractor shall place 8-inch thick concrete pavement as scheduled, shown on the Drawings and specified herein.

**21.02 WORK NOT INCLUDED**

- A. Pavement replacement required beyond specified construction limits and items included for payment under other Items.
- B. Pavement damaged or destroyed beyond specified pay limits shall be replaced at the Contractor's expense.

**21.03 DEFINITION OF ITEMS**

- A. Item 21 - Includes 8-Inch Concrete Pavement.

**21.04 MEASUREMENT**

- A. Quantities to be paid for under this Item shall be the actual quantity constructed, measured in place within the limits as scheduled and shown on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

**21.05 PAYMENT**

- A. The unit price stated in the Bid for Item 21 shall be full compensation for each square yard concrete placed within the prescribed limits as specified, so measured.

**ITEM 22  
DUMPSTER PAD**

**22.01 DESCRIPTION**

- A. Under this Item, the Contractor shall furnish and perform all Work necessary for the replacement/installation of the dumpster pad including but not limited to concrete and required reinforcing materials shown on the Drawings and specified, in conformance with relevant sections of the Specifications.
- B. These Items shall include all Work to install the dumpster pad, including but not limited to the following: excavation; pavement removal; saw-cutting; concrete drive, curb and walk removal; hauling excess spoil material from Site; backfill; compaction; construction, maintenance, and removal of temporary access to the Work area; and related Work such as performing material testing; unless included under other items.

**22.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.

**22.03 DEFINITION OF ITEMS**

- A. Item 22 - Includes Dumpster Pad

**22.04 MEASUREMENT**

- A. The quantity to be paid under Item 22 shall be the measured quantity of each dumpster pad completed as specified, shown on the drawings and so measured.

**22.05 PAYMENT**

- A. The unit price stated in the Bid for Item 22 shall be full compensation for each dumpster pad so measured, as specified and required.

**ITEM 23  
GUARD POST**

**23.01 DESCRIPTION**

- A. Under this Item, the Contractor shall furnish and perform all Work necessary for the replacement/installation of guard posts including but not limited to concrete and required sleeves as shown on the Drawings and specified, in conformance with relevant sections of the Specifications.

**23.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.

**23.03 DEFINITION OF ITEMS**

- A. Item 23 - Includes Guard Post.

**23.04 MEASUREMENT**

- A. The quantity to be paid under Item 23 shall be the measured quantity of each guard post completed as specified, shown on the drawings and so measured.

**23.05 PAYMENT**

- A. The unit price stated in the Bid for Item 23 shall be full compensation for each guard post so measured, as specified and required.

**ITEM 24 & 25  
CONCRETE SIDEWALK**

**24.01 DESCRIPTION**

- A. Under this Item, the Contractor shall construct concrete sidewalk.
- B. Under this Item, the Contractor shall construct concrete sidewalk ramps.

**24.02 WORK NOT INCLUDED**

- A. Sidewalks and driveways damaged or destroyed beyond the specified limits shall be replaced at the Contractor's expense.
- B. Any work specifically included under other Bid Items.

**24.03 DEFINITION OF ITEMS**

- A. Item 24 - Includes construction of 6-inch Concrete Sidewalk.
- B. Item 25 - Includes construction of 6-inch Concrete ADA Sidewalk Ramps.

**24.04 MEASUREMENT**

- A. Quantities to be paid for under Items 24 & 25 shall be the actual quantity constructed, measured in place within the limits as scheduled and shown on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

**24.05 PAYMENT**

- A. For Item 24, the unit price stated in the bid shall be full compensation for each square foot of 6-inch concrete sidewalk constructed in accordance with the Specifications and Drawings.
- B. For Item 25, the unit price stated in the bid shall be full compensation for each square foot of concrete sidewalk ramp constructed in accordance with the Specifications and Drawings.

**ITEM 26 & 27  
CURB & GUTTER**

**26.01 DESCRIPTION**

- A. Under this Item, the Contractor shall construct concrete curb and gutter.

**26.02 WORK NOT INCLUDED**

- A. Curb and gutter damaged or destroyed beyond the specified limits shall be replaced at the Contractor's expense.
- B. Any Work specifically included under other Bid Items.

**26.03 DEFINITION OF ITEMS**

- A. Item 26 - Includes construction of MDOT F4 Curb and Gutter.
- B. Item 27 - Includes construction of Mountable Curb and Gutter.

**26.04 MEASUREMENT**

- A. Quantities to be paid for under Items 26 & 27 shall be the actual quantity constructed, measured in place by linear length at the back of the curb, within the limits as scheduled and shown on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

**26.05 PAYMENT**

- A. For Item 26, the unit price stated in the bid shall be full compensation for each linear foot of MDOT F4 Curb and Gutter installed in accordance with the Specification and Drawings.
- B. For Item 27, the unit price stated in the bid shall be full compensation for each linear foot of mountable curb and gutter placed, in accordance with the Specifications and Drawings.

**ITEMS 28 - 38**  
**DUCTILE IRON WATER MAIN**

**28.01 DESCRIPTION**

- A. Under these Items, the Contractor shall furnish and perform all Work necessary for the installation of the water lines as scheduled, shown on the Drawings and specified, in conformance with relevant sections of the Specifications.
- B. These Items shall include all Work to install the water lines, including but not limited to the following: excavation; backfill; compaction; bedding; pipe materials; fittings; maintenance of trenches; temporary pavement; connections to existing water mains; and related Work and materials such as blow offs to perform disinfection, flushing, performing pressure and bacteriological tests as shown on the Drawings and specified in conformance with relevant Sections of the Specifications.
- C. Under Items 34 and 35 the Contractor shall furnish and perform all Work necessary for the installation of the water services to the right-of-way, or to the house if required due to unsatisfactory existing pipe materials, as shown on the Drawings and specified, in conformance with relevant sections of the Specifications.
  - 1. The removal of existing water services, including existing fittings, valves, structures and other associated appurtenances shall be included under these items.
  - 2. Connections of new water services to existing water services as shown on the Drawings are included under these Items. This shall include connections of new water services to water meter pits or to the house if required due to unsatisfactory existing pipe materials.
  - 3. Reinstatement of existing water services onto the new water line shall be included under these Items.
  - 4. These Items shall include all water service fittings, accessories and appurtenances not included in other pay items. Fittings, including those not shown on the plans required to avoid existing utilities shall be included under these Items.
  - 5. The excavation and backfill of bore and receiving pits for trenchless water service construction is included under these items.
- D. These Items shall also include all Work under the Contract unless specifically included for payment under other Items.
- E. Connections of new water lines to new and existing water lines shall be included under these Items, unless specifically included under other items. Temporary supporting of existing utilities, locating of existing utilities, exploratory excavation and backfill required by the utility owner for existing utilities encountered during construction is included under these Items.

- F. The removal or abandonment of existing water mains, including existing fittings, valves, backfill, bedding, structures and other associated appurtenances shall be included under these items. The removals noted are included under Items 28 & 29.
- G. All water main fittings, accessories and appurtenances not included in other pay items shall be incidental to Item 31. Fittings, including those not shown on the plans required to avoid existing utilities shall be included under these Items and shall be incidental to Item 31.
- H. All repairs of existing utilities damaged, as a result of construction, are included under these Items.
- I. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed lawn areas shall be included under these Items, unless specifically included under other items.

#### **28.02 WORK NOT INCLUDED**

- A. Pavement replacement within the Contract limits is included under other Items.
- B. Hydrant assemblies including associated 6-inch water main piping and gate valve are included under other items.
- C. Any Work specifically included under other Bid Items.

#### **28.03 DEFINITION OF ITEMS**

- A. Item 28 - Includes Water Main - 2", Remove.
- B. Item 29 - Includes Water Main - 4", Remove.
- C. Item 30 - Includes Water Main - 4" Cut & Cap.
- D. Item 31a – Includes Water Main – 6" Ductile Iron Pipe.
- E. Item 31b - Includes Water Main - 8" Ductile Iron Pipe
- F. Item 34 - Includes Water Main - Water Service
- G. Item 35 - Includes Water Main – Water Serv, Yard
- H. Item 36 – Includes Water Main – 24" x 8" Tapping Sleeve and Valve
- I. Item 37 – Includes Water Main – 6" x 6" Tapping Sleeve and Valve
- J. Item 38 – Includes Water Main – 8" x 8" Tapping Sleeve and Valve

#### **28.04 MEASUREMENT**

- A. The quantity to be paid under Item 28 shall be the measured quantity of each horizontal linear foot of 2" water main removed as specified, shown on the drawings, and so measured.



- B. The quantity to be paid under Item 29 shall be the measured quantity of each horizontal linear foot of 4" water main removed as specified, shown on the drawings, and so measured.
- C. The quantity to be paid under Item 30 shall be the measured quantity of each 4" water main cut and cap completed as specified, shown on the drawings, and so measured.
- D. The quantities to be paid for under Item 31 shall be the horizontal length of pipe measured parallel to the axis of the line along the surface of the ground, with no deduction for laying length of fittings and valves. Vertical portions of the water main shall not be measured for payment.
- E. The quantity to be paid under Item 34 shall be the measured quantity of each water service installed in accordance with the Specifications and Drawings.
- F. The quantity to be paid under Item 35 shall be the measured quantity of each private water service installed "to the house" in accordance with the Specifications and Drawings.
- G. The quantity to be paid under Item 36 shall be the measured quantity of each 24-inch x 8-inch tapping sleeve and valve installed in accordance with the Specifications and Drawings.
- H. The quantity to be paid under Item 37 shall be the measured quantity of each 6-inch x 6-inch tapping sleeve and valve installed in accordance with the Specifications and Drawings.
- I. The quantity to be paid under Item 38 shall be the measured quantity of each 8-inch x 8-inch tapping sleeve and valve installed in accordance with the Specifications and Drawings.

#### 28.05 PAYMENT

- A. The unit prices stated in the Bid for Items 28 and 29 shall be full compensation each linear foot of water main removed as specified and required.
- B. The unit prices stated in the Bid for Items 30, 34, 35, 36, 37, and 38 shall be full compensation for each item, furnished and installed as specified and required.
- C. The unit price stated in the Bid for Item 31 shall be full compensation for each linear foot, furnished and installed as specified, and so measured.
  - 1. Four dollars per linear foot will be withheld from the unit price of Item 31 as stated in the Bid, for acceptance testing, in accordance with the Contract Documents. This amount shall not be considered part of retainage and shall not be released until testing has been satisfactorily completed.

**ITEM 39 & 40  
FIRE HYDRANT ASSEMBLIES & REMOVAL**

**39.01 DESCRIPTION**

- A. Under this Item, the Contractor shall furnish and perform all Work necessary for the installation of the fire hydrant assemblies and removal and salvage of existing fire hydrants, shown on the Drawings and specified, in conformance with relevant sections of the Specifications.
- B. These Items shall include all Work to install the fire hydrant assemblies, including but not limited to the following: excavation; pavement removal; saw-cutting; concrete drive, curb and walk removal; removal and replacement of fences including fabric and posts; hauling excess spoil material from Site; backfill; compaction; bedding; pipe materials; fittings; connections to water lines; construction, maintenance and removal of temporary access to the Work area; and related Work such as performing material testing; unless included under other items.
- C. Contractor shall take care not to damage the hydrant during removal and shall remove the hydrant in one piece. Contractor shall arrange delivery of the hydrant to the City at 415 Stockbridge Avenue, Kalamazoo, MI 49001.
- D. If a fire hydrant sign is damaged, stolen, lost or otherwise rendered unusable the Contractor will be responsible to furnish and install a replacement sign.
- E. Tee fittings at main line shall be incidental to this Item.

**39.02 WORK NOT INCLUDED**

- A. Pavement replacement within Contract limits is included for payment under other items.

**39.03 DEFINITION OF ITEMS**

- A. Item 39 - Includes Fire Hydrant Assembly
- B. Item 40 - Includes Fire Hydrant Removal

**39.04 MEASUREMENT**

- A. The quantity to be paid under Item 39 shall be the measured quantity of each fire hydrant assembly completed as specified, shown on the drawings, and so measured.
- B. The quantity to be paid under Item 40 shall be the measured quantity of each existing fire hydrant removed and salvaged as specified, shown on the drawings, and so measured.

**39.05 PAYMENT**

- A. The unit price stated in the Bid for Item 39 shall be full compensation for each hydrant assembly so measured, as specified and required.
- B. The unit price stated in the Bid for Item 40 shall be full compensation for each existing hydrant removed and salvaged so measured, as specified and required.

**ITEMS 41 - 46  
SANITARY SEWER**

**41.01 DESCRIPTION**

- A. Under these Items, the Contractor shall furnish and perform all Work necessary for the installation of sanitary sewer and service connections as scheduled, shown on the Drawings and specified, in conformance with relevant sections of the Specifications.
- B. These Items shall include all Work to install the sanitary sewer, including but not limited to the following: excavation; removal and replacement of fences including fabric and posts; hauling excess spoil material from Site; backfill; compaction; bedding; pipe materials; fittings; connections to existing sewers; installation of manholes; construction maintenance and removal of temporary access to the Work area; and related Work such as performing material testing; deflection and infiltration tests; unless included under other items.
- C. Sanitary service leads installed to the right-of-way and tied to existing sanitary service leads shall be included under these Items.
- D. The removal or abandonment of existing sanitary sewers, including existing fittings, backfill, bedding, structures and other associated appurtenances shall be included under these items. The removals noted are included under Items 41 & 42.
- E. Maintaining existing sewers in operation and temporary flow stoppage, diversions and sewer flow by-pass connections shall be included under these Items.
- F. Temporary supporting existing utilities, locating of existing utilities, exploratory excavation and backfill required by the utility owner for existing utilities encountered during sewer construction is included under these Items.
- G. Vertical pipe sections and riser pipes for 6-inch lateral sewers and cleanouts shall be included under these Items.
- H. No addition compensation shall be considered for sewers installed within 2 feet of the elevation shown on the Drawings.

**42.02 WORK NOT INCLUDED**

- A. Pavement replacement within the Contract limits is included under other Items.

- B. Sewers installed to convey sewage around or through the Work during construction will not be measured for payment.
- C. Damage to existing utilities shall be the responsibility of the Contractor.
- D. Replacement of existing manholes or catch basins removed or damaged for Contractor convenience of construction and which were not planned to be removed shall be done at the Contractor's expense.
- E. The furnishing and placing of special backfill in areas specified under Section 02200, is included under other Items.

#### **43.03 DEFINITION OF ITEMS**

- A. Item 41 - Includes Sanitary - 6" Sewer, Remove.
- B. Item 42 - Includes Sanitary - 8" Sewer, Remove.
- C. Item 43a - Includes Sanitary - 8" SDR 26.
- D. Item 43b - Includes Sanitary - 8" C900.
- E. Item 44 - Includes Sanitary - Service Connection.
- F. Item 45 - Includes Sanitary - Manhole, 4' Diameter.
- G. Item 46 - Includes Sanitary - Tie-In to Existing Manhole.

#### **43.04 MEASUREMENT**

- A. The quantity to be paid under Item 41 shall be the measured quantity of each horizontal linear foot of 6" sanitary sewer removed as specified, shown on the drawings, and so measured.
- B. The quantity to be paid under Item 42 shall be the measured quantity of each horizontal linear foot of 8" sanitary sewer removed as specified, shown on the drawings, and so measured.
- C. The quantity to be paid under Item 43a shall be the measured quantity of each linear foot of 8" SDR 26 sanitary sewer installed as specified, shown on the drawings, and so measured.
- D. The quantity to be paid under Item 43b shall be the measured quantity of each linear foot of 8" C900 sanitary sewer installed as specified, shown on the drawings, and so measured.
- E. The quantity to be paid under Item 44 shall be the measured quantity for each sanitary service installed as specified, shown on the drawings, and so measured.
- F. The quantity to be paid under Item 45 shall be the measured quantity for each 4-foot diameter sanitary manhole installed as specified, shown on the drawings, and so measured.

- G. The quantity to be paid under Item 46 shall be the measured quantity for each tie-in to an existing manhole as specified, shown on the drawings, and so measured.

**43.05 PAYMENT**

- A. The unit prices stated in the Bid for Items 41 and 42 shall be full compensation each linear foot of sanitary sewer removed as specified and so measured.
- B. The unit price stated in the Bid for Item 43a shall be full compensation for each linear foot of 8" SDR 26 installed as specified and so measured.
- C. The unit price stated in the Bid for Item 43b shall be full compensation for each linear foot of 8" C900 installed as specified and so measured
- D. The unit price stated in the Bid for Item 44 shall be full compensation for each sanitary sewer service lateral installed as specified and so measured.
- E. The unit price stated in the Bid for Item 45 shall be full compensation for each 4-foot diameter sanitary manhole installed as specified and so measured.
- F. The unit price stated in the Bid for Item 46 shall be full compensation for each tie-in to an existing manhole as specified and so measured.

**ITEM 47  
GAS RELOCATION**

**47.01 DESCRIPTION**

- A. Under this Item the Contractor shall relocate existing gas lines to perform other aspects of the Work. The Contractor shall coordinate with the relevant utility company to facilitate the relocation of the gas lines.
- B. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed lawn areas beyond the scope of other items shall be included under these Items.

**47.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.

**47.03 DEFINITION OF ITEMS**

- A. Item 47 - Includes Gas Relocate.

**47.04 MEASUREMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 47 - Gas Relocate.

**47.05 PAYMENT**

- A. The unit price stated in the Bid for Item 47 - Gas Relocate shall be made in the amount of a percent of the lump sum price for Item 47 consistent with the percentage of Work completed.

**ITEM 48 - 50  
STORM SEWER**

**48.01 DESCRIPTION**

- A. Under these Items, the Contractor shall furnish and perform all Work necessary for the installation of storm sewer as scheduled, shown on the Drawings and specified, in conformance with relevant sections of the Specifications.
- B. These Items shall include all Work to install the storm sewer, including but not limited to the following: excavation; removal and replacement of fences including fabric and posts; hauling excess spoil material from Site; backfill; compaction; bedding; pipe materials; fittings; connections to existing sewers; installation of manholes; construction maintenance and removal of temporary access to the Work area; and related Work such as performing material testing; deflection and infiltration tests; unless included under other items.
- C. Temporary supporting existing utilities, locating of existing utilities, exploratory excavation and backfill required by the utility owner for existing utilities encountered during sewer construction is included under these Items.
- D. No addition compensation shall be considered for sewers installed within 2 feet of the elevation shown on the Drawings.

**48.02 WORK NOT INCLUDED**

- A. Pavement replacement within the Contract limits is included under other Items.
- B. Damage to existing utilities shall be the responsibility of the Contractor.
- C. Replacement of existing manholes or catch basins removed or damaged for Contractor convenience of construction and which were not planned to be removed shall be done at the Contractor's expense.
- D. The furnishing and placing of special backfill in areas specified under Section 02200, is included under other Items.

**48.03 DEFINITION OF ITEMS**

- A. Item 48 - Includes Storm Sewer, 12" Class IV RCP
- B. Item 49 - Includes Storm - Catch Basin, 4-foot Diameter
- C. Item 50 - Includes Storm - Manhole, 4-foot Diameter

**48.04 MEASUREMENT**

- A. The quantity to be paid under Item 48 shall be the measured quantity of each linear foot of storm sewer installed as specified, shown on the drawings, and so measured.
- B. The quantity to be paid under Item 49 shall be the measured quantity for each 4-foot diameter storm catch basin installed as specified, shown on the drawings, and so measured.
- C. The quantity to be paid under Item 50 shall be the measured quantity for each 4-foot diameter storm manhole installed as specified, shown on the drawings, and so measured.

**48.05 PAYMENT**

- A. The unit price stated in the Bid for Item 48 shall be full compensation for each linear foot of 12-inch storm sewer installed as specified and so measured.
- B. The unit price stated in the Bid for Item 49 shall be full compensation for each 4-foot diameter storm catch basin installed as specified and so measured.
- C. The unit price stated in the Bid for Item 50 shall be full compensation for each 4-foot diameter storm manhole installed as specified and so measured.

**ITEM 51  
RESTORATION**

**51.01 DESCRIPTION**

- A. Under this Item, the Contractor shall restore landscape surface improvements including topsoil, seeding, mulching, and fertilizing all disturbed lawn areas within the defined construction limits as shown on the Drawings and specified.

**51.02 WORK NOT INCLUDED**

- A. All other landscape surface improvements disturbed or damaged by the Contractor without prior approval from the Engineer shall be repaired or replaced at the Contractor's expense.

**51.03 DEFINITION OF ITEMS**

- A. Item 51 - Includes topsoil, seed, mulch, and fertilizer for restoration.

**51.04 MEASUREMENT**

- A. The lump sum price stated in the Bid for Item 51 shall be full compensation for all Work required under Item 51 - Restoration.

**51.05 PAYMENT**

- A. The unit price stated in the Bid for Item 51 shall be full compensation for restoration as specified and required.

**ITEM 52  
MATERIALS TESTING**

**52.01 DESCRIPTION**

- A. Under this Item, the Contractor shall provide materials testing as specified.

**52.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.

**52.03 DEFINITION OF ITEMS**

- A. Item 52 - Includes Materials Testing.

**52.04 MEASUREMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 52.

**52.05 PAYMENT**

- A. The unit price stated in the Bid for Item 52 shall be full compensation for materials testing as specified and required.

**ITEM 53  
CONSTRUCTION STAKING**

**53.01 DESCRIPTION**

- A. Under this Item, the Contractor shall provide construction staking as specified.

**53.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.



**53.03 DEFINITION OF ITEMS**

- A. Item 53 - Includes Construction Staking. The Surveyor shall coordinate the layout and staking for the project with the Engineer.

**53.04 MEASUREMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 53.

**53.05 PAYMENT**

- A. The unit price stated in the Bid shall be full compensation for construction staking as specified and required.

END OF SECTION

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**SECTION 01043**  
**COORDINATION AND CONTROL OF THE WORK**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This section includes coordination and control of the Work.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Information for the Record:
    - a. Haul routes to and from Site.
    - b. Plan and procedures for any shut-downs.

**1.03 LINES AND GRADES**

- A. All Work under this Contract shall be built in accordance with the lines and grades shown on the Drawings or as altered or modified by authority of the Owner and Engineer.

**1.04 EXISTING STRUCTURES SHOWN ON DRAWINGS**

- A. Where underground and surface structures are shown on the Drawings, the location, depth, and dimensions of such structures are believed to be reasonably correct but are not guaranteed.
- B. Such structures are shown for the information of the Contractor, but information so given is not to be construed as a representation that such structures will in all cases be found or encountered just where shown, or that they represent all the structures which may be encountered.

**1.05 COOPERATION OF CONTRACTOR**

- A. The Contractor shall conduct his operations so as to interfere as little as possible with those of the Owner, other contractors, utilities, or any public authority on or near the Work.
- B. The Owner reserves the right to perform other Work by contract or otherwise, and to permit other public bodies, public utility companies, and others to do Work on or near the project during progress of the Work. If a conflict arises, the Owner will determine when and how the Work shall proceed.

- C. Claims for delay or inconvenience due to operations of such other parties on Work specified, shown on the Drawings, as directed or which can be reasonably expected to be encountered by the nature and location of the Work will not be considered.
- D. Operations entailing the use of construction equipment and lights outside the hours of 8:00 am and 5:00 pm or outside the hours allowed for construction by local ordinances or regulations is prohibited unless otherwise authorized by the Owner or Engineer.
- E. Closing off clear access to any public alley, street, road, avenue or boulevard without the prior consent of municipal officials and the Engineer is prohibited.

**1.06 MAINTENANCE OF SANITARY SYSTEM DURING CONSTRUCTION**

- A. All construction which requires interruption of existing sanitary system flow shall be executed during periods designated by the Owner.
- B. Bypassing of untreated sanitary wastewater to any stream or body of water is prohibited.

**1.07 PERMANENT PAVEMENT AND FINAL RESTORATION**

- A. Permanent pavement and final restoration shall be completed prior to the close of the last paving season prior to the Contract's final completion.
- B. Pavement restoration shall include, but not limited to, replacement of pavement, driveways, and sidewalks

**1.08 RESERVED**

**1.09 TEMPORARY PARKING FACILITIES**

- A. Parking spaces for the Contractor's personnel shall be provided and maintained in usable condition by the Contractor at all times. Provisions shall be made so that sediment is not tracked onto paved roadways from the vehicles operated by the Contractor's personnel. Temporary parking areas are to be located in the area designated by the Owner and Engineer. At the completion of the project, temporary parking areas shall be removed and the surface restored as specified, shown on the Drawings, as directed or to its original condition.
- B. The Contractor's personnel shall not utilize existing permanent parking areas unless specifically noted otherwise on the Drawings.

**1.10 TEMPORARY WATER, HEATING, LIGHTING AND POWER**

- A. The Contractor shall provide all water, heat, lighting, and power required to construct and protect the Work until Final Completion.

- B. The source for temporary power shall be from the electric utility or portable power source.
- C. The source for temporary water can be from the water utility if available. The Contractor shall furnish all backflow prevention devices, flow meter and appurtenances as may be required by the water utility. Should the water utility impose a charge for furnishing, to the Contractor, the meter or appurtenances the Contractor shall pay all the fees. The Contractor shall pay all charges for the water metered.
  - 1. If a water utility is not available, the Contractor shall be responsible for furnishing water and all cost associated including, but not limited to, procurement, hauling, pumping equipment, and appurtenances.
- D. The Contractor shall pay for all significant amounts of electric power utilized by the Contractor in the construction of the facility. All electric power used for such significant uses as pumping groundwater and heating shall be separately metered and paid for by the Contractor.
- E. The installation for electric power shall meet the requirements of federal, state, and local authorities and regulatory agencies.

#### **1.11 DISPOSAL OF DEBRIS**

- A. All debris resulting from construction operations, i.e., packaging, waste materials, damaged equipment, etc., shall be trucked from the Site by the Contractor and disposed of at spoil sites.
- B. The Contractor shall police the hauling of debris to ensure that all spillage from haul trucks is promptly and completely removed from public or private rights-of-way.
- C. All debris shall be disposed of in accordance with federal, state, and local laws and regulations.

#### **1.12 CONTROL OF NOISE**

- A. The Contractor shall eliminate noise to as great an extent as possible at all times. Air compressors shall be equipped with silencers and the exhaust of all gasoline motors and other power equipment shall be provided with mufflers. In the vicinity of hospitals, libraries, and schools, precautions shall be taken to avoid noise and other nuisance, and the Contractor shall require strict observances of all pertinent ordinances and regulations. Any blasting permitted in such locations shall be done with reduced charges.

#### **1.13 SMOKE PREVENTION**

- A. Strict compliance with all ordinances regulating the production and emission of smoke will be required, and the Contractor shall accept full responsibility for all damage that may occur to property as a result of negligence in providing required control.

**1.14 DEBRIS AND DUST CONTROL**

- A. The Contractor shall apply water, dust palliative, or both, for the alleviation or prevention of dust nuisance caused by his operations. Dust control operations shall be performed by the Contractor as site conditions dictate or as order by the Owner and Engineer.
- B. The Contractor shall utilize mechanical equipment to remove all debris from all streets, drives and walks to the satisfaction of the Owner and Engineer. Cleaning shall be performed at a minimum of daily and as directed by the Owner and Engineer.
- C. The cost of the all debris and dust control methods shall be the responsibility of the Contractor.

**1.15 SANITARY REGULATIONS**

- A. The Contractor shall provide all necessary housing accommodations for the workers for changing clothes and for protection during inclement weather. Toilet accommodations shall also be maintained for the use of the employees on the Work. The accommodations shall be in approved locations, properly screened from public observance and shall be maintained in a strictly sanitary manner. The Contractor shall obey and enforce all other sanitary regulations and orders; shall take precautions against infectious diseases and the spread of same; and shall maintain at all times satisfactory sanitary conditions around all shanties, tool and supply houses, and on all other parts of the Work.

**1.16 USE OF EXPLOSIVES**

- A. The use of explosives is prohibited.

**1.17 EMERGENCY MAINTENANCE SUPERVISOR**

- A. The Contractor shall submit to the Engineer the names, addresses, and telephone numbers of two employees responsible for performing emergency maintenance and repairs when the Contractor is not working. These employees shall be designated in writing by the Contractor to act as his representative and shall have full authority to act on his behalf.
- B. Contractor shall post at job Site, in a conspicuous location, the emergency numbers for the project.
- C. Contractor shall be responsible for contacting the local fire, police, and emergency response personnel and organizations in advance of the Work. The Contractor shall be responsible for the coordination and compliance with emergency response plans, whether developed by the governing agency, laws, or the Contractor for the project.
- D. At least one of the designated employees shall be available for a telephone call any time an emergency arises.

**1.18 PUBLIC SERVICE STRUCTURES**

- A. Public service structures shall be understood to include all poles, tracks, pipes, wires, conduits, house-service connections, vaults, manholes, and other appurtenances, whether owned or controlled by the Owner or other public bodies or by privately-owned corporations, used to supply the public with transportation, heating, electric, telephone, gas, water, sewer, or other services.
- B. At least a week in advance of breaking ground, the Contractor shall notify the registered underground protection service, all public bodies, and other owners of such facilities of the proposed location of his operations, advising them that their property may be affected and that such measures as they may deem necessary should be promptly taken to protect, adjust, remove, or build them.
- C. In developed residential and commercial areas, the Contractor shall assume each building and dwelling has water and sewer services and that they shall be protected and repaired as needed as part of the pipeline installation. No additional payment will be made for Work associated with supporting or repairs of such services.
- D. Three conditions which may be encountered will be dealt with as follows:
  - 1. Structures which are adjacent to but not included within the limits of an excavation required for performance of the Work shall be protected, supported, and maintained in service by the Contractor at his expense.
  - 2. Structures within the limits of the Work which can be satisfactorily supported and maintained in service and which do not require removal and rebuilding in the judgment of the Engineer shall be thus supported by the Contractor at his expense, including cost of repair of damage incident to his operations.
    - a. Supports for water and gas mains, sewers, conduits, and similar structures shall be constructed of timber or other acceptable materials; shall be supported from undisturbed foundations, and shall be sufficiently substantial to ensure against settlement when pipe trenches or other excavations are backfilled. In all cases where permits or inspection fees are required by utilities in connection with changes to or temporary support of their conduits, the Contractor shall secure such permits and pay all permit and inspection fees.
    - b. The Contractor shall assume full responsibility for maintaining all public service structures in service and shall support and protect, or remove and rebuild them at his own expense. Such services shall not be interrupted without permission of the owner of the public service structure.
  - 3. In case relocation of pipelines or other utility structures is required because of direct interference, as determined jointly by the Owner, Engineer, and Contractor, with the installation of the Work, the Contractor shall notify the Owners of the utility structure involved.

- a. The Contractor will not be reimbursed for the cost of the relocation if the interference is shown on the Drawings, described in the Specifications, apparent on visual inspection, or specifically included in the Work to be performed by the Contractor.
- b. The Contractor will not be paid for time lost because of such direct interference. Where it is the policy of any utility owner to perform such Work with his own forces, the Contractor shall cooperate to the fullest extent with such utility owner.

#### **1.19 UNAUTHORIZED WORK**

- A. Work done beyond the lines shown on the Drawings or ordered, Work done without required inspection, except as herein provided, or any extra work done without authority will be considered as unauthorized and will not be paid for under the provisions of the Contract. Work so done may be ordered removed at the Contractor's expense. Work done without lines and grades being given shall be considered as unauthorized and subject to rejection.

#### **1.20 RESERVED**

#### **PART 2 PRODUCTS**

Not used.

#### **PART 3 EXECUTION**

Not used.

#### **PART 4 SPECIAL PROVISIONS**

#### **4.01 MAINTAINING FLOW IN EXISTING SEWERS**

- A. Flow in existing storm, sanitary and private sewers shall be maintained at all times during construction of this project. The Contractor shall furnish and install all necessary temporary facilities required to maintain the flow in existing sewers including bulkheads, plugs, stop planks, flumes, coffer dams, pumping equipment, valves, etc.

#### **4.02 REQUIRED SAFETY DOCUMENTATION TO BE SUBMITTED**

- A. On all projects that require the Contractor's or subcontractor's personnel to occupy permitted confined spaces and/or hazardous atmospheres on the Site, the Contractor shall submit to the Owner, a written proposed safety program. The safety program shall comply with all Federal, State, and local requirements. If the Owner has a safety plan that is more stringent than the Federal and State requirements, it will be made available to the Contractor for review. The submittal of the proposed safety program to the Owner shall be made well in advance of the start of construction at the Site. The submittal shall include a written Safety Management Plan including Confined Space



Entry procedures. The Contractor shall be responsible to maintain documentation that anyone employed by the Contractor, subcontractors, or suppliers of any tier to the Contractor occupying such hazardous locations has received the appropriate confined space entry training and other applicable training. The Contractor is also responsible to maintain completed confined space entry permits.

**4.03 MAINTAINING CRITICAL OPERATIONS**

- A. The Contractor shall closely coordinate any needed equipment, or roadway shutdowns with the Owner and Engineer.

END OF SECTION

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**SECTION 01090**  
**REFERENCE STANDARDS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes reference standards.

**1.02 DESIGNATION OF ASSOCIATIONS, INSTITUTIONS, SOCIETIES AND STANDARDS**

- A. Whenever in these Specifications reference is made to Associations, Institutions, Societies, or Standards, they will be designated as follows:

AA	-	Aluminum Association
AAMA	-	Architectural Aluminum Manufacturers Association
AASHTO	-	American Association of State Highway and Transportation Officials
ACI	-	American Concrete Institute
ADAAG	-	Americans with Disabilities Act Accessibility Guidelines
AFBMA	-	Anti-Friction Bearing Manufacturers Association
AFI	-	Air Filter Institute
AGA	-	American Gas Association
AGMA	-	American Gear Manufacturers Association
AIHA	-	American Industrial Hygiene Association
AISC	-	American Institute of Steel Construction
AISI	-	American Iron & Steel Institute
AITC	-	American Institute of Timber Construction
AMCA	-	Air Moving and Conditioning Association
ANSI	-	American National Standards Institute
API	-	American Petroleum Institute
ARI	-	Air Conditioning and Refrigeration Institute
ASA	-	American Standards Association
ASHRAE	-	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	-	American Society of Mechanical Engineers
ASTM	-	American Society for Testing Materials
AWPB	-	American Wood Preservers Bureau
AWS	-	American Welding Society
AWWA	-	American Water Works Association
BLS	-	Bureau of Labor Standards
CISPI	-	Cast Iron Soil Pipe Institute
FM	-	Factory Mutual
FS	-	Federal Specifications

IBR	-	Institute of Boiler and Radiator Manufacturers
IEEE	-	Institute of Electrical and Electronic Engineers
INETA	-	International Electrical Testing Association
ISA	-	Instrument Society of America
JIC	-	Joint Industrial Council
ODOT	-	Ohio Department of Transportation
INDOT	-	Indiana Department of Transportation
MDOT	-	Michigan Department of Transportation
NBS	-	National Bureau of Standards
NEC	-	National Electrical Code
NEMA	-	National Electrical Manufacturers Association
NFPA	-	National Fire Protection Association
NICET	-	National Institute for Certification in Engineering Technologies
NSF	-	National Sanitation Foundation
NRTL	-	Nationally Recognized Testing Laboratory
OSHA	-	Occupational Safety and Health Act
SMACNA	-	Sheet Metal and Air Conditioning Contractors National Association, Inc.
SSPC	-	Steel Structures Painting Council
MBC	-	Michigan Building Code
OBC	-	Ohio Building Code
INBC	-	Indiana Building Code
IBC	-	International Building Code
UBC	-	Uniform Building Code
UL	-	Underwriters Laboratories, Inc.
USBM	-	United States Bureau of Mines

- B. Wherever specific standard numbers are indicated, i.e., ASTM C150, it shall be understood to mean the latest revision thereof.

**PART 2 PRODUCTS**

Not used.

**PART 3 EXECUTION**

Not used.

**PART 4 SPECIAL PROVISIONS**

Not used.

END OF SECTION

**SECTION 01300  
SUBMITTALS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes requirements for submittals.
- B. Contractor shall adhere to the submittal schedule as submitted under the provisions of the General Conditions. Contractor shall modify the schedule as required to allow sufficient time for submittal review based on current construction schedule.

**1.02 COORDINATION OF SUBMITTALS**

- A. The Contractor shall be responsible for the coordination of submittals and field verifications as required for the various parts of the Work.
- B. All submittals to the Engineer, unless otherwise specified, shall be made only by the Contractor. Direct submittals from subcontractors or suppliers will not be accepted.
- C. All submittals shall reference the Specification item that it covers, the Contractor's name, the Contract title and location, and the date of submission. Submittal shall also indicate whether the information is for the Engineer's review and approval, for record purposes, or for the fulfillment of the operation and maintenance requirements.

**PART 2 PRODUCTS**

**2.01 GENERAL**

- A. Two categories of information are normally required:
  - 1. Shop Drawings for review.
  - 2. Information for Record:
    - a. Operation and maintenance manuals.

**2.02 SHOP DRAWINGS FOR REVIEW**

- A. Shop Drawings:

1. The Contractor shall submit Shop Drawings in accordance with the General Conditions, as required by individual Sections, shown on the Drawings or as directed.
  2. The Contractor shall indicate all variances from the requirements of the Contract Documents in accordance with the General Conditions.
  3. The Contractor shall clearly indicate quantities and the exact intended use of the equipment or material contained in the submittal.
  4. All Submittals shall be tailored to the project by high-lighting appropriate information and deleting or crossing out nonapplicable information or where applicable the Contractor shall provide a data sheet with all necessary information to correctly identify the applicable Sections of the manuals for the actual material or equipment furnished. All options furnished shall be indicated. The Contractor shall highlight and cross out nonapplicable information in a color other than red. Red mark-ups shall be reserved strictly for the Engineer.
  5. Color charts or samples shall be included for all submittals where a color selection by the Owner is required. Original Color Charts (not Color Copies) and samples shall be delivered to the Site, Engineer's RPR or Owner as required. The Engineer shall be copied on the transmittal letter for record purposes.
- B. Samples shall be provided as required in the individual Sections. Samples shall be of the precise material proposed to be furnished. The number of samples and sample size shall be the industry standard unless otherwise stated in the individual Sections.

### **2.03 INFORMATION FOR RECORD**

- A. Material certificates shall be submitted for materials as indicated in the individual Sections. The certificate shall state that the products have been sampled and tested in accordance with the proper industrial and governmental standards and meet the requirements of the Specifications. Certificates shall be signed by an authorized agent of the manufacturer.
- B. Licenses and Permits - The Contractor shall submit copies of all licenses and permits required by Local, State, and Federal laws.
- C. Installation and calibration certificates shall be submitted for equipment as indicated in the individual Sections. These certificates shall indicate manufacturer's satisfaction with the installation, the accuracy of calibration and alignment, and the operation of the equipment. Such certificates must be signed by an authorized agent of the manufacturer.
- D. Progress Schedules shall be submitted in accordance with the General Conditions and Section 01310.
- E. Schedule of Shop Drawings and Sample Submittals shall be submitted in accordance with the General Conditions.
- F. Schedule of Values shall be submitted in accordance with the General Conditions.

## 2.04 OPERATION AND MAINTENANCE INFORMATION

- A. Operation and maintenance manuals shall be submitted as information for the record.
- B. Operation and maintenance manuals shall be submitted as electronic documents prior to the printing of the record copy.
  - 1. Contractor shall provide one electronic copy of the manuals for preliminary review.
  - 2. The final accepted manuals shall be provided as one electronic copy of the manual and one printed copy as specified below.
- C. Electronic manuals shall be in Portable Document Format (PDF) as generated by Adobe Professional Version 7.0 or newer. The PDF file shall be fully indexed using the table of contents, searchable with thumbnails generated. PDF documents shall have bookmark created in the navigation frame for each major entry (Section, Chapter, Tab) in the table of contents. PDF images shall be at a readable resolution typically 300 dpi or higher. Optical Character Recognition (OCR) capture shall be performed on these images text can be searched, selected and copied from the PDF file.
  - 1. The opening view of each PDF document shall be the bookmarks to the left and cover page or table of contents.
  - 2. The PDF file name shall include the Name of Owner, Project title, Contract Number, and Specification Section. Commonly used abbreviations acceptable to the Owner may be used to minimize length of file name.
  - 3. The Contractors Name shall be the electronic "Author" of the PDF document.
- D. This information will be reviewed only if properly identified with Specification Section numbers and only after revised, where necessary, to conform to the Engineer's notes on previous submittals that have been marked "Make Corrections Noted." Manuals shall be tailored to suit the specific equipment provided.
- E. Submittals shall include but not limited to the following:
  - 1. Descriptive literature, bulletins, or other data covering equipment or system.
  - 2. Complete list of equipment and appurtenances included with system, complete with manufacturer serial number and model number.
  - 3. Utility requirements.
  - 4. General arrangement drawing.
  - 5. Sectional assembly.
  - 6. Dimension print.
  - 7. Materials of construction.
  - 8. Certified performance curve.

9. Parts list with assembly drawings.
  10. Recommended spare parts list with part and catalog number.
  11. Lubrication recommendations and instructions.
  12. Schematic wiring diagrams.
  13. Schematic piping diagrams.
  14. Description of associated instrumentation.
  15. Drive dimensions and data.
  16. Operating instructions.
  17. Maintenance instructions including trouble-shooting guidelines, lubrication, and preventive maintenance instructions with task schedule.
  18. Special tools and equipment required for operation and maintenance.
  19. Description of equipment controls.
  20. Pump seal data.
  21. Assembly, installation, alignment, adjustment, and checking instructions.
  22. Confirmation of all corrections noted on Shop Drawings marked "Make Corrections Noted."
  23. Manufacturer's name, address, and telephone number along with manufacturers job number and Purchase Order number.
  24. Manufacturer's local sales representative, address, telephone number.
  25. All installation instructions that were provided to Contractor for use to install equipment.
- F. All manuals shall be tailored to the project by high-lighting appropriate information and deleting or crossing out nonapplicable information or the Contractor shall provide a data sheet with all necessary information to correctly identify the applicable Sections of the manuals for the actual equipment furnished. All options furnished shall be indicated.
- G. Manuals shall be printed on 8-1/2 by 11-inch size with standard three-hole punching. Large manuals shall be submitted in three-ring binders. Small manuals shall be submitted in folders with metal fasteners. Index tabs shall be furnished for all manuals containing data for three or more items of equipment. All manuals shall have a title label on the cover stating the specification item number and item name. A table of contents shall be included in all manuals.
- H. Drawings shall be reduced to 8-1/2 by 11 inch or 11 by 17 inch. Where reduction is not possible, larger drawings shall be folded separately and placed in envelopes which are bound into the manual.
- I. Equipment installations shall not be considered substantially complete until all associated operation and maintenance manual submittals are accepted by the Engineer.



- J. Field modifications to equipment during installation shall be included in the manual so that the manual reflects as-built conditions. Revisions to the manual may be submitted for incorporation into the manual where appropriate. However, the Engineer reserves the right to return all six manuals for revision to reflect as-built conditions.

### **PART 3 EXECUTION**

#### **3.01 IDENTIFICATION OF SUBMITTALS**

- A. All submittals shall have a Submittal Identification & Approval cover sheet attached. A sample of the submittal cover sheet is attached for reference. The form will be provided by Engineer and coordinated with Contractor.

#### **3.02 PRINTING AND DISTRIBUTION**

- A. Contractor shall provide one printed copy of the approved operation and maintenance manual and the electronic copy on portable electronic media device to the Owner.
- B. Contractor shall provide printed copies of submittals, project information or documents required to satisfy the building permit and inspections as may be required by the governing agency.
  - 1. The Engineer will provide the stamped/sealed Contract Drawings for the initial filing of the building permit applications.

### **PART 4 SPECIAL PROVISIONS**

Not used.

END OF SECTION



**Submittal Identification & Approval**

<b>Date:</b>	<b>Spec Section</b>
<b>Submittal No.</b>	<b>Drawing Sheet No.</b>
<b>Description:</b>	
<b>Manufacturer(s)</b>	

**Contractor Comments/Deviations/Measurements**

<i>Contractor</i>	<i>Engineer</i>
Contractor Name  <input type="checkbox"/> Approved <input type="checkbox"/> Forwarded <input type="checkbox"/> Checked  By: _____ Date: _____	<b>SHOP DRAWING REVIEW</b> <b>SUBJECT TO CONTRACT REQUIREMENTS</b> <b>Jones &amp; Henry Engineers, Ltd.</b>  <input type="checkbox"/> Approved <input type="checkbox"/> Approved—Make Corrections Noted <input type="checkbox"/> Amend & Resubmit <input type="checkbox"/> Rejected—See Remarks <input type="checkbox"/> Distribute for Information  <small>REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS. NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS</small> <small>Approval in no way relieves the Contractor of any responsibility for capacities, performance, functions, compliance with Federal, State, and Local Codes; accuracy of dimensions and details; or continuity and completeness of the Project nor does approval constitute or imply any increase in Contract Price.</small> By: _____

**Review Comments**

**SECTION 01310  
CONSTRUCTION SCHEDULES AND DOCUMENTATION**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes the requirements for construction schedules and construction sequences.
- B. This Section includes the requirements for the tracking and documentation of the progress and activities driving the completion of the Work as specified, shown on the Drawings and as directed.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Information for the Record:
    - a. Preliminary Construction Schedule.
    - b. Contractor's Construction Schedule and monthly updates.
    - c. Submittals Schedule.
- B. Contractor shall submit three copies of the 24-inch by 36-inch construction schedule, unless approved otherwise by the Engineer.

**1.03 QUALITY ASSURANCE**

- A. Scheduling conference shall be held prior to the commencement of the construction to discuss the following including, but not limited to:
  - 1. Construction sequencing.
  - 2. Contractor's coordination of subcontractors.
  - 3. Coordination with the Owner's operations.
  - 4. Coordination with other Contractor's or other Work.
  - 5. Project milestones.
  - 6. Owner's partial utilization.

## **PART 2 PRODUCTS**

### **2.01 PRELIMINARY CONSTRUCTION SCHEDULE**

- A. Preliminary construction schedule shall be completed in accordance with the General Conditions and prior to the scheduling conference.
- B. The preliminary schedule shall outline the Contractor's sequencing of tasks, activities, milestones, and all critical path items within the contract time.

### **2.02 CONSTRUCTION SCHEDULE**

- A. The Contractor's submission of the construction schedule will not change the contract completion date, whether reviewed by the Owner and Engineer or not. The Contractor shall incorporate all approved change orders that have resulted in a contract time extension.
- B. The Contractor shall require all subcontractors engaged in the Work to submit to the Contractor construction schedules, as specified herein, for incorporation into the Contractor's construction schedule.
- C. The construction schedule shall include, but not limited to, the following dates:
  - 1. Notice to Proceed.
  - 2. Substantial Completion and Final Completion.
  - 3. Commencement of on-site operations.
  - 4. Milestones as specified, shown on the Drawings, and as directed.
  - 5. Submittal schedule per the General Conditions.
- D. The Contractor shall incorporate into the construction schedule all constraints and work restrictions specified or otherwise required by the Contractor's operations, including, but not limited to, the following:
  - 1. Construction sequencing.
  - 2. Contractor's coordination of subcontractors.
  - 3. Coordination with the Owner's operations.
  - 4. Coordination with other Contractor's or other work.
  - 5. Project milestones.

### **2.03 UPDATING CONSTRUCTION SCHEDULE**

- A. The Contractor shall keep the construction schedule current to the progress of the Work continually through closeout of the project. The construction schedule shall be submitted monthly for the Engineer's review.

#### 2.04 WEEKLY CONSTRUCTION SCHEDULE

- A. The Contractor shall submit a schedule of his work for each week. This schedule shall identify the foreman of each work crew and the location and type of work the crew will be doing each day. It shall be delivered no later than 4:00 p.m. of the next to last regular workday of the preceding week to the Resident Project Representative's office.

#### PART 3 EXECUTION

##### 3.01 COORDINATION

- A. All phases of the Work requiring interference with normal operations of the existing facilities shall be scheduled in accordance with agreements among the Contractor, Owner, and Engineer. The Contractor shall notify the Owner at least one week before such Work is to begin.

#### PART 4 SPECIAL PROVISIONS

##### 4.01 SCHEDULED NON-WORK DAYS

- A. The Contractor shall restrict Work to 8:00 am to 5:00 pm Monday through Friday unless otherwise authorized by the Owner or Engineer. Contractor shall consider the following list of holidays as mandatory non-work days (unless permitted, in writing, by the Owner), all of which shall be incorporated into the construction schedule:
1. New Year's Day.
  2. Martin Luther King Day.
  3. President's Day.
  4. Good Friday.
  5. Memorial Day.
  6. Fourth of July.
  7. Labor Day.
  8. Columbus Day.
  9. Veteran's Day.
  10. Thanksgiving Day.
  11. Day after Thanksgiving Day.
  12. Christmas Eve Day.
  13. Christmas Day.

END OF SECTION

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**SECTION 01350  
COMMON PRODUCT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes general requirements for all materials, equipment and systems furnished or installed under this project.
- B. Additional specific requirements included under a particular Section shall take precedence.
- C. This Section includes, but is not limited to, the following procedural and administrative requirements:
  - 1. Product Delivery Storage and Handling.
  - 2. Warranties.
  - 3. Quality Assurance and Control.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and related specification sections.
- B. The specification sections and Drawings contain the specific submittal requirements.

**1.03 QUALITY ASSURANCE**

- A. Where Contractor is required to provide design services or certification of the design, the specified product, equipment or system shall comply with the specified criteria.
  - 1. Contractor shall submit a written request for clarification when specified criteria is incomplete or insufficient.
- B. Manufacturer's name, make, model number and other designations provided in the contract documents are to establish the significant characteristics, including but not limited to, type, function, dimensions and physical properties, performance, and appearance for the purpose of evaluating comparable products. Contractor shall verify product, equipment or system proposed meets or exceeds the requirements as specified or shown on the Drawings.

**1.04 PROJECT HANDLING**

- A. Schedule delivery to minimize the time goods are kept in storage.
- B. Deliver goods to Site in manufacturer's original packaging.
- C. Inspect the goods to determine if there is visible damage to the packaging.

1. The packaging shall be removed in a manner that will allow resealing for storage.
  2. If packaging cannot be removed and reused, the goods shall be repackaged per the manufacturer's recommendations.
- D. Goods that are susceptible to damage by the environmental or project conditions, including but not limited to, switchgear, motor control centers, panelboards, instrument control panels, fixtures shall be stored in a controlled environment per the manufacturer's recommendations. If no such area is available at the time such equipment is received, such space shall be provided by the Contractor at no expense to the Owner.
- E. Where construction is in roads or streets, that portion of the right-of-way not required for public travel may be used for temporary storage purposes unless otherwise prohibited. Materials shall not be stored in areas where such storage creates a hazard. Any other additional space required for construction or storage of materials and equipment shall be obtained by the Contractor at his expense.
- F. The Contractor shall confine his equipment, the storage of materials and equipment, and the operations of his workers to areas permitted by law, ordinances, permits, and the requirements of the Contract Documents, and shall not unreasonably encumber the premises with materials or equipment.

#### **1.05 GUARANTEE**

- A. Manufacturer's warranty, extending beyond two-years after substantial completion for the specified product, equipment or system shall be provided to the Owner and endorsed by the manufacturer.
- B. Requirements for warranties extending beyond two-years after substantial completion are described in individual Sections of these specifications.
- C. Manufacturer's limitations and disclaimers shall not relieve the Contractor from warranty obligations under the Contract Documents.

### **PART 2 PRODUCTS**

#### **2.01 SHOP PAINTING**

- A. Non-galvanized ferrous surface shall be painted.
- B. Shop painting of ferrous surfaces shall be as follows:
  1. Surfaces shall be thoroughly cleaned of dirt, grease, oil, rust, scale, or other foreign substances. All metal surfaces shall, as a minimum, be abrasive blasted in accordance with SSPC-SP6, Commercial Blast Cleaning.
  2. Surfaces shall receive a shop coat of a primer compatible with the finish coating to be used by the Contractor.



**2.02 GALVANIZING**

- A. Where galvanized metal is indicated, unless otherwise specified, galvanizing shall conform to ASTM A123 (Hot Dip Galvanized). Threaded parts and hardware shall be galvanized in conformance with ASTM A153.

**2.03 REGULATORY REQUIREMENTS**

- A. Materials, equipment, coatings, and chemicals in contact with potable water or water being treated for potable water use shall comply with the applicable NSF Standards.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Products shall be installed in accordance with the manufacturer's instructions and Contract Documents.
- B. Required appurtenances including but not limited to, anchors, grout, and leveling shims, shall be provided.

**PART 4 SPECIAL PROVISIONS**

Not used.

END OF SECTION

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**SECTION 01410  
LABORATORY SERVICES**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. The Contractor shall retain an independent laboratory to perform testing and inspection(s) as required.
- B. The Owner shall perform required testing on water mains prior to placing new mains into service.
- C. The Owner has retained SME Engineering to perform required density testing, concrete, and asphalt testing.
- D. Testing, inspection(s) and quality control are required to certify compliance with the Contract Documents.
  - 1. The laboratory services do not relieve the Contractor from the responsibility of compliance with the Contract Documents
  - 2. Any test required by the Owner shall not relieve the Contractor from the responsibility of compliance with the Contract Documents.
  - 3. Any test required by the Owner shall not relieve the Contractor from the responsibility of supplying certificates from manufacturers or suppliers to demonstrate compliance with the Specifications.
- E. Specific testing, inspection(s) and quality control requirements are specified in the individual Sections of the specifications.
- F. Specific testing, inspection(s) and quality control requirements of any Federal, State or Local authorities are specified in the related sections of Work.
- G. Testing of materials or equipment for compliance with various national or technical society standards and ordinarily performed by manufacturers, and shop and field tests of equipment are not included under this Section but shall be performed by the Contractor or his supplier as specified elsewhere.
- H. Contractor may conduct material or field test(s), inspection(s) and quality control as they deem necessary.
  - 1. Should the Contractor, at any time, desire the Owner to consider the results of such testing, inspection(s), and quality control, such results shall be certified by an independent testing laboratory acceptable to the Owner. Any testing of this nature shall be conducted at the Contractor's expense.

## 1.02 SUBMITTALS

- A. Submittals of all required field and laboratory test results shall be made by the independent laboratory as soon as they are available to the Owner and Engineer directly.
1. Statement of Compliance per 1.03

## 1.03 QUALITY ASSURANCE

1. The laboratory shall be a recognized and independent commercial laboratory with experience in conducting the required tests.
2. Laboratory shall certify compliance with ASTM E548, ASTM E329, and ASTM C1093 when masonry construction is part of the project scope. In lieu of ASTM certification, the laboratory may submit written documentation demonstrating experience and training relevant to the inspections to be performed. The documentation shall demonstrate experience with projects of similar complexity and quantity of inspections as the project herein.
3. Testing, inspection(s) and quality control shall be certified by a professional engineer specialized in the related field and in the state where the Site is located.

## PART 2 PRODUCTS

### 2.01 TESTS

- A. Aggregates, Bedding Material, and Special Backfill - For each type of material, the laboratory shall perform an ASTM C136 sieve and screen analysis to determine compliance with the contract documents.
1. Retests shall be performed until the Specifications are met.
  2. Retest shall be performed each time the source of material is changed.
- B. Selected Backfill - At the discretion of the Engineer, but in no case, more than one test for each 1,000 cubic yards or portion thereof, the laboratory shall perform an ASTM C136 sieve and screen analysis to determine whether the material is suitable for backfilling purposes.
- C. Mix Designs:
1. For each type of controlled density fill, concrete, and asphalt, the laboratory shall review, perform test(s).
  2. Review, perform test(s) and approve change in source of materials.
  3. The asphalt design shall be made in accordance with ASTM D1559, the Marshall Method of Mix Design and as specified.
  4. Approved mix designs shall include sieve analyses and suppliers' certificates for materials incorporated in the mix.

- D. Compaction Tests:
  - 1. For each type of backfill material, the laboratory shall determine the moisture-density curve according to ASTM D698.
  - 2. Using ASTM D2922 test methods, the laboratory shall determine the density of placed backfill.
  - 3. Retests shall be performed if the compaction requirements stated in the individual Sections are not met.
  - 4. The Engineer may at his discretion require the sand cone (ASTM D1556) or the balloon (ASTM D2167) tests for density and compaction to verify questionable results of the ASTM D2922 tests.
- E. The independent testing laboratory shall test and report the soil bearing capacity under all foundations and slabs on grade. The testing shall be conducted at regular intervals in all directions. The independent testing laboratory shall immediately notify both the Contractor and Engineer of any such test not meeting the presumed soil bearing capacity contained in the Structural Design Data on the Drawings.
- F. Asphalt and Concrete Quality Control Testing - Perform tests as indicated in Section 02600 and as required by the City of Kalamazoo.
- G. Miscellaneous Tests - Perform all other tests requested in the individual Sections of the Specifications.

## **2.02 PLANT INSPECTIONS**

- A. Inspect and certify asphalt plants as indicated in Sections 02600 and concrete plants as required by the City of Kalamazoo.

## **2.03 EQUIPMENT**

- A. Provide all necessary equipment to extract and store samples and perform the required tests.

## **PART 3 EXECUTION**

### **3.01 COORDINATION**

- A. The Contractor shall provide the source of all materials requiring testing and shall arrange access for the independent laboratory to obtain representative samples and perform required tests at the material source. The information shall be supplied in advance to allow time for testing and reporting. Concrete information shall be supplied at least 45 days prior to the first concrete placement.
- B. Contractor shall coordinate activities to accommodate the required quality assurance/control.

1. Contractor shall not compromise the requirement for quality assurance /control in order to maintain the schedule.
- C. The laboratory shall conduct tests on materials and in locations as directed by the Resident Project Representative.
- D. All tests shall be performed in accordance with the proper test methods mentioned above and in the individual Sections. Results shall be compared to the required values included in the individual Sections.

**3.02 PREPARATION**

- A. Contractor shall prepare all Work to be tested in accordance with the testing procedures as directed and required by independent laboratory, regulatory agency, or Owner and Owner's representative.

**3.03 PROTECTION**

- A. Contractor shall at the completion of testing, repair damage to construction in accordance with these specifications.
- B. Contractor shall be responsible for the protection regardless of the responsibility for quality assurance/control.

**PART 4 SPECIAL PROVISIONS**

Not used.

END OF SECTION

**SECTION 01568  
POLLUTION CONTROL**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes the requirements for pollution control.

**PART 2 PRODUCTS**

**2.01 GENERAL**

- A. Dust palliatives shall conform to MDOT Item 922.08.

**PART 3 EXECUTION**

**3.01 MICHIGAN GENERAL REQUIREMENTS**

- A. The Contractor is responsible for following an erosion control plan in accordance with permits required under Act 451, Part 91, as amended (Soil Erosion and Sedimentation Control), Part 303 (Wetland Protection, formerly Act 203), Part 301 (Inland Lakes and Streams, formerly Act 346), Part 31, (Water Resources Protection, Floodplain Regulatory Authority, formerly Act 245 as amended by Act 167), and Part 31 (Water Resources Protection), National Pollutant Discharge Elimination System (NPDES). Secure Federal Section 404, Clean Water Act of 1972, permits, if required. Provide temporary and permanent erosion and sedimentation controls according to the permits.
- B. It shall be the responsibility of the Contractor to prevent or limit pollution of air and water resulting from his operations.
- C. The Contractor shall perform Work required to prevent soil from eroding or otherwise entering onto all paved areas and into natural watercourses, ditches, and public sewer systems, and to prevent dust attributable to his operations from entering the atmosphere.
- D. Water containing suspended material from any part of the Contractor's operations shall be clarified before discharging to drains or streams.
- E. No fill, topsoil, or heavy equipment shall be stored within 200-feet of a stream bank or within the drip line of a treed area.
- F. Excess soil that is stockpiled shall be removed or regraded within 15 days of the completion of construction.

**3.02 STREETS, SIDEWALKS AND DRIVEWAYS**

- A. Streets, haul roads, and detours and bypass roads shall be swept by automatic self-contained sweepers.

- B. Excessive dirt on pavements shall be removed by means of hand shoveling or appropriate mechanical equipment and the area swept as directed above.
- C. Sidewalks and driveways shall be cleaned by means of shovels and hand brooms or appropriate mechanical equipment.
- D. Dust on unsurfaced streets or parking areas and any remaining dust on surfaced streets shall be controlled with calcium chloride dust palliative.
- E. The Contractor shall comply with the above requirements on a daily basis. If the Contractor fails to perform the above Work in a satisfactory manner, all Work, except cleanup operations, shall be stopped until the Contractor has complied with the above requirement.

### **3.03 EROSION AND SEDIMENT CONTROL**

- A. The Contractor shall initiate appropriate vegetative practices on all disturbed areas to remain dormant (undisturbed) for more than 45 days within seven days.
  - 1. Such practices may include: temporary seeding, permanent seeding, mulching, matting sod stabilization, vegetative buffer strips, phasing and protection of trees.
- B. Permanent or temporary soil stabilization shall be applied to disturbed areas within seven (7) days after final grade is reached on any portion of the Site.
- C. When seasonal conditions prohibit the application of temporary or permanent seeding, non-vegetative soil stabilization practices, such as mulching and matting, shall be used.
- D. A stabilization construction entrance shall be provided to reduce vehicle tracking of sediment. The paved street adjacent to the Site entrance shall be swept a minimum of daily, or as needed, to remove any excess mud, dirt, or rock being tracked from the Site.
  - 1. Dust and sediment along any street due to construction on this Site is to be swept a minimum of once at the end of the day or as necessary to prevent a build-up of dust and soil on the pavement surface.
- E. Dump trucks hauling from the construction site shall be covered with a tarpaulin.
- F. No more than 200-feet of trench shall be open at any given time. Trench opening, laying of pipe, and backfilling should occur so as to minimize the amount of disturbed area.
- G. The Contractor shall minimize the width of his work area.
- H. Existing trees, shrubs, and other ground cover vegetation shall be preserved where possible. Tree removal will be limited to that necessary for construction and will be limited further to the permanent easement wherever possible. No tree removal will be permitted outside the temporary easement.
- I. Storm water runoff and natural stream flow shall be intercepted or diverted when originating upgrade away from the construction site so as to minimize the amount of flow over the construction site.



- J. All dewatering flows are to be settled in siltation basins or directed through filters before discharge to stabilized sites, such as stream or storm sewers, and not onto exposed soils, stream banks, or any other sites where the flow could cause erosion.
- K. When construction occurs near storm sewer inlets, erosion control measures such as inlet filters or hay bales shall be used to prevent silt from entering the storm sewers.
- L. The clean-up and disposal of excess excavated material shall be done as soon as practical after laying of the pipe. However, clean-up work shall not fall behind the pipe laying more than 800-feet. Should the Contractor not keep his clean-up within the aforementioned distance, Work shall stop until the clean-up work is accomplished.

### 3.04 MICHIGAN SEDIMENT CONTROL

- A. Contractor shall control erosion and trap sediment from all sites remaining disturbed for more than 14 days. Such practices shall include among others, sediment traps, sediment basins, silt fences, and storm drain inlet protection. Silt Fence Fabric shall be in accordance with MDOT Item 910.04 Silt Fence Geotextile.
- B. Timing - Sediment control structures shall be functional throughout earth-disturbing activity. Sediment ponds and perimeter sediment barriers shall be implemented as the first step of grading and within seven days from the start of grubbing. They shall continue to function until the upslope development area is restabilized.
- C. Settling Ponds - Concentrated storm water runoff from disturbed areas flowing at rates which exceed the design capacity of sediment barriers shall pass through a sediment settling pond. The facility's storage capacity shall be 67 cubic yards per acre of drainage area.
- D. Sediment Barriers - Sheet flow from runoff from denuded area shall be intercepted by sediment barriers. Sediment barriers, such as sediment fences or diversions directing runoff to settling facilities, shall protect adjacent properties and water resources from sediment transported by sheet flow.
- E. Other erosion and sediment control practices shall prevent sediment-laden water from entering drain systems. Unless the storm drain system drains to a settling pond. These practices shall divert runoff from distributed areas and steep slopes where practicable and stabilize channels and outfalls from erosive flows.

### 3.05 CONSTRUCTION OF SLOPES

- A. The Contractor shall comply with the following requirements when working on slopes exceeding 4:1.
  - 1. The pipeline shall be constructed during dry weather, low flow periods as determined by the Engineer. The construction time for this Work shall be limited to the shortest time possible in order to minimize environmental impacts.

2. Construction equipment shall be limited to trenching equipment or rubber tired backhoes in order to prevent soil erosion and maintain slope stabilization.
3. Biodegradable mesh shall be used for slope stabilization. The mesh shall cover the entire width of disturbed ground.
4. The trench shall be backfilled immediately after installation of the pipe. The disturbed areas shall be graded, seeded, and mulched within 24 hours after backfilling. The Contractor shall maintain all seeded and mulched areas in accordance with the specifications until final acceptance of the Work.
5. The Contractor shall place straw or hay bales at the base of the slopes for sedimentation control. The bales shall be placed prior to construction of the pipeline and shall remain until final seeding has germinated and become established.

### **3.06 RESERVED**

### **3.07 PROHIBITED CONSTRUCTION ACTIVITIES**

- A. Disposing of excess or unsuitable excavated material in wetlands or floodplains, even with the permission of the property owner.
- B. Locating stockpile storage areas in environmentally sensitive areas.
- C. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, any wetlands, any surface waters, or outside the easement limits.
- D. Pumping of sediment-laden water from trenches or other excavations directly into any surface waters, any stream corridors, any wetlands, or storm sewers; all such water will be properly filtered or settled to remove silt prior to release.
- E. Discharging pollutants such as chemicals, fuels, lubricants, bituminous materials, raw sewage and other harmful waste into or alongside of rivers, streams, impoundments, or into natural or man-made channels leading thereto.
- F. Permanent or unspecified alteration of the flow line of any stream.
- G. Damaging vegetation outside of the construction area.
- H. Disposal of trees, brush, and other debris in any stream corridors, any wetlands, any surface waters, or at unspecified locations.
- I. Open burning of project debris without a permit.
- J. Discharging injurious silica dust concentrations into the atmosphere resulting from breaking, cutting, chipping, drilling, buffing, grinding, polishing, shaping or surfacing closer than 200 feet to places of residences or places of human occupation.

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- K. Storing construction equipment and vehicles and/or stockpiling construction materials on property, public or private, not previously specified on the Drawings or not authorized by the Owner or Engineer for such purpose.
- L. Running well point or pump discharge lines through private property or public property and rights-of-way without the written permission of the property owner and the consent of the Engineer.

**PART 4 SPECIAL PROVISIONS**

None

END OF SECTION

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**SECTION 01800  
CONSTRUCTION SURVEY WORK**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes the furnishing of all labor, materials, equipment, and services necessary for the completion of Construction Survey Work in accordance with the Contract Documents.
- B. This Work consists of the layout of all lines and grades shown on the Drawings or as altered or modified by the Engineer, control survey and of miscellaneous survey work related to construction of the project.

**1.02 PROJECTION**

- A. The Contractor shall protect and preserve the established reference points and monuments.
- B. Whenever monuments are encountered in the line of Work, whether shown on the Drawings or not, the Contractor shall notify the Engineer in writing at least 24 hours in advance of moving same, and under no circumstances is such a stone or other monument to be removed or disturbed by the Contractor or by any of his men without a written order of the Engineer and only when a registered surveyor representative of the Owner is present.

**1.03 REPLACEMENT OF LOST SURVEY POINTS**

- A. Whenever a reference point or monument is lost or destroyed or requires relocation, the Contractor shall, at his own expense, accurately relocate and replace all such points so lost, destroyed, and moved.

**1.04 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Information for the Record:
    - a. Layout Sheets including, but not limited to, Benchmarks both temporary and permanent and Pipeline layout staking.
    - b. Field Notes and survey log.
- B. Contractor shall provide the Engineer and Resident Project Representative, no later than five working days prior to installation, all Logs, reports, field notes, drawings and documentation as specified shown on the Drawings or directed.

- C. No pipeline or related Work shall be considered for payment until all logs, reports field notes drawings and documentation as specified, shown on the Drawings or directed has been submitted to the Engineer or Engineers representative.

## **PART 2 PRODUCTS**

### **2.01 CONSTRUCTION STAKING**

- A. All construction points shall be marked with a wooden hub and nail or a PK nails in concrete and asphalt pavements and walks.
- B. All points located in areas of heavy underbrush, inaccessible or limited site distance shall be identified with a wood lath extending a minimum of 3 feet above the ground.
- C. All points located in paved surfaces shall be clearly marked with paint. Contractor shall obtain written permission from owner to use paint for marking.

## **PART 3 EXECUTION**

### **3.01 COORDINATION**

- A. The Contractor shall provide field forces necessary to lay out the location, alignment, elevation, and grade of the Work shown on the Drawings and in conformance with the control points and benchmarks shown on the Drawings.
- B. The Contractor shall use competent personnel and suitable equipment for the layout of the Work required. If the layout Work involves more than a few simple distance and elevations from established reference points, the Contractor shall employ a Registered Surveyor to supervise the layout Work.
- C. Contractor shall furnish the necessary labor to assist the Engineer in checking the installation, if required.

### **3.02 EXISTING CONNECTION POINTS**

- A. The Contractor shall verify critical elevation points of the existing utilities prior to commencing installation of Work. Critical points shall include all points where new Work connects to existing utilities and existing utilities that could be conflicts with Work. All data shall be provided to the Engineer before commencing Work.

### **3.03 RIGHTS-OF-WAY AND EASEMENTS**

- A. Rights-of-way or easement(s) shall be staked at points along the boundaries so that at least two stakes can be seen distinctly from any point along the boundary line. The staking shall not exceed 200-feet in any direction. All points of change in width or direction of the rights-of-way or easement(s) boundary line shall be staked.
- B. When the Contractor performs construction and the zone of influence is within 10-feet of a rights-of-way or easement(s) boundary line, they shall place stakes properly

identifying points of change in width or direction of the boundary line and at points along the boundary line not to exceed 25-feet.

### 3.04 PAVEMENT

- A. The Contractor shall establish a layout for location and grade on both sides of the road and 5-feet off the edge of the pavement or back of curb. Layout line shall consist of stakes set at station intervals necessary for the topography and environment to assure conformance to planned line and grade. Stakes shall be set at a minimum every 50-feet, at all vertical and horizontal points of curvature and points of tangent, and at all vertical high or low points.
- B. Stakes for line and grade of pavement and curb shall be set at station intervals necessary for the topography and environment, not to exceed 50-feet, and at low and high points of vertical curves to assure conformance to planned line and grade.

### 3.05 PIPE IN OPEN CUT

- A. The Contractor shall utilize a laser beam for establishing line and grade when installing pipeline in open-cut construction. In order to maintain control during pipeline installation and to obtain the required field data for the record documents (G.C. 6.19) the Contractor shall establish construction and layout stakes. These stakes shall be based on the contract documents and the survey control data as provided by the Engineer.
- B. The construction staking shall be placed along the pipeline route at and at location of new manholes, valves, deflections both vertical and horizontal and as specified, shown on the Drawings or as directed. All construction layout stakes shall be offset at a minimum of 10-feet and at a right angle to the pipe line route. Layout shall be referenced to the downstream manhole or valve, in addition it may reference survey of baseline stationing.
- C. Contractor shall provide to the Engineer, no later than five working days prior to the installation of the pipeline, all information of the completed construction layout staking. This information shall include but not be limited to stationing, elevations, control points, project coordinates, offset direction and distance for all deflections both horizontal and vertical, manholes and all other points as specified, shown on the Drawings and directed by the Engineer.
- D. The grade of pipe in open-cut, whether placed by laser beam or other approved methods, shall be checked using surveying equipment. The Contractor shall have a surveyor's level and level rod on the Site at all times when pipeline and appurtenances are being installed. The level rod shall be equipped with an attached "shoe" extension on the bottom for placing on the pipe invert. The pipe invert elevation shall be checked at a maximum of 50-feet intervals or more often as directed by the Engineer. Checks will

be performed by the Contractor and results, including but not limited to layout station shall be recorded in contractor's field log.

- E. The Contractor shall furnish all equipment and labor and check his alignment from the offset stakes. Contractor shall record all information in the log.
- F. Any inspection or checking of the Contractor's layout by the Engineer shall not relieve the Contractor of his responsibility to secure the proper dimensions, grades, and elevations of the Work.

**3.06 RESERVED**

**3.07 RESERVED**

**3.08 LOCATION OF STRUCTURES AND UNDERGROUND PIPING**

- A. The location of new structures and underground utilities shall be based on the dimensions, coordinates, and requirements shown on the Drawings or specified.
- B. If it is stated on the Drawings or specified that the location and/or elevation of the new structure or underground piping shall depend on the location of existing underground or otherwise hidden facilities, those existing underground or hidden facilities shall be located by the Contractor prior to his determination of the location and/or elevation of the new facilities. This requirement shall override any other specific location dimensions or coordinates shown on the Drawings for that structure or piping.
- C. If the location or elevation determined by the Contractor, in accordance with the above requirements, appears to cause conflicts with existing structures or utilities or appears to potentially cause functional issues with either the existing or new structures or utilities, the Contractor shall notify the Engineer immediately.
- D. In no case, shall coordinates or other location information be extracted or interpolated from the electronic CAD files that may be provided to the Contractor by the Owner or Engineer without the specific approval of the Engineer.

**3.09 CURB AND GUTTER ELEVATIONS**

- A. In locations where the existing curb and gutter shall be removed as part of the Work, the Contractor shall be responsible for reconstructing the existing curb and gutter to match existing alignment, elevations and grades. The Contractor shall be responsible for collecting existing curb and gutter elevation information prior to commencing the Work.

**3.10 BENCHMARKS/VERTICAL CONTROL**

- A. Benchmarks have been set for survey and construction reference purposes.
- B. The Contractor shall protect and transfer these benchmarks as needed to complete the Work.



**3.11 HORIZONTAL CONTROL**

- A. The centerline stationing provided is not based upon physical control points found or established as part of the design.
- B. The Contractor shall establish horizontal control as necessary.

**PART 4 SPECIAL PROVISIONS**

**4.01 REGISTERED SURVEYOR**

- A. The Contractor shall employ the services of a registered surveyor for the initial layout and staking of the project. The Registered Surveyor shall be utilized at any time when reestablishing control points, elevations and on any redesign or extension of the Work. All survey Work shall be as specified, shown on the drawings or as directed.

END OF SECTION

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**SECTION 02100  
CLEARING AND GRUBBING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes grubbing, scalping, and otherwise clearing of the construction site in accordance with the Drawings and as specified herein or ordered.
- B. This Work includes the removing and disposing of all trees, stumps, vegetation, and debris as necessary to accommodate new construction or to recontour the Site, and the preservation of all vegetation and other objects designated to remain.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Information for the Record:
    - a. Spoil Site Permit - When the material and debris resulting from the clearing and grubbing operations are disposed of at locations off the project, the Contractor shall obtain and submit as specified written permission from the owner of the property upon which the material and debris are to be placed.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Paint required for cut or scarred surfaces of trees or shrubs designated to remain shall be a suitable asphaltum base paint.

**PART 3 EXECUTION**

**3.01 COORDINATION**

- A. Clearing and grubbing shall be performed only after the Site has been surveyed and staked as required and in accordance with Section 01800.

**3.02 PREPARATION**

- A. The Contractor shall protect and preserve all land survey monuments or property corners along the line of his work.
  - 1. Where monuments, irons, or property corners are disturbed or removed due to operations under this Contract, the Contractor, at his own expense, shall

employ the services of a registered land surveyor to establish, reset or replace such monuments, irons, or property corners.

- B. The Contractor shall not damage or destroy trees or shrubs nor remove or cut them without authorization by the Owner. All trees and shrubs except those ordered to be removed shall be adequately protected by the Contractor. No excavated material shall be placed so as to damage such trees and shrubs.
  - 1. Trees and shrubs damaged by the Contractor shall be replaced with new stock of similar size and age, or with other stock size and age satisfactory to the Owner, at the proper season, and at the sole expense of the Contractor. Scarred surfaces shall be treated as indicated in Part 2.
- C. When or where any direct or indirect damage is done to public or private property resulting from Contractor's operations, such property shall be restored by the Contractor, at his expense, to a condition equal or better than that existing before such damage was done or the Contractor shall make good such damage in manner acceptable to the owner of the property.
- D. Prior to clearing and grubbing operation, the Owner, Contractor, and Engineer shall walk the site to designate the trees to be removed or to be protected. Trees shall be marked with paint and a universally accepted designation.

### **3.03 CLEARING AND GRUBBING**

- A. Only those trees and shrubs shall be removed that are in actual interference with excavation or grading work and such removal shall be subject to approval by the Owner. The Owner reserves the right to order additional trees or shrubs removed at no additional cost if, in his opinion, they cannot be maintained or have been damaged by the Contractor's operations.
- B. All trees, stumps, vegetation, and debris not designated to remain shall be cleared and/or grubbed.
- C. In locations to be seeded, stumps, roots, and other protruding obstructions shall be removed to a minimum of 6 inches below the final ground surface.
- D. At all times, the Contractor shall remain within the property lines and/or easement areas.
- E. Except in areas to be excavated, all holes resulting from the clearing and grubbing operations shall be backfilled and compacted in accordance with Section 02200.

### **3.04 SCALPING**

- A. Areas of excavation or embankment shall be scalped of brush, roots, sod, grass, crop residue, decayed vegetable matters, and other organic materials.
- B. Scalping depth shall be only as required to remove the above. Scalping of topsoil is not included under this Section.

**3.05 DISPOSAL OF DEBRIS**

- A. Debris resulting from the clearing and grubbing operations shall be disposed of at Contractors designated spoil sites in a legal manner, in full compliance with applicable codes and ordinances.

**3.06 TREE AND VEGITATION REPAIR**

- A. The Contractor shall employ an arborist where necessary for the repair and protection of a tree and vegetation
- B. Contractor shall repair injuries to bark, trunks, limbs, and roots of remaining vegetation by properly dressing, cutting, pruning, bracing and painting utilizing tree surgery methods, tools and materials recommended by the Arborist.

**PART 4 SPECIAL PROVISIONS**

**4.01 TREE REMOVAL**

- A. A tree is defined as a live, dying or dead plant with a minimum diameter of 3 inches with snags at 4-feet above the ground surface and a minimum height of 12-feet above the ground surface.

END OF SECTION

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**SECTION 02110**  
**REMOVAL OF STRUCTURES AND OBSTRUCTIONS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes demolition of existing structures and removal of pavement, piping, and equipment necessary to clear space for new construction and/or to rehabilitate existing construction.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
1. Information for the Record:
    - a. The Contractor shall submit, as specified, a copy of a signed permit from the owner of the property upon which the debris, removed under this Section, will be disposed.
    - b. Dust and noise control measures
    - c. Record documents, in accordance with the General Conditions, and photograph or video recording indicating the location of, but not limited to, the following existing, new, and abandoned:
      - 1) Utilities.
      - 2) Mechanical.
      - 3) Electrical.
      - 4) Structural.
      - 5) Any embedded items.
    - d. Inventory and documentation list for removed and salvaged materials for the Owner.

**1.03 QUALITY ASSURANCE**

- A. Contractor shall execute the Work in compliance with all federal, state, and local codes. Any removal or demolition shall not leave the Owner in violation of any such regulations or codes unless approved by the Owner and Engineer.

**1.04 PROTECTION**

- A. Structures shall be removed in such a manner as not to damage any portions of the existing structure which are to remain in place.

## **PART 2 PRODUCTS**

### **2.01 FILL MATERIAL**

- A. Fill material shall be in accordance with Section 02200.

## **PART 3 EXECUTION**

### **3.01 COORDINATION**

- A. Demolition work extending beyond the limits as specified, shown on the Drawings, or as required, will be considered unauthorized. The Contractor, at no additional cost to the Owner, shall repair said damage to a condition equal to or better than existed prior to commencement of the Work.
- B. Existing structures and equipment which are damaged in appearance or function by performance of demolition work shall be replaced or repaired, at Owner's discretion and to an approved condition, by the Contractor at no increase in Contract Price.

### **3.02 PAVEMENTS, SIDEWALKS, CURBING AND SIMILAR STRUCTURES**

- A. Removal of existing pavements, sidewalks, curbing, and similar structures shall end at an existing joint or a sawed joint. Sawed joints shall be straight, neat, and free from chipped or damaged edges.
- B. For removal of non-reinforced concrete, the minimum depth of saw cut shall be 3 inches.
- C. For removal of reinforced concrete, the depth of saw cut shall be sufficient to cut the steel unless specified otherwise.
- D. If the concrete is coated with a bituminous surface or other material, the depth shall be sufficient to cut into the concrete, not including the coating depth, as specified above.

### **3.03 RESERVED**

### **3.04 MANHOLES, CATCH BASINS, INLETS AND SIMILAR STRUCTURES**

- A. Existing manholes, catch basins, inlets, and similar structures designated to be removed shall be completely removed.
- B. Manholes, catch basins, inlets, and similar structures designated to be abandoned shall be removed to an elevation of at least 3 feet below the finished subgrade or ground surface. The remaining void shall be filled with special backfill material compacted to 100% optimum density per ASTM D698 or controlled density fill, CDF if permitted by the Engineer. All sewer openings in manholes located on sewer lines that are not to be filled, shall be plugged with 8-inch minimum thickness masonry plug.



- C. Sewers designated to remain in service and connected to structures indicated to be removed or abandoned shall be rebuilt through the area with new pipe. Sewer flow shall be maintained between removal and replacement operations. Abandoned sewers shall be sealed and made watertight with approved precast stoppers or masonry bulkheads.
- D. All castings or hydrants salvaged from abandoned or removed structures shall remain the property of the Owner, if requested by the Owner, and shall be cleaned and transported by the Contractor to a site designated by the Owner or incorporated in the Work where called for on the Drawings, scheduled, or so directed. If Owner decides salvaged materials are not wanted, the Contractor shall dispose of them at no additional cost to the Owner.

**3.05 ABANDONMENT OF PIPE, CONDUIT AND SIMILAR STRUCTURES**

- A. Ends of pipe designated to be abandoned shall be sealed with approved masonry bulkheads or factory caps and plugs.
- B. Sites disturbed by the abandonment work shall be restored as part of this Work.

**3.06 GUARDRAIL AND FENCE**

- A. Where so required by the Drawings, existing guardrail and fence shall be carefully dismantled and stored for reuse or for salvage by the Owner.
- B. Wood posts and other materials not considered salvageable by the Owner shall be disposed of by the Contractor.

**3.07 RESERVED**

**3.08 RESERVED**

**3.09 PRIVATE SIGNS**

- A. Private and commercial signs shall be carefully removed and relocated as directed by the Owner.

**3.10 DISPOSAL OF DEBRIS**

- A. All debris resulting from demolition operations; i.e., broken concrete, masonry, pipe, miscellaneous metal, trees and brush, equipment, etc., shall be trucked from the Work site by the Contractor and disposed of at spoil sites in a legal manner, in full compliance with applicable codes and ordinances.
- B. The Contractor shall police the hauling of debris to ensure that all spillage from haul trucks is promptly and completely cleaned up.

**3.11 BACKFILLING**

- A. All trenches, holes, and pits resulting from the removal and abandonment of any structure or obstruction shall be backfilled and compacted in accordance with the requirements of Section 02200.

**3.12 RESERVED**

**3.13 USE OF EXPLOSIVES**

- A. The use of explosives for the Work of removal of structures and obstructions is PROHIBITED.

**3.14 PIPING REMOVAL**

- A. At the location where pipe removal stops, the remaining pipe end shall be capped. The cap must be pressure tight and restrained from movement due to pressures inside the pipe.
- B. Piping removal includes, but not limited to, all hangers, stands, and anchoring devices.

**3.15 RESERVED**

**PART 4 SPECIAL PROVISIONS**

**4.01 SCHEDULE OF REMOVALS**

- A. The following list of items once removed shall remain the property of the Owner and shall be delivered to the Owner-designated location.
  - 1. Castings and Covers

**4.02 BURIED SANITARY SEWER AND WATER MAIN REMOVAL**

- A. As shown on the Drawings, existing water main or sanitary sewer main piping, accessories, and appurtenances shall be removed within limits shown on the Drawings or as specified.
- B. The removal shall include removal and disposal, aggregate backfill, pipe bedding and control density backfill.
- C. Existing pipe removed shall become the property of the Contractor and shall be properly disposed of in accordance with the requirements of this Section.
- D. At locations where the pipe removal is terminated, a water-tight sewer plug shall be placed in the end of the pipe to remain.

- E. Manholes shall be fully removed. Castings to be salvaged and returned to the Owner unless otherwise directed by the Engineer or Owner.

**4.03 VALVES, BOXES AND VALVE STRUCTURES ABANDONED**

- A. Manholes and valve box castings to be abandoned in place shall be removed to 18 inches below final grade and filled with low-strength mortar backfill in accordance to the bottom of the pavement typical section or to 12 inches below final grade in non-paved areas. The pavement section shall be removed and replace an additional 18 inches horizontally outside of the casting area. The void created by the removal of the casting, structure and valve box shall be backfilled to match the surrounding pavement section or as specified for non-pavement areas.
- B. Valve boxes shown on the plans may also have existing manhole castings, frames, manhole structures around the existing valves. The abandonment of valves shall include the removal of all existing manhole casting, frame, and structure walls to be specified depths as associated with that particular valve.
- C. Valve shall be abandoned in the off position when possible.

**4.04 VALVES AND STRUCTURES REMOVED**

- A. Valves, boxes, and structures to be removed shall be removed in their entirety or as approved otherwise by the Engineer.

END OF SECTION

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**SECTION 02200  
EXCAVATION AND BACKFILL**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes all excavations and related Work for the construction of the designated structures, pipelines, and other incidental Work.
- B. Excavation includes the Work of making all necessary excavations for the construction of all Contract Work; of furnishing, placing, and use of sheeting, shoring, and sheet piling necessary in excavating for and protecting the Work and workers; of doing all pumping and fluming necessary to keep the excavation free from water; of providing for uninterrupted flow of existing drains and sewers; of supporting and protecting existing structures, pipes, conduits, sewers, culverts of all types of materials of construction, of supporting and protecting railroad tracks, posts, poles, wires, fences, buildings, and other public and private property adjacent to the Work; of removing and replacing existing sewers, culverts, pipelines, and bulkheads where necessary; of removing after completion of the Work all sheeting and shoring not necessary to support the sides of excavations; of removing and disposing of all surplus excavated material or material under structures that does not meet the soil design bearing capacities; of doing all backfilling, of compacting backfill to limits specified or ordered by the Engineer; and restoring all property damaged as a result of the Work involved in this Contract.
- C. The Work includes obtaining and transporting suitable fill material from off-site when on-site material is not available.
- D. The Work includes transporting surplus excavated material not needed for backfill at the location where the excavation is made, to other parts of the Work where filling is required, or disposal of all surplus on other sites selected by the Owner.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Sieve Analysis (ASTM C136) - One test for each material source.
    - b. Submit a moisture density curve (ASTM D698) for each type of material used for backfill. Test shall be referenced to appropriate sieve analysis test. The maximum dry weight and optimum moisture content shall be indicated.
    - c. Controlled Density Fill Material - Design Mix and Certified Test Results.

- d. Test results for conformance with specified "Compaction Requirements":
  - 1) Retests shall be referenced to the corresponding failing test.
- 2. Information for the Record:
  - a. When excess excavated material is disposed at locations off the Site, the Contractor shall obtain and submit written permission from the Owner of the property upon which the material is to be placed.

## **PART 2 PRODUCTS**

### **2.01 TOPSOIL**

- A. Soil stripped from the Site shall consist of loose, friable, loamy topsoil without admixture of subsoil or refuse. It shall be reasonably free from peat, muck, roots, hard clay, coarse gravel, stones, weeds, tall grass, brush, sticks, litter, ground debris and wood products. The stockpiled soil shall be subject to the approval of the Engineer.
- B. Topsoil provided shall be in accordance with MDOT 816 and be loose, friable, loamy soil without admixture of subsoil or refuse. In order for the topsoil to be considered loamy the fraction of topsoil, passing a No. 10 sieve, shall contain not more than 40% clay. Topsoil shall contain not less than 4% nor more than 20% organic matter as determined by loss on ignition of oven-dried samples to constant weight at 212 degrees F.
- C. Excess material shall be removed from Site, unless directed otherwise by Owner or Engineer.

### **2.02 SELECTED BACKFILL**

- A. Selected backfill shall be clean excavated soil. It shall be free of rock and foreign debris of any kind and shall be tested in accordance with ASTM C136 sieve screen analysis and ASTM D2487 soil classification. The material's use as selected backfill shall be approved by the Engineer.
- B. Engineer may waive material testing of selected backfill. Such waiver shall apply only to the designated location and the source of the selected backfill. Such waiver shall not apply to excavated soil from locations not so designated.

### **2.03 SPECIAL BACKFILL MATERIAL**

- A. Special backfill material shall conform to MDOT 902.08 and shall meet the grading requirements of Table 902-3, Class II.

### **2.04 AGGREGATE BEDDING MATERIAL**

- A. Aggregate bedding material shall be well-graded durable crushed gravel, crushed stone or meeting the graduation requirements of MDOT Table 902-1, Class 17A. Bedding

material containing a greater percentage of larger sized aggregate shall be furnished at the direction of the Engineer.

**2.05 RESERVED**

**2.06 RESERVED**

**PART 3 EXECUTION**

**3.01 COORDINATION**

- A. Construction Through Highways:
  - 1. Permits - The Owner will obtain permits required for open cut construction through highways. Contractor shall be responsible for compliance with and furnishing any item required by permit such as Bond Security.
  - 2. Notification - The Contractor shall give written notice to appropriate officials of the affected Department of Transportation, City, or County at least five days, not including weekends and holidays, before starting construction under highways and as required under other roadways.
  - 3. Contractor shall comply with standard permit conditions of controlling authority and special provisions noted in Part 4 of this Section.
- B. Test Pits:
  - 1. The Contractor shall perform exploratory test pits as may be necessary or ordered by Engineer in advance of excavation to determine the exact location and elevation of subsurface structures, pipelines, and conduits which are likely to be encountered and shall make acceptable provision for their protection, support, and maintenance in operation. Vacuum excavation (pot hole) may be used if adequate information can be obtained by such method. No additional payment shall be made for test pits.
  - 2. Conflicts with existing utilities not located, as specified, far enough in advance of construction, shall not be considered as a basis for delay claims or additional payment.

**3.02 REMOVING AND REPLACING TOPSOIL**

- A. Removal
  - 1. Excavation for trenches in which pipelines, sewers, conduits and other utilities are to be installed: The Contractor may elect to strip soil and stockpile unless the Contract Documents direct stripping and stockpiling prior to excavation.

2. General excavation, other than trench excavation: The Contractor shall remove, and stockpile the top 12 inches of the existing soils from all areas of construction including, but not limited to, excavation and embankment areas, stockpile sites, construction yard, storage areas, etc.
- B. Replacing stockpiled soil and topsoil
1. Trench excavation areas disturbed as a result of trenching operations and which are to be restored with grass or other plantings shall be free of peat, muck, roots, hard clay, coarse gravel, stones, weeds, tall grass, brush, sticks, litter, ground debris and wood products. The surface shall be mechanically conditioned after removal of debris. After surface is prepared, it shall be covered with topsoil or stockpiled soil material to a minimum depth of 4 inches. Topsoils and stockpiled soil material shall meet the requirements specified herein and be tested.
  2. General excavation areas which are to be restored with grass or other plantings shall be free of peat, muck, roots, hard clay, coarse gravel, stones, weeds, tall grass, brush, sticks, litter, ground debris, wood products and construction debris including loose stone. The surface shall be mechanically conditioned after removal of debris. After surface is prepared it shall be covered with stockpiled soil and then have a minimum of 4 inches of topsoil placed.
- C. The Work shall be in accordance with applicable portions of MDOT 205.03A.1 and 816.03A.

### 3.03 GENERAL EXCAVATION

- A. All necessary excavation shall be performed to accommodate the completion of all Contract Work.
- B. The Drawings show the horizontal and the lower limits of structures, pipelines, sewers and other utilities. The methods and equipment used by the Contractor when approaching the bottom limits of excavation and when trimming the bottom of the excavation to a smooth surface shall be selected to prevent disturbing the soil below the bottom limits of excavation.
- C. Excavation which is carried below the bottom limits shall be classified as Unauthorized Excavation, unless said excavation has been authorized by the Engineer prior to each occurrence.
- D. Unauthorized excavation shall be filled with CDF material to the bottom limits. Under circumstances where structural integrity is not a factor, the Engineer may allow the filling of unauthorized excavation with pipe bedding material or special backfill material compacted to 100% density, as specified under compaction requirements.
- E. Sheeting, Shoring, and Bracing:
  1. The Contractor shall furnish and install adequate sheeting, shoring, and bracing to maintain safe working conditions, and to protect newly built work and all



- existing adjacent and neighboring structures and utilities from damage by settlement.
2. Sheeting, shoring and bracing shall be arranged so as not to place a strain on portions of completed Work until the construction has proceeded far enough to provide ample strength. Sheeting and bracing may be withdrawn and removed at the time of backfilling, but the Contractor shall be responsible for all damage to newly built Work and adjacent and neighboring structures and utilities.
  3. Sheeting, shoring and bracing shall be removed or cut-off at the time of backfilling to avoid problems with finish grade or future excavation.
- F. Removal of Water:
1. The Contractor shall at all times during construction provide and maintain ample means and devices with which to remove promptly and dispose of properly all water entering the excavations or other parts of the Work and shall keep said excavations dry until the structures to be built or pipelines to be placed therein are completed. No water shall be allowed to rise over or come in contact with concrete or masonry until the concrete and mortar has attained a satisfactory set, except in cases where the concrete has been tremied into place with the approval of the Engineer. Water shall not be allowed to rise above the bottom of the bedding stone prior to placing pipe. In waterbearing sand, well points and/or sheeting shall be supplied, together with pumps and other appurtenances of ample capacity to keep the excavation free of water and in compliance with government regulations.
  2. The Contractor shall dispose of water from the Work in a suitable manner without damage to adjacent property or structures and in compliance with all regulations.

### **3.04 TRENCH EXCAVATION**

- A. Excavation for trenches in which pipelines, sewers, conduits and other utilities are to be installed shall provide adequate space for workers to place and joint the pipe properly. The trench shall be kept to a minimum width. The width of trench at the top of the pipe shall comply with the limits specified or shown on the Drawings.
- B. Excavation shall be to the depth necessary for placing aggregate bedding material under the pipeline, sewer, conduits and other utilities as shown on the Drawings. If over excavation occurs, the trench bottom shall be filled to grade with compacted aggregate bedding material.
- C. The amount of trench open at any one time in advance of completed Work shall be limited to the minimum necessary for conducting laying operations.
- D. In general, backfilling shall begin as soon as the pipeline, sewer, conduits and other utilities are in a condition to receive it and shall be carried to completion as rapidly as

possible. New trenching shall not be started when earlier trenches need backfilling or the surfaces of streets or other areas need to be restored to a safe condition.

### **3.05 EXCAVATION OF UNSUITABLE MATERIAL**

- A. Unsuitable materials existing below the Contract bottom limits for excavation shall be removed as required by the Engineer. The Engineer may rely upon the independent laboratory retained on this Project when determining unsuitable soil conditions, removal and backfill. Such excavation shall be conducted at a time when the Engineer and independent laboratory are present and shall not exceed the vertical and lateral limits prescribed by both.
- B. The voids left by removal of unsuitable material shall be filled with special backfill, pipe bedding material, or CDF material as listed in Part 4 or as prescribed by the independent laboratory and as approved and ordered by the Engineer. Special backfill or pipe bedding shall be installed as described in this Section and in general shall be compacted to 100% density as specified under compaction requirements.

### **3.06 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL**

- A. All excavated materials which are unsuitable for use in backfilling trenches or around structures, and materials excavated that are in excess of that required for backfilling and for constructing fills and embankments as shown on the Drawings, shall be disposed of by the Contractor at his expense and at sites provided by him as may be required, except that the Owner reserves the right to require the Contractor to deposit such surplus at locations designated by the Owner within a five-mile radius of the Work.
- B. No surplus excavated material of any class shall be deposited in any stream or watercourse or be dumped on public property without the consent of the Owner. All spoil areas shall be left smooth, level, with drainage to a water course and proper erosion and runoff control shall be used.

### **3.07 BACKFILL AND COMPACTION**

- A. Pipe and Conduit Bedding - Unless otherwise directed, pipe, conduits and other utilities shall be installed in specified aggregate bedding material as shown on the Drawings and as specified.
- B. Backfilling Under Existing Pipeline, Sewer, Conduits and Other Utilities - Where it is necessary to undercut or replace existing utility conduits and/or service lines, the excavation beneath such lines shall be backfilled the entire length with aggregate bedding material tamped in place in 6-inch layers to the required density. The aggregate bedding shall extend outward from the spring line of the conduit a distance of 2-feet on all sides and thence downward at its natural slope.
- C. Backfilling with Selected Backfill - Unless otherwise specified or directed, material excavated in connection with the Work may be used for backfilling and other filling

purposes, if it meets all requirements given elsewhere in this specification for selected backfill. No material shall be used for backfilling that contains stones, rock, or pieces of masonry greater than 12 inches, frozen earth, debris, earth with an exceptionally high void content, organic material, or marl. No large pieces of rock or masonry shall be deposited closer than 24 inches from the completed outside surface of any structure or pipe.

- D. Backfill Immediately - All trenches and excavations shall be backfilled immediately after completion of construction therein, unless otherwise directed by the Engineer. Under no circumstances shall water be permitted to rise in unbackfilled excavation during construction or after pipe has been placed.
- E. Backfilling around and over structures, pipelines, conduits and other utilities comprising the Work shall be carefully done by hand and tamped with suitable tools of approved weight when within 2 feet of structures, pipeline, conduit and other utilities. Selected backfill or, where specified, shown on Drawings, or ordered by the Engineer, special backfill material shall be used in this area. The material shall be placed in uniform layers not exceeding 6 inches in depth up each side. Each layer shall be placed, then carefully and uniformly tamped to the specified density so as to eliminate the possibility of lateral displacement of pipe or structure.
- F. Backfilling may be done by machinery after the backfill has been placed and compacted beyond 2 feet horizontally of structures, pipelines, conduits and other utilities and to a minimum depth of 1 foot above the tops of any buried structures, pipelines, conduits, and other utilities. The backfill material shall be deposited in horizontal layers, not thicker than one foot, and each layer shall be thoroughly compacted to the specified density by approved methods before a succeeding layer is placed. In no case, will backfill material from a bucket be allowed to fall directly on a structure or pipe and in all cases the bucket must be lowered so that the shock of the falling material will not cause damage.
- G. Backfilling Under Pavement and Walks - Where existing or new pavement, driveway, parking lot, curb and gutter, or walk is over an excavation, special backfill material shall be used to backfill the entire excavation from the bedding to surface. The material shall be placed and compacted to the required density in accordance with one of the following methods:
  - 1. The backfill material shall be deposited in 6-inch horizontal layers and each layer shall be thoroughly compacted to the proper density by approved compaction method before a succeeding layer is placed.
  - 2. No method of compaction which alters the gradation of the special backfill material or prevents compaction testing by standard testing methods shall be used.

### 3.08 COMPACTION REQUIREMENTS

- A. In areas to be filled, after the top 12-inches of soil is stripped, then the undisturbed subgrade shall be compacted to not less than 100% of maximum dry density per ASTM D698 (Standard Proctor) prior to placing of fill.
- B. Backfill placed under areas receiving concrete slabs, mats, footings, or within the interior of buildings shall be compacted to not less than 100% of maximum dry density per ASTM D698.
- C. Backfill placed around structures where other structures, pipelines, or slabs are to be constructed shall be compacted to not less than 100% of maximum dry density per ASTM D698.
- D. The material used to construct embankments and fills in locations other than under pavements, walks, structures, or slabs and around and over pipelines, shall be compacted to not less than 95% of maximum dry density per ASTM D698.
- E. All other backfill, including backfill around and over pipelines, and backfill around structures not covered in Paragraphs B. and C. above, shall be compacted to not less than 95% of maximum dry density per ASTM D698.
- F. The bottom of excavations upon which concrete slabs or structures are to be placed shall be compacted to obtain 100% maximum dry density per ASTM D698 in the top 12 inches.
- G. All soil subgrade which will provide bearing support for pavements or curbs, shall be compacted to a width of 6 inches beyond the back of curb and to a depth of 12 inches below the bottom of excavation to a density of not less than 100% of maximum dry density per ASTM D698. All fill below the subgrade shall be compacted to not less than 98% of maximum dry density, unless specified otherwise.
- H. Subgrade under the driveways and walks shall be compacted to a depth of 6 inches below the subgrade surface to density of not less than 100% of the maximum dry density determined by ASTM D698.
- I. Subgrade under structures shall be compacted to a depth of 12 inches below bottom of excavation surface to a density of not less than 100% of the maximum dry density determined by ASTM D698.

### 3.09 COMPACTION TESTS

- A. Trenches and excavation around structures shall be backfilled and consolidated in layers, as specified, to the existing ground surface. Initial test series for each type of backfill material shall be continued until the method of consolidation employed has proven to attain the required compaction. Any change in the proven method of consolidations will require additional testing and field verification of compaction.
- B. Subgrade below pavements, curbs, sidewalks, and structures shall be consolidated as specified. Compaction tests shall be performed to verify specified consolidation.

- C. Subsequent tests or series of tests shall be in locations and at depths ordered by the Engineer.

**3.10 RESERVED**

**3.11 RESERVED**

**3.12 RESERVED**

#### **PART 4 SPECIAL PROVISIONS**

##### **4.01 FIELD TESTING (MINIMUM REQUIREMENTS)**

- A. The laboratory shall perform the following field tests:
1. Trench Backfill - One test for every 200 cubic yards of backfill material.
  2. Subgrade Compaction - One test for every 300 square yards of subgrade.
  3. If directed by the Engineer, additional tests shall be performed for any of the above.

END OF SECTION

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**SECTION 02550  
SANITARY SEWERS AND STORM SEWERS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes furnishing and installing sanitary sewers.
- B. Reconstruction of existing sewers, house connections, and catch basin leads shall be in conformance with requirements of this Section.
- C. This Section shall include furnishing and installing all required pipe, bends or beveled pipe, tees, wyes, tee manhole base pipes, bulkheads and stoppers, jointing material, granular material for pipe bedding, concrete used for encasement or bedding, making watertight connections to existing and new sewers and existing manholes, catch basins and inlets, cleaning and testing sewers, removing temporary bulkheads, and other work incidental to the sewer installation unless specifically included under other Items.
- D. Additional product requirements are specified in Section 01350.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturer's Shop Drawings indicating pipe and joint materials, physical dimensions, and joint details for each size, type, and class of pipe, fittings and specials furnished for the project compliance with specified standards.
  - 2. Information for the Record:
    - a. Manufacturer's certification indicating that the pipe and joints meet specifications for each production run for each size, type, and class of pipe furnished. The Engineer may request test results to verify certification. Certification documents shall be according to the Source Quality Control of this Section.

**PART 2 PRODUCTS**

**2.01 SOLID WALLED PIPES**

- A. Polyvinyl Chloride (PVC) Sewer Pipe Specifications:

1. For pipe 15-inch diameter and smaller: Pipe, fittings, and jointing systems shall conform to ASTM D3034, except that the standard dimension ratio of the outside diameter of the pipe to wall thickness shall not exceed 26.
2. Joint systems shall be elastomeric seal (gasket) type. Seals shall conform to ASTM F-477 requirements. Joint materials and testing shall conform to ASTM D3212 requirements.
3. All service connections shall be made using a wye and a bend. Tees shall be used only as directed by the Engineer. Tees and wyes shall be die cast or factory fabricated. All service pipe shall be SDR 26.

## **2.02 COMPOSITE AND PROFILED WALL PIPES**

- A. High-Density Polyethylene (PE) Profile Wall Sewer Pipe:
1. Pipe shall have a smooth interior with a profile wall. Pipe, fittings, and jointing systems shall conform to ASTM F894. Pipe and fittings shall be made of high density, high molecular weight polyethylene material meeting the requirements of ASTM F2306. Pipe for storm drainage applications shall be ADS N-12 (WT) or approved equal.
  2. Joint systems shall be elastomeric seal (gasket) type. Seals shall conform to ASTM F477 requirements. Joint materials and testing shall conform to ASTM D3212 requirements. Joints shall be able to pass an ASTM D3212 test at 10.8 psi for 10 minutes with no leakage.
  3. Fittings shall include couplings, tees, wyes, elbows, plugs, and adapters. Tees and wyes shall be die cast or factory-fabricated.
  4. Manhole adapters shall have a smooth exterior surface to ensure a watertight joint with "Flexible Joints" as specified in Section 02552.

## **2.03 ACCESSORIES**

- A. Flexible Pipe Repair Couplings:
1. Flexible repair couplings shall be made of elastomeric polyvinyl chloride boot with series 300 stainless steel shield and clamps. Couplings shall be Strong Back RC series as manufactured by Fernco Joint Sealer Co., Ferndale, Michigan; Logan Clay Pipe Co., Logan, Ohio; Mission Clay Products Corp., or equal.
- B. Granular Pipe Bedding Material:
1. Granular pipe bedding material shall be as specified in Section 02200.

## **2.04 REPLACEMENT DRAINS, SEWERS AND APPURTENANCES**

- A. Vitrified clay pipe sanitary sewers removed or damaged in completing the Work shall be replaced using pipe and joints as specified in this Section. Connections to existing sewers shall be as specified in this Section.



- B. Manholes, catch basins, and inlets removed or damaged under these Items shall be replaced in conformance with applicable Drawings and Specifications.

## **2.05 SOURCE QUALITY CONTROL**

- A. Pipe Manufacturer's Certification:
  - 1. The pipe manufacturer's certificate shall state that the materials have been sampled and tested in accordance with the provision for and meet the requirements of the designated specification and shall be signed by an authorized agent of the seller or the manufacturer.
  - 2. A test results report shall accompany that manufacturer's certificate. The report shall compare test results to Specification requirements. Test specimens shall be selected in conformance with the designated specification, except that no less than two tests shall be made for each production run of each size, type, and class of pipe furnished, and further, that in case tests are unsatisfactory, additional tests shall be made to the maximum number in the referenced ASTM Specification.

## **PART 3 EXECUTION**

### **3.01 CONSTRUCTION IN HIGHWAY PROPERTIES**

- A. Construction in Highway properties shall conform to the requirements of Section 02200.

### **3.02 PREPARATION OF TRENCH**

- A. Trench excavation shall conform to requirements of Section 02200.
- B. Unless otherwise indicated minimum trench widths for flexible pipes shall meet the requirements of ASTM D2321 and the Trench Detail shown on the Drawings.
- C. Unless otherwise indicated all sewer trenches shall be excavated below the proposed pipe invert as required to accommodate the depths of bedding material as shown on the Drawings and specified herein.

### **3.03 RESERVED**

### **3.04 FLEXIBLE PIPE INSTALLATION**

- A. Flexible pipe shall be installed in accordance with ASTM D2321. Bedding, backfill, and compaction shall meet the requirements of this Section and Section 02200.
- B. The laying of pipe in finished trenches shall be commenced at the lowest point, with the bell end or groove end laid upgrade. Pipe shall be laid with ends abutting and true to line and grade. They shall be carefully centered to form a sewer with a uniform invert of line and grade shown on the Drawings.

- C. Pipe shall be laid to lines and grades and checked in conformance with Section 01800. Pipes installed more than 0.04-feet above or below specified elevation shall be removed and reinstalled to grade.
- D. Temporary internal supports shall be used as recommended by the pipe manufacturer.

### 3.05 PIPE JOINTS

- A. O-Ring and Chemically Welded Joints - Pipe jointing surfaces shall be clean and dry when preparing surfaces for joining. Lubricants, primers, adhesives, etc., shall be used as recommended by the pipe or joint manufacturer's specifications. The jointing materials or factory fabricated joints shall then be placed, fitted, joined, and adjusted in such a manner as to obtain a watertight joint. Trenches shall be kept water-free and as dry as possible during bedding, laying, and jointing. As soon as possible after the joint is made, sufficient backfill material shall be placed along each side of the pipe to prevent movement of the pipe from any cause.
- B. Flexible Plastic Gasket Joints - Materials used for gaskets shall be as specified in this Section. Cross section size of gaskets and method of installation shall conform to the manufacturer's recommendations.

### 3.06 CONNECTIONS TO EXISTING SEWERS

- A. Unless indicated otherwise new pipe connections through the side of existing sewers shall be made as follows:
  - 1. Vitrified clay pipe, plain concrete pipe, and asbestos cement pipe, 15-inch diameter and smaller, and larger diameter at the option of the Contractor, shall be connected by removing a section of the existing sewer and inserting connecting fittings using specified flexible repair couplings.
  - 2. Polyvinyl chloride pipe, HDPE pipe, ABS pipe, and ABS truss pipe shall be connected in conformance with the manufacturer's recommendations as approved by the Engineer.
  - 3. Connections shall be made in conformance with the jointing materials manufacturer's recommendations and as directed by the Resident Project Representative.

### 3.07 FIELD QUALITY CONTROL

- A. The Resident Project Representative may select one sample of pipe on the job site of each production run of each size and type of pipe to be tested by the Contractor's laboratory. The Contractor shall furnish the first test piece or pipe core and any additional samples required because of failures. The Contractor shall pay for tests on the first sample. Should the sample fail to meet specifications, retests shall be conducted by the Contractor's laboratory in conformance with the specifications and shall be at no additional expense to Owner.

- B. Field Inspection:
  - 1. Individual sections of pipe may be rejected at any time because of defective joints, dimension variations, fractures, cracks, chips, or blisters exceeding the permissible tolerances.
  - 2. Rejected pipe shall be so marked with a lumber crayon or paint and shall be removed from the job site before the end of the following work day.

**3.08 RESERVED**

**3.09 RESERVED**

**PART 4 SPECIAL PROVISIONS**

**FELLOWS AVENUE SEWER PIPE**

- A. Polyvinyl Chloride Pipe:
  - 1. Pressure pipes and fittings 3 inches or smaller in diameter shall be PVC material and shall consist of Class 12454-B rigid PVC compound in conformance with ASTM D1784. Pipe shall be ASTM D1785 Schedule 80 or ASTM D2241, SDR 21 with hydrostatic design stress of 2,000 psi. All joints for ASTM 1785 pipe, unless otherwise shown on the Drawings, shall be solvent welded in conformance with ASTM D2855. Joint solvent shall be as recommended by the pipe manufacturer. Joints for ASTM D2241 pipe shall be push-on gasketed. Joint restraint for ASTM D2241 pipe shall be provided where specified or shown on the Drawings and shall be United Series 1300 or 1350, or equal. The fittings for ASTM D1785 pipe shall be Schedule 80 and shall conform to ASTM D2467. Fittings for ASTM D2241 pipe shall be ductile cast iron and shall conform to ANSI 21.10/AWWA C110 with mechanical joint.
  - 2. PVC pipe 4 inches to 12 inches in diameter shall meet the requirements of AWWA C900, and unless otherwise specified, shall be Class 235, and have a standard thermoplastic pipe dimension ratio (D.R.) of 18.0.
- B. Polyvinyl Chloride Pipe Joints:
  - 1. Pipe shall have integral bell push-on type joints meeting the requirements of ASTM D3139. Gaskets shall be rubber ring type meeting the requirements of ASTM F477 (AWWA C900).

END OF SECTION

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**SECTION 02552  
PRECAST CONCRETE MANHOLES**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes furnishing and installing precast concrete manholes, including manhole stacks of types and at locations shown on the Drawings and scheduled.
- B. This Section includes additional excavation to widen and deepen trenches for manhole construction, furnishing and installing concrete of classes called for, portland cement mortar, reinforcing steel, flat slab tops and grade rings, flexible manhole connections, manhole steps, manhole frames and covers, plugging lifting holes, pointing joints, joint wrap installing, , and other work incidental to manhole construction and testing.
- C. Additional product requirements are specified in Section 01350.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop drawings for Review:
    - a. Manufacturer's Shop Drawings indicating physical dimensions, pipe openings, precast section arrangement, adjusting rings, castings, and joint details for each size and type of manhole components furnished for the project. Shop Drawing shall incorporate the planned elevations and details.
    - b. Manufacturer's certification indicating that the manhole components and joints meet specifications for each production run for each size and type furnished.
  - 2. Information for the Record:
    - a. The Engineer may request test results to verify certification. Certification documents shall be according to the Source Quality Control of this Section.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Type of Manhole Sections:
  - 1. Type I Manholes - Type I manholes shall mean 4-foot diameter manholes with either precast integral base sections or precast bottoms for air release

manholes. Pipe connections to manholes shall be made with flexible water tight joints. Type I manholes are intended for installation of pipes 18-inch diameter and smaller unless noted otherwise.

2. Type S Manholes - S following manhole type shall mean the designated type manhole constructed with a precast flat slab top in lieu of a precast cone.
  - B. Precast concrete pipe manhole sections, integral base sections, transition sections, eccentric cones, flat slab tops, and adjusting rings shall conform to ASTM C 478. Reinforcing in transition sections shall be equal to that specified for wall sections of the larger diameter.
  - C. Joints shall be tongue and groove type with a gasketed seal type conforming to ASTM C443.
  - D. The standard length of riser sections shall be 48-inch. Lengths of 32-inch or 16-inch shall be used to meet required dimensions and as specified.
  - E. Openings for connecting pipes in riser sections, bottom riser sections, and integral base sections, and for access in flat slabs shall be pre-formed or cored by the manufacturer. Cut-out openings shall be made immediately after the pipe is removed from the casting form.
  - F. Precast integral base sections shall be of monolithic construction. Base flat slab floors or integral floors shall have a minimum thickness of 6-inch for risers up to and including 48-inch in diameter. A layer of reinforcement shall be placed above the midpoint and shall have a minimum area of 0.12 square inch/linear feet in both directions.
  - G. Manhole sections shall be constructed with no pipe connection within 6 inches of a joint in the structure.
  - H. Manhole sections shall be clearly marked and identified with the manhole number, section placement order, casting date, trademark, name of the manufacturer, and location of the production plant.

## 2.02 ACCESSORIES

- A. Manhole Steps - Manhole steps shall be of polypropylene plastic reinforced with a 1/2-inch No. 60 grade reinforcing rod. Steps shall be M. A. Industries Model PS-1, or equal.
  1. Specified manhole steps shall be factory installed to provide a continuous ladder of 16-inch Center-to-Center rung spacing. Steps shall be placed in the forms and cast in pipe wall or placed immediately after the pipe is removed from casting and carefully mortared in place with non-shrinking mortar to ensure a watertight joint. Manhole step installation shall be in compliance with OSHA regulations. If the outer surface of the pipe wall is pierced the patch shall be completely covered with a bituminous sealer.
- B. Manhole frames and covers shall be as shown on the Drawings and in conformance with requirements of Section 05540.

- C. Mortar:
  - 1. Mortar used for the structures herein specified shall conform to ASTM C270 Type S, containing no masonry cement. The mortar shall be composed of one-part portland cement to two parts sand by volume.
  - 2. Non-shrinking Mortar - Materials for non-shrinking mortar shall be Sauereisen F-100, Five-Star, or equal.
- D. Cast-in-Place Concrete:
  - 1. All cast-in-place concrete shall be according to MDOT Specification Division 7.
- E. Flexible Joints - Joints for precast pipe openings shall be "A-LOK X-CEL" as manufactured by A-LOK Products, Inc., "Kor-n-seal" as manufactured by National Pollution Control Systems, Inc., or equal in accordance with ASTM C923.

### **PART 3 EXECUTION**

#### **3.01 COORDINATION**

- A. Location and type of manholes installed shall be as shown on the Drawings or directed.
- B. Construction shall be in conformance with details shown on the Drawings and as specified.
- C. Excavation for manhole construction shall be prepared as directed in applicable paragraphs of Section 02200.

#### **3.02 INSTALLATION OF INTEGRAL BASE SECTIONS**

- A. The manhole base may be placed on 6 inches compacted granular bedding material.

#### **3.03 RESERVED**

#### **3.04 RESERVED**

#### **3.05 RESERVED**

#### **3.06 INSTALLATION OF MANHOLE FRAMES**

- A. Manhole frames and covers shall be installed to grades shown on the Drawings or as directed.
- B. Adjustment of manhole castings shall be made using specified precast grade rings and portland cement mortar joints or preferred bitumen seals.
- C. Each manhole casting shall be anchored in place using four 5/8-inch stainless steel bolts with nuts as detailed on the Drawings or directed.

- D. The maximum depth of adjustment below any manhole casting shall be 16 inches and the minimum depth of adjustment shall be 4 inches.

**3.07 RESERVED**

**3.08 RESERVED**

**PART 4 SPECIAL PROVISIONS**

None

END OF SECTION



**SECTION 02600  
PAVEMENTS, CURBING, AND WALKS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes the construction of sidewalks, curbing, pavements, and berms of various designated types as shown or scheduled on the Drawings, specified or directed.
- B. This Section includes preparation of the base and subgrade construction of walks, curbs, pavements and base courses, adjustment of manhole castings, and valve boxes to conform to new pavement courses, and other work and materials incidental to the construction of pavements, curbing and walks.
- C. Existing curbs and walks of stone or concrete shall be replaced using concrete.
- D. This Section includes temporary and restoration of permanent pavement markings as they exist at the time of bidding unless otherwise shown on the Drawings, specified or directed.

**1.02 OWNER'S STANDARDS AND SPECIFICATIONS**

- A. Sidewalks, curbs, driveways, parking areas, and street pavement, and berms disturbed by construction shall be restored in accordance with the Owner's present standards and specifications.

**1.03 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturers' and suppliers' material certificates.
    - b. A sieve analysis (ASTM C136) shall be furnished for each soil material source.
  - 2. Information for the Record:
    - a. Delivery tickets from the asphalt and aggregate suppliers shall be given to the inspector at the unloading site. Tickets shall include (as a minimum) name of source, date, type of material, and weight.

## PART 2 PRODUCTS

### 2.01 AGGREGATE BASE AND SURFACE

- A. The aggregate shall be crushed natural stone meeting the requirements of MDOT Table 902-1, Class 21AA.

### 2.02 RESERVED

### 2.03 ASPHALT EMULSIONS

- A. The bond coat material shall be SS-1h or CSS-1h and shall meet the requirements of MDOT Table 904-4 and 904-5.
- B. The prime coat material, if required, shall be MS-Op and shall meet the requirements of MDOT Table 903-4.

### 2.04 BITUMINOUS AGGREGATE BASE AND ASPHALT CONCRETE

- A. Bituminous Material - The asphalt cement shall be PG 58-28 performance grade (Design Temperature) and shall meet the requirements of MDOT Table 904-2.
- B. Design Mix - Refer to MDOT Section 501.
  - 1. The base course shall meet the requirements of MDOT Mixture 13A, Modified
  - 2. The wearing course shall meet the requirements of MDOT Mixture 36A, Modified.

### 2.05 CONCRETE (CAST-IN-PLACE)

- A. All concrete used shall be Grade P1 as specified in MDOT Table 601-2.
- B. Reinforcing steel and dowel bars shall be as specified in MDOT Section 905 and 906.
- C. Other materials required for placing concrete shall be as follows:
  - 1. Joint Sealer:
    - a. Hot Applied Sealer - MDOT Section 914.04A.
    - b. Backer Rod - MDOT Section 914.04B.
  - 2. Preformed Fiber Joint Filler - MDOT Section 914.03.
  - 3. Curing Materials:
    - a. Burlap Cloth - AASHTO M182, Class 2.
    - b. Sheet Materials - ASTM C171.
    - c. White Membrane Curing Compound - ASTM C309, Type 2, Class B.

- d. Transparent Membrane Curing Compound - ASTM C309, Type 1, Class B.
- 4. Stamped and Colored Concrete:
  - a. See Part 4.

## **2.06 PAVEMENT MARKING**

- A. Contractor shall provide temporary and permanent pavement markings equal to those markings that are removed from existing paved surfaces prior to commencement of the Work unless scheduled on the drawings, specified, or as directed.
- B. Pavement markings shall be in accordance with the requirements of MDOT Item 811.
- C. Pavement markings shall match existing or adjoining pavement markings.
- D. Pavement markings partially disturbed by construction shall be replaced entirely.

## **PART 3 EXECUTION**

### **3.01 COORDINATION**

- A. All soil subgrade under pavements, driveways, curbs, curb and gutter, and walks shall be compacted in accordance with Section 02200.
- B. All service boxes, manholes, inlets and other structures shall be adjusted or reconstructed to the required grades in both new and resurfacing pavement areas.

### **3.02 PAVEMENT INSTALLATION**

- A. All construction shall be in conformance with applicable portions of MDOT Specifications, except as otherwise specified or called for herein.
- B. Unless otherwise directed by Engineer all aggregate bases which are to receive bituminous courses shall be primed as specified.
- C. A tack coat at a rate as specified shall be applied to all existing pavements which are to be overlaid, and between subsequent courses when directed by the Engineer.

### **3.03 TRANSITION JOINTS FOR BITUMINOUS CONCRETE PAVEMENT OVERLAY**

- A. Types of Transition Joints:
  - 1. Transition joints shall be either butt type or feathered type as directed by the Engineer.
  - 2. Butt joints shall be used on State and Federal roads and main thoroughfares and feathered joints used elsewhere unless otherwise specified.
  - 3. Butt Joints:

- a. When a butt joint is called for on the Drawings or specified, the old surface shall be cut back for at least 3 feet to a depth of at least 1 inch for the full width of the joint and pavement installed.
  - b. A bituminous seal shall be placed on the finished surface at the junction of the new and old pavements.
4. Feathered Joint:
- a. Feathered joints shall be constructed by manually raking the paving material to a smooth transition from the full depth material to the existing pavement surface.
  - b. Existing pavement surface shall be bond-coated to include the transition area.
  - c. Feathering shall be done by a workman skilled in the operation and shall be approved by the Resident Project Representative.

### **3.04 CURBING**

- A. Curbing shall be constructed in conformance with applicable portions of MDOT Section 802 and MDOT Standard Construction Drawings.
- B. Place 1-inch dowelled expansion joints at inlets and at spring lines of street and driveway returns. If intersecting streets and driveways are more than 300-feet apart, place expansion joints at 300-foot intervals.
- C. Contraction joints shall be placed at approximately 10-foot intervals.

### **3.05 CONCRETE SIDEWALK**

- A. Sidewalk shall be constructed in conformance with applicable portions of MDOT Section 803.
- B. Unless otherwise indicated on the Drawings, concrete sidewalks shall be a minimum of 5-feet-0-inch wide and 6-inch thickness of concrete. Concrete walk removed and replaced shall be equal to the section removed.
- C. The surface of the walks shall be divided into equally spaced blocks at approximately 5-foot intervals. Expansion joint filler 1/2-inch thick shall be installed between the walk and any fixed structure, at all changes in direction or shape and at intervals of 20-foot maximum. The expansion joint filler shall be 1-inch thick where the walk is installed against the back of curb. The filler shall be recessed 1/2-inch from top of finished surface.
- D. Surface of new sidewalks shall be broomed to slightly roughen surface. On sections of sidewalk to be replaced, the surface texture shall match the adjoining.

**3.06 CONCRETE DRIVEWAYS**

- A. Concrete driveways shall be constructed in conformance with applicable portions of MDOT Section 801.
- B. Dowelled contraction joints shall be placed at a maximum spacing of 20-feet. Lesser spacing shall be used on irregular areas as directed by the Engineer.
- C. Expansion joint filler 1/2-inch thick shall be installed at intervals of 24-feet maximum. One-inch expansion joint filler shall be installed between the driveway and any fixed structure.

**3.07 BITUMINOUS AND AGGREGATE DRIVEWAYS**

- A. Bituminous driveways and parking lots shall be constructed as shown on the Drawings using materials specified for asphalt concrete pavements. Placement shall be in accordance with MDOT Section 501.
- B. Aggregate driveways and parking lots shall be constructed as shown on the Drawings using base aggregate meeting the requirements of MDOT Item 302.
- C. Replacement of bituminous or aggregate driveways and parking lots shall conform to this Section but in no case, be inferior to that being replaced.

**3.08 RESERVED**

**3.09 INSPECTION**

- A. Laboratory services shall be in accordance with the requirements of Section 01410 and shall include:
  - 1. A compaction test on the subgrade, aggregate base, and each layer of asphalt shall be performed for every 300 square yards of material placed.
  - 2. Asphalt Concrete:
    - a. Plant Certification - The laboratory shall certify or furnish recent certification (within one year) from January 1, 2019 that the plant meets State requirements.
    - b. Plant Inspection - For the first day of production and for every day when more than 100 cubic yards of material is being delivered to the project, the laboratory shall provide a representative at the plant who will inspect the plant, make mix design adjustments, check the temperature, and take the required samples.
    - c. Quality Control Testing - A sample of the mix shall be taken for each 200-cubic yard of bituminous material or fraction thereof delivered to the project. An extraction test AASHTO T164-70 and a mechanical analysis AASHTO T30-70 shall be performed on the mix samples.

- d. Bituminous Material - Provide a satisfactory certificate furnished by the manufacturer stating that the materials conform to MDOT Specifications, Table 904-2, 904-3, or 904-4 as required.
  - e. Aggregate - A sieve analysis (ASTM C136) shall be performed on each aggregate to be used in the plant mix design.
  - f. Mix Designs - The supplier shall design the plant mixes in accordance with the Marshall Method of Mix Design (ASTM D1559) and shall make all mix design adjustments.
3. Cast-in-Place Concrete:
- a. Concrete materials and operations shall be tested as the Work progresses.
  - b. Duties of testing laboratory shall be as follows:
    - 1) Review, check, and test proposed materials for compliance with Specifications before the start of the Work.
    - 2) Sample aggregates from concrete production stockpiles, at least once a month, during the placement of concrete and test for compliance with the specifications. The moisture content of each sample shall be measured and recorded.
    - 3) Review and test proposed mixture design when required by Engineer.
    - 4) Randomly sample concrete during construction in accordance with ASTM C172 and perform scheduled tests.
    - 5) Measure and report surface profile of slabs in accordance with ASTM E1155. Surface profile shall be determined for first trowel finish slab and first float finish slab on project and other slabs specified.
  - c. Test Schedule:
    - Strength:
      - 1) One strength test shall be made for each 50 cubic yards, or fraction thereof, of each class of concrete placed on any one day. Frequency of testing shall not provide less than 5 strength tests for each class of concrete.
      - 2) Concrete strength test shall consist of three specimens from each sample molded and cured in accordance with the section of ASTM C31, "Curing Specimens for Checking the Adequacy of Mixture Proportions for Strength or as the Basis for Acceptance or Quality Control".

- 3) Specimens shall be tested in accordance with ASTM C39. Two specimens shall be tested at 28 days for acceptance and one shall be tested at 7 days for information. Strength test result shall be average of strengths of 28-day specimens. If one specimen shows evidence of improper molding, handling, or testing, it shall be discarded and remaining specimen shall be considered as strength test result. Should both specimens in a test show any of the above defects, the entire test shall be discarded.  
  
Cold Weather Concreting and Form Removal:
  - 1) When cold weather concreting procedures apply or when form removal provisions of Section 03100 apply, field cured specimens shall be made to determine when protection procedures may be terminated or when forms may be removed. These field cured specimens shall be in addition to strength tests and shall be made at same time as strength specimens.
  - 2) Specimens shall be molded and cured in accordance with the section of ASTM C31, "Curing for Determining Form Removal Time or When a Structure May be Put into Service". Contractor shall determine number of specimens required, but number of specimens shall not be less than three.
  - 3) Specimens shall be tested in accordance with ASTM C39. Age-at-test of specimens shall be selected by Contractor.
- d. Slump shall be measured for first batch of each concrete class delivered in morning and afternoon, for each strength test, and whenever consistency of concrete appears to vary. Slump shall be measured in accordance with ASTM C143. In the event that a batch fails to comply with specified requirements, the slump shall be measured on each successive batch until three batches meet the specified requirements.
- e. Air content shall be determined for first batch of each concrete class delivered in morning and afternoon, for each strength test, and as required by field representative. Air content shall be measured in accordance with ASTM C231, ASTM C173, or ASTM C138. When concrete is placed by pumping, air content and slump shall be measured before pump and also at pump discharge. In the event that a batch fails to comply with specified requirements, the air content shall be measured on each successive batch until three batches meet the specified requirements.
- f. Temperature of concrete sample shall be measured for each strength test.

- g. If the measured slump or air content falls outside the specified limits, make additional tests immediately. Test all succeeding trucks for both slump and air until three in succession pass the slump and air tests.

### 3.10 PROTECTION

- A. No heavy construction vehicle shall operate on any pavement, curbing or walk after it has been installed.
- B. Traffic shall be prohibited on newly installed asphalt pavement until it has cooled sufficiently to avoid marking.
- C. Asphalt Pavements:
  - 1. Bituminous mixtures shall be transported and placed in accordance with MDOT Section 501.03.
- D. Concrete Pavements, Curbing and Walks:
  - 1. Concrete shall be mixed, transported, placed, and finished only within the temperature limitations specified in MDOT Sections 601.03F and 602.03T.
  - 2. No concrete shall be mixed, transported, placed, or finished when the temperature of the base, subgrade, or air is below 40 degrees F or whenever, in the opinion of the Engineer, the temperature may fall below 40 degrees F within 24 hours after the concrete has been placed.
  - 3. The Contractor shall take such precautions as are necessary to protect the concrete from rain.
  - 4. The Contractor shall protect the concrete from freezing for no less than seven days or until such time that specimen beams have attained a modulus of rupture of at least 600 psi.

### PART 4 SPECIAL PROVISIONS

- A. None.

**END OF SECTION**



**SECTION 02750  
INTEGRALLY COLORED & STAMPED  
CONCRETE PAVEMENT**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes the construction of integrally colored and stamped concrete as shown or scheduled on the Drawings, specified or directed.
- B. Related Sections:
  - 1. 02600 - Pavements, Curbing, and Walks

**1.02 REFERENCES**

- A. American Concrete Institute (ACI):
  - 1. ACI 301 "Specification for Structural Concrete for Buildings."
  - 2. ACI 302 IR "Recommended Practice for Concrete Floor and Slab Construction."
  - 3. ACI 303.1 "Standard Specification for Cast-In-Place Architectural Concrete."
  - 4. ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing of Concrete."
  - 5. ACI 305R "Recommended Practice for Hot Weather Concreting."
  - 6. ACI 306R "Recommended Practice for Cold Weather Concreting."
- B. American Society for Testing and Materials (ASTM):
  - 1. ASTM C309 "Liquid Membrane-Forming Compounds for Curing Concrete."
  - 2. ASTM C494 "Standard Specification for Chemical Admixtures for Concrete."
  - 3. ASTM C979 "Standard Specification for Pigments for Integrally Colored Concrete."
- C. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. AASHTO M194 "Chemical Admixtures."

**1.03 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturers' and suppliers' material certificates.

- 1) Design mix for integrally colored concrete.
  - 2) Color Admixture.
  - 3) Imprinting/Texturing tools
  - 4) Curing Compound.
- b. Samples for Initial Selection: Manufacturer's color charts showing full range of colors available.
2. Information for the Record:
- a. Delivery tickets from the concrete supplier shall be given to the inspector at the unloading site. Tickets shall include (as a minimum) name of source, date, type of material, and weight.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer with 10-years experience in production of specified products.
- B. Installer Qualifications: An installer with 5-years experience with work of similar scope and quality.
- C. Comply with the requirements of ACI 301.
- D. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout Project.
- E. Notification of manufacturer's authorized representative shall be given at least 1-week before start of Work.
- F. Integrally Colored Concrete Field Samples:
  1. At location on Project selected by Owner/Engineer, place and finish 10-foot x 10-foot area.
  2. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards (or not less than 1/3 the capacity of the mixing drum on the ready-mix truck) and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations.
  3. Construct field sample using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction, and expansion joints in sample panels. Field sample shall be produced by the individual workers who will perform the work for the Project.
  4. Retain samples of cements, sands, aggregates and color additives used in field sample for comparison with materials used in remaining work.

5. Field sample shall remain through completion of the work for use as a quality standard for finished work.
6. Remove field sample when directed.

**1.05 DELIVERY, STORAGE AND HANDLING**

- A. Colored Admixture: Comply with manufacturer's instructions. Deliver colored admixtures in original, unopened packaging. Store in dry conditions.

**1.06 PROJECT CONDITIONS**

- A. Integrally Colored Concrete Environmental Requirements:
  1. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.
  2. Avoid placing concrete if rain, snow, or frost is forecast within 24-hours. Protect fresh concrete from moisture and freezing.
  3. Comply with professional practices described in ACI 305R and ACI 306R.
- B. Schedule delivery of concrete to provide consistent mix times from batching until discharge. Mix times shall meet manufacturer's written recommendations.

**1.07 PRE-JOB CONFERENCE**

- A. One week prior to placement of integrally colored concrete, a meeting shall be held to discuss the Project and application methods.
- B. It is suggested that the Owner/Engineer, General Contractor, Subcontractor, Ready-Mix Concrete Representative, and a Manufacturer's Representative be present.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Sika Corporation (Scofield brand).
- B. The use of products other than those specified will be considered provided the Contractor requests its use in writing within 14-days prior to bid date. This request shall be accompanied by the following:
  1. A certificate of compliance from the material manufacturer stating that proposed products meet or exceed requirements of this Section, including standards ACI 303.1, ASTM C979, ASTM C494 and AASHTO M194.

2. Documented proof that proposed materials have a 10-year proven record of performance for staining concrete substrates, confirmed by at least 5 projects that Owner/Engineer can examine.

## 2.02 MATERIALS

- A. L.M SCOFIELD Systems or Owner/Engineer approved alternate.
  - a. Pattern and Texture: LITHOTEX Pavecrafters: Pennsylvania Avenue Brick Running Bond.
  - b. Color Admixture for Concrete: CHROMIX color to be selected by the Owner/Engineer from the manufacturer's standard running line.
    - 1) Admixture shall be a colored, water-reducing admixture containing no calcium chloride with coloring agents that are lime-proof and ultra-violet resistant.
    - 2) Colored admixture shall conform to the requirements of ACI 303.1, ASTM C979, ASTM C494, and AASHTO M194.
    - 3) Raw pigments are not an equivalent and may not be substituted.
  - c. Release Agent: LITHOCHROME Antiquing Release Pro.
    - 1) Powder antiquing release agent shall be recommended by pattern tool manufacturer and compatible with integral color additives.
  - d. Clear Concrete Sealer and Curing Agent: CURESEAL 700; Matte Finish
    - 1) Curing compound shall comply with ASTM C309 and be of same manufacturer as colored admixture, for use with integrally colored concrete.

## 2.03 CONCRETE MIX

- A. Concrete mix shall conform to Section 02600 except as noted herein.
- B. Slump of concrete shall be consistent throughout Project at 4-inches or less. At no time shall slump exceed 5-inches. If super plasticizers are used, slump shall not exceed 8-inches.
- C. Do not add calcium chloride to mix as it causes mottling and surface discoloration.
- D. Supplemental admixtures shall not be used unless approved by manufacturer.
- E. Do not add water to the mix in the field.
- F. Add colored admixture to the mix according to manufacturer's written instructions in premeasured bags, not by weight of cement content.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install concrete in accordance with Section 02600.
- B. Apply pattern according to tool manufacturer's instructions. Touch up pattern and finish edges with hand tools as necessary.

#### **3.02 CURING**

- A. Integrally Colored Concrete: Apply curing and sealing compound for integrally colored concrete according to manufacturer's instructions using manufacturer's recommended application techniques. Apply curing and sealing compound at consistent time for each pour to maintain close color consistency.
- B. Curing compound shall be same color as the colored concrete and supplied by same manufacturer of the colored admixture.
- C. Precautions shall be taken in hot weather to prevent plastic cracking resulting from excessively rapid drying at surface as described in CIP 5 *Plastic Shrinkage Cracking* published by the National Ready Mixed Concrete Association.
- D. Do not cover concrete with plastic sheeting.

#### **3.03 TOLERANCES**

- A. Minor variations in appearance of colored concrete, which are similar to natural variations in color and appearance of uncolored concrete, are acceptable.

#### **3.04 APPLICATORS**

- A. For a list of qualified contractors, contact your local Scofield representative.

### **PART 4 SPECIAL PROVISIONS**

- A. None

**END OF SECTION**

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**SECTION 02800  
SEEDING AND MULCHING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes fine grading, and seeding and mulching areas designated on the Drawings, specified, or ordered.
- B. The Work consists of fine grading, furnishing and placing topsoil; seed; mulching material; and fertilizer; and watering seeded areas until growth is established.
- C. The Contractor shall restore all grass areas damaged by his operations.
- D. Unless otherwise specified herein or directed, Work shall be in conformance with MDOT Section 816, Turf Establishment.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturer's project information for materials.
  - 2. Information for the Record:
    - a. Submit to Resident Project Representative:
      - 1) Invoices indicating the weight, brand, and composite analysis of fertilizer used on the project.
      - 2) Bag tickets indicating weight and composition of all seed used on the project.

**PART 2 PRODUCTS**

**2.01 SEED**

- A. Seed mixtures shall be in conformance with the requirements of MDOT Tables 816-1 and 917-1, Mixture TUF, unless otherwise specified in Part 4.

**2.02 FERTILIZER**

- A. Commercial fertilizers shall be from a dealer or manufacturer whose brands and grades are registered or licensed by the State of Michigan, Department of Agriculture. The content of nutrients shall be 12-12-12, unless otherwise approved by Engineer.

**2.03 MULCHING MATERIAL**

- A. Mulching material shall be straw, wood fiber or compost reasonably free of weed seed, and other foreign materials, conforming to MDOT Section 917.15A.

**2.04 MATTING MATERIAL**

- A. Matting material shall be in conformance with the requirements of MDOT Section 917.14B, unless otherwise specified in the Special Provisions.

**2.05 TOPSOIL**

- A. Topsoil furnished by the Contractor shall be as specified in Section 02200.

**PART 3 EXECUTION**

**3.01 FURNISHING AND PLACING TOPSOIL**

- A. Areas from which the top layer of soil has been removed or disturbed shall be recovered with a minimum of 4 inches of recompacted topsoil placed in conformance with Section 02200 or MDOT Section 816.03A.

**3.02 PREPARATION**

- A. The operating of finish grading and sowing shall not be performed when the ground is frozen or muddy.
- B. Areas to be Seeded:
1. Unless otherwise shown on the Drawings or specified in Part 4, all areas of disturbed soil on the Site shall be seeded.
  2. The area to be seeded shall be prepared in accordance with Section 02200.
  3. Fertilizer shall be applied at a rate which will provide 240 pounds per acre of chemical fertilizer nutrients in equal proportions of Nitrogen, Phosphoric Acid, and Potash. Either dry or liquid fertilizer may be used and shall be distributed in an even pattern over the specified area, then thoroughly disked, harrowed, or raked into the soil to a depth of not less than 1 inch.

**3.03 INSTALLATION**

- A. Seeding:
1. The seed shall be mixed thoroughly and sown evenly at a rate specified by MDOT. The seed mixture may be sown dry or hydraulically unless directed otherwise in Part 4 of this Section.
  2. The seed mixture shall be applied when the soil is in a workable condition and shall be raked into a depth of approximately 1/4 inch.



3. Seed shall be sown only between the dates of May 1 and October 15, unless otherwise permitted by the Engineer.
- B. Mulching:
1. Within 24 hours after an area has been seeded it shall be mulched in conformance with one of the following specified methods as designated in Part 4:
    2. Mulch:
      - a. Mulching with hay or straw shall be in conformance with mulching requirements of MDOT Sections 816.03E, F, and G except that in front of residences the mulching material shall be kept in place by an approved non-tracking adhesive or other approved method in lieu of the specified asphalt emulsion.
      - b. Matting shall be used on all slopes greater than 10:1. Matting used for mulching shall be placed in conformance with MDOT Section 816.03H.
- C. Seeded areas shall be watered and maintained as specified below until they are established.
1. The seed bed shall be thoroughly watered, as soon as the seed is covered.
  2. Water shall be applied by a hydro-seeder or water tank under pressure with a nozzle producing a spray that will not dislodge the mulching material.
  3. Water applications shall be made at least once a week, provided significant rainfall has not occurred within the weekly period.
  4. The rate of application shall be 240 gallons per 1,000 square feet
  5. Mulch and matting areas shall be maintained until all Work on the Contract has been completed and accepted.
  6. The seeded area shall be mowed once at an approximate height of 6 inch as directed by the Engineer to control excess growth, including weeds.
  7. Maintenance shall consist of the repair of areas damaged by erosion, wind, fire, or other causes. The soil in these damaged seeded areas shall be restored to the condition and grade existing prior to application of mulch or matting, and restored areas shall be relimed, refertilized, and reseeded. Where necessary, the mulch or matting shall be completely replaced.

#### **PART 4 SPECIAL PROVISIONS**

None

END OF SECTION

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**SECTION 05540  
IRON CASTINGS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes manhole covers and frames, and other iron castings shown on Drawings.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Product literature that shall be included; General Specifications, Surface Coating, Anchor Bolts, Machine Bearing Surface.
    - b. Independent Shop Drawings shall be submitted for the frame and the cover.
    - c. A submittal of a casting schedule that clearly notes either the structure number or in what circumstances the casting is intended to be installed, shall be included, i.e., roadway.
    - d. All dimensions for both the frame and the cover/grate shall be included.
  - 2. Information for the Record:
    - a. Material certification.
    - b. Proof-load test data.
    - c. Manufacturer's installation instructions.
    - d. Manufacturing Capabilities and Quality Control Measures.

**1.03 PRODUCT HANDLING**

- A. Castings shall be delivered in sufficient time to permit proper placement in pavement and slabs.
- B. Castings shall be stored in such a way as to prevent warping prior to installation.
- C. Additional product handling requirements are specified in Section 01350.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Castings shall be manufactured by East Jordan Iron Works, Inc., or approved equal.

### **2.02 MANHOLE COVER AND FRAME**

- A. Castings located in roadways, driveways, or other areas subject to vehicular traffic shall be suitable for heavy-duty service. Other castings shall be suitable for light-duty service.
- B. Unless indicated otherwise, sewer manhole shall have a minimum access opening of 24 inches.
- C. Unless indicated otherwise, heavy duty manhole cover and frame shall be East Jordan No. 1045, Product 00104510.

### **2.03 INLET GRATE AND FRAME**

- A. Castings shall be suitable for heavy duty service.
- B. Unless indicated otherwise, inlet grate and frame shall be East Jordan No. 7045.

### **2.04 RESERVED**

### **2.05 PERFORMANCE REQUIREMENTS**

- A. Castings shall be gray iron conforming to ASTM A48, Class 35.

### **2.06 FABRICATION**

- A. Castings shall be free from pouring faults, sponginess, cracks, blowholes, blisters, shrinkage strains, and other defects. Plugging of defective castings is not permitted.
- B. Castings shall be true to pattern in form and dimension. Weight of castings shall not vary by more than 5% from published weight. Contractor shall submit invoices showing actual weight of casting as certified by manufacturer.
- C. Castings shall have machined bearing surfaces.
- D. All castings shall be coated with a non-toxic, nonflammable, water-based, asphalt paint.
- E. Lettering shall be cast on covers. Unless indicated otherwise, the manufacturer's name shall be cast in cover.
- F. Covers for water line manholes shall be solid lids and labeled "WATER".
- G. Covers for sanitary sewer manholes shall be solid lids and labeled "SANITARY".
- H. Covers for storm sewer manholes shall be solid lids and labeled "STORM".

- I. Covers shall be furnished with bolts, locks, hinges, perforations, lifting rings, and pick holes as specified, shown on Drawings, or as directed.

### **PART 3 EXECUTION**

#### **3.01 PREPARATION**

- A. Contractor shall examine surfaces to receive castings and shall report unacceptable conditions to Engineer before proceeding with the Work.

#### **3.02 ERECTION AND INSTALLATION**

- A. Castings shall be accurately set, aligned, and anchored as shown on Drawings.
- B. Castings shall be installed in accordance with manufacturer's instructions or shown on the drawings. If any discrepancies exist, then the more stringent requirements shall take precedence.
- C. Stop plank grooves shall be square, set plumb, and securely anchored as shown. Grooves that are buckled, twisted, or otherwise prevent free insertion of stop plank shall be removed and replaced.

### **PART 4 SPECIAL PROVISIONS**

None

END OF SECTION

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**CITY OF KALAMAZOO  
DEPARTMENT OF  
PUBLIC SERVICES**

**WATER RESOURCES DIVISION**



**PUBLIC SERVICES DEPARTMENT**

WATER RESOURCES DIVISION  
415 STOCKBRIDGE AVE.  
KALAMAZOO, MICHIGAN 49001-2898  
PHONE 269-337-8601  
FAX 269-337-8533

**Standard Specifications for  
Water Main and Service Installation  
2021**



## WATER MAIN AND WATER SERVICES

### PART 1 GENERAL

#### 1.01 SCOPE

- A. This Section includes furnishing and installing water main systems.
- B. Reconnection of proposed water main and/or water service connections to existing water main and/or water service constructions shall be in conformance with requirements of this Section.
- C. This Section shall include furnishing, excavating, installing, testing, disinfecting, and backfilling all required water main pipe, water service pipes, water main appurtenances, water service, and other work incidental to the water main and/or water service installation unless specifically included under other Items.
- D. This work shall also consist of providing as-constructed plans of the completed work.

#### 1.02 SUBMITTALS

- A. Submittals shall be the responsibility of the Contractor:
  - 1. Shop Drawings for Review:
    - a. Manufacturer's Shop Drawings indicating physical dimensions, and joint details for each size, type, and class of pipe, fittings and specials furnished for the project.
  - 2. Information for the Record:
    - a. Manufacturer's certification indicating that the pipe and joints meet specifications for each production run for each size, type, and class of pipe furnished. The Engineer may request test results to verify certification. Certification documents shall be according to the Source Quality Control of this Section.
    - b. Manufacturer's installation instructions.
    - c. The laboratory shall submit test certifications of pipe ordered tested under "Field Quality Control," of this Section.
  - 3. Engineer may request additional Shop Drawings or Information for the Record as required.
  - 4. **Requests for approved equals must be submitted to the Engineer for review a minimum of two (2) weeks prior to bid.**

#### 1.03 AS CONSTRUCTED RECORD

- A. During construction the contractor shall be required to keep current a set of "as constructed" drawings. Before final payment shall be made, the contractor shall submit for approval to the City of Kalamazoo the complete set of as constructed drawings. Each set of "as constructed" drawings shall be labeled "As Constructed", dated, and contain at a minimum the following information (additional information may be required by the City of Kalamazoo):
  - 1. Note distance between all fittings (Center to Center of Fittings).
  - 2. Note Hydrant to valve, valve to main distances (Center to Center of Fittings).
  - 3. Note the type of bend used, (# of degrees), and the Direction of Bend: (Up or down), (N-S-E-W).



4. Note lengths and locations of restrained joints.
5. Details and profiles of special field situations that relate to the water distribution system shall be included.
6. Dimensional information locating each water distribution system component to real world features, such as property lines, right-of-way lines, and centerlines of roads.
7. On all cul-de-sacs with no center island, measure bends and hydrants to center of cul-de-sac. On all cul-de-sacs with a center island, measure bends and hydrants to center of the roadway.
8. When fittings/hydrants are installed as proposed, please circle the proposed listing.
9. All hydrants shall be noted as to whether or not drip valve plugs were installed.
10. When installing 12 inch or larger valves, (Butterfly Valves), indicate which side of the main the operating nut was placed, as well as gear box style with number of turns to close.
11. The contractor shall complete the service card information including a sketch of the water service installation with dimensions and location of the curb box.
12. Contractor shall GPS all valves, hydrants, fittings, as well a minimum every 3 lengths of pipe for straight runs. DWG files shall be provided to the Engineer upon completion of the project. GPS accuracy shall be subfoot.
13. **All as-built record drawings shall be completed and turned in to the Engineer within 2 weeks from completion of the installation.**

#### 1.04 CONTRACT WORK

- A. Prior to the start of construction, the City of Kalamazoo shall be given the opportunity to provide construction services for any and all portions of the water main construction. The City of Kalamazoo shall submit an estimated cost to perform the work or will issue a bill based on time and material costs. A separate contract with the City of Kalamazoo will be needed for work to be performed by the City of Kalamazoo.
  1. City of Kalamazoo shall perform all water main taps in the water system, unless otherwise directed by the Engineer.
- B. The City of Kalamazoo Department of Public Services must approve the Contractor who will perform water main installation. A reference list of at least five (5) Type 1 supply water main projects completed by the Contractor shall be submitted in support of the Contractor's qualifications. The Department of Public Services maintains a list of Contractors approved for water main installation and can be contacted to receive a current copy of that list.
- C. The Contractor (when hired by the City) or Developer (when the Contractor is hired to perform work by the Developer), shall provide a written statement of warranty (Warranty Bond) for a period of 2 years from the date of **final acceptance** for water main work or **after meter is installed** for water service work. Warranty work shall cover any necessary cost to repair water main or appurtenance leaks and water main or appurtenance leak damage at no cost to the City of Kalamazoo. Final acceptance on all water main and appurtenance work shall not occur until all items have been inspected by the Engineer, passed all required testing, as well as receipt and approval of all as built documents. Additionally, final acceptance on a water service will only be given **once the water meter is installed**.
  1. Water service or water main warranty work shall be completed either a prequalified contractor under the inspection of the City of Kalamazoo, or by City of Kalamazoo field service crews. All warranty work shall be paid for by the Developer or the Contractor.
- D. The Contractor is responsible for field locating all work which has not yet received final acceptance by the City of Kalamazoo. All damage to work that has not received final acceptance is the responsibility of the Contractor.

## PART 2 PRODUCTS

All Products shall be supplied new from the manufacturer and certified new from the supplier. No second hand or salvaged material shall be allowed. All products shall be **“Buy American”** unless otherwise specified in this section.

### 2.01 DUCTILE IRON

#### A. Ductile Iron (DI) Pipe Specifications:

1. Ductile Iron Pipe shall be manufactured in accordance with American National Standards Institute (ANSI) and American Water Works Association (AWWA) ANSI/AWWA C150/A21.50 and C151/A21.51. Pipe shall be minimum thickness Class 52 pipe. Flanged pipe shall be manufactured in accordance with ANSI/AWWA C 115/A21.15. Pipe through concrete floors or foundations shall be minimum thickness Class 53 pipe.
  - a. Water pipe must be lined with a standard thickness cement mortar lining sealed with a bituminous seal coat in accordance with ANSI/AWWA C104/A21.4, unless otherwise required. The outside of the pipe must be coated with the standard bituminous seal and each length of pipe must be marked with the following information
    - 1) Metal thickness class.
    - 2) Net weight of the pipe without lining.
    - 3) The nominal size.
    - 4) The manufacturer's identifying symbol.
  - b. Underground pipe shall be push on or mechanical joints and above ground pipe shall be flanged joints with gaskets meeting the requirements of ANSI/AWWA C111/A21.11. Nitrile or fluoroelastomer gaskets shall must be used as indicated on the plans and in locations of known or suspected soil or groundwater contamination as necessary. Gaskets provided will be specified based on the type of contamination that is encountered. Each joint shall contain serrated silicon bronze electrical continuity wedges as directed by the Engineer or authorized representative. 4 to 6 inch pipe shall use 2 wedges, 8 to 12 inch pipe shall use 3 wedges, and 16 inch and above shall use 4 wedges.
  - c. Pipe used in conjunction with Horizontal Directional Drilling operations shall be Flex-Ring or TR FLEX joints.

#### B. Restrained Joints

1. Restrained joints shall meet the requirements of ANSI/AWWA C111/A21.11, and AWWA/ANSI C110/A21.10 or ANSI/AWWA C153/A21.53.
2. Mechanical restrained joints shall be EBAA Iron Megalug series 1100, Romac Romagrip, Ford Series 1400, or approved equal.
  - a. Restraint devices for nominal pipe sizes 4 inch through 54 inch shall consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of ANSI/AWWA C110/A21.10.
  - b. The devices shall have a working pressure rating of 350 psi for 4 to 16 inch, 250 psi for 18 to 48 inch and 200 psi for the 54 inch size. Ratings are for water pressure and must include a minimum safety factor of 2 to 1 in all sizes.

- c. Gland body, wedges and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536.
  - d. Ductile iron gripping wedges shall be heat treated within a range of 370 to 470 BHN.
  - e. Three (3) test bars shall be incrementally poured per production shift as per Underwriter's Laboratory (U.L.) specifications and ASTM A536. Testing for tensile, yield and elongation shall be done in accordance with ASTM E8.
  - f. Chemical and nodularity tests shall be performed as recommended by the Ductile Iron Society, on a per ladle basis.
  - g. All components shall be manufacture and assembled in the United States.
  - h. Coating for restraint devices shall consist of the following:
    - 1) All wedge assemblies and related parts shall be processed through a phosphate wash, rinse and drying operation prior to coating application. The coating shall consist of a minimum of two coats of liquid thermoset epoxy coating with heat cure to follow each coat.
    - 2) All casting bodies shall be surface pretreated with a phosphate wash, rinse and sealer before drying. The coating shall be electrostatically applied and heat cured. The coating shall be a polyester based powder to provide corrosion, impact and UV resistance.
    - 3) The coating system shall be MEGA-BOND by EBAA Iron, Inc. or approved equal.
3. Push on restrained joint shall be field locking gasket or Flex Ring style as manufactured by US Pipe, McWane, American USA, or approved equal. Field locking or Flex Ring gasket shall match appropriately to the manufacturer of the pipe used.
  4. Use of threaded rods or thrust blocks as a restrained joint shall not be permitted, unless approved by the Engineer.
  5. Restrained flange adapters shall be EBAA Iron Megaflange series 2100 or approved equal.
    - a. Restrained flange adapters shall be made of ductile iron conforming to ASTM A536 and have flange bolt circles that are compatible with ANSI/AWWA C110/A21.10 (125#/Class 150 Bolt Pattern).
    - b. Restraint for flange adapter shall consist of plurality of individual actuated gripping wedges to maximize restraint capability. Torque limiting actuating screws shall be used to insure proper initial set of gripping wedges.
    - c. The flange adapters shall be capable of deflection during assembly or permit lengths of pipe to be field cut to allow a minimum of 0.6 inch gap between the end of the pipe and the mating flange without affecting the integrity of the seal.
    - d. All internal surfaces of the gasket ring (wetted parts) shall be lined with a minimum of 15 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C213. The coating shall meet ANSI/NSF-61. Exterior surfaces of the gasket ring shall be coated with a minimum of 6 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C116/A21.16.
    - e. Restraint Ring coated with MEGA-Bond Restraint Coating System.

C. Ductile Iron Pipe Fittings

1. Fittings, plugs, and gaskets must meet the requirements of ANSI/AWWA C111/A21.11, and AWWA/ANSI C110/A21.10 or ANSI/AWWA C153/A21.53. Cement mortar linings for fittings must meet the requirements of ANSI/AWWA C104/A21.4.
2. Mechanical joints shall be EBAA Iron Megalug series 1100, Romac Romagrip, or approved equal.
3. Restrained flange adapters shall be EBAA Iron Megaflange series 2100 or approved equal.

2.02 Ductile Iron Valves

- A. All underground valves in sizes from 4 inches to 10 inches shall be reduced wall, resilient-seated gate valves for water supply service meeting the requirements of AWWA C 515. Valves shall be American Flow Control Series 2500, Clow model 2638, or EJ Flowmaster Series resilient seated gate valve, Mechanical joint with rubber gaskets (per AWWA/ANSI C 111/A21.11), ductile iron body, stainless steel stem, mechanical joint restraint, and ¾ inch tee head bolts. Valves shall open right (clockwise) and be equipped with standard AWWA operating nut. Nut shall be color coded red. Valves shall have a working pressure rating of 250 psi or greater.
1. In lieu of a mechanical joint restraint, American Flow Control Series 2500 valves may be equipped with ALPHA joints.
- B. All underground valves 12 inches and larger shall be rubber-seated butterfly valves meeting the requirements of AWWA C 504. Valves shall be Pratt Groundhog Butterfly Valves, by Henry Pratt Company, Clow, M&H, or Kennedy model 4500, mechanical joint with rubber gaskets (per AWWA/ANSI C 111/A21.11), ductile iron body, mechanical joint restraint, and ¾ inch tee head bolts. Valves shall open right (clockwise) and be equipped with standard AWWA operating nut. Nut shall be color coded red. Valves shall have a working pressure rating of 250 psi or greater.
- C. All above ground or in pits/vaults valves between 3 inches and 10 inches shall be rubber seated gate valves meeting the requirements of AWWA C515. Valves shall be American Flow Control Series 2500 Resilient Wedge Gate Valve, Clow model 2638, EJ Flowmaster Series, or approved equal with flanged joint with rubber gaskets (per AWWA/ANSI C 111/A21.11), ductile iron body, stainless steel bolts, nuts and washers, stainless steel stem, and be equipped with a hand wheel to operate. Valves shall have a working pressure rating of 150 psi or greater.
- D. All above ground or in pits/vaults valves 12 inches and larger shall be rubber seated butterfly valves meeting the requirements of AWWA C504. Valves shall be by Henry Pratt Company, Clow, M&H, or Kennedy, flanged joint with rubber gaskets (per AWWA/ANSI C 111/A21.11), ductile iron body, and ¾ inch stainless steel bolts, washers and nuts. Valves shall open right (clockwise) and be equipped with standard wheel to operate. Valves shall have a working pressure rating of 150 psi or greater.
- E. All underground valves in sizes from 4 inches to 16 inches used in combination with a tapping saddle shall be reduced wall, resilient-seated gate valves for water supply service meeting the requirements of AWWA C 515. Valves shall be American Flow Control Series 2500, Clow model 2638, EJ Flowmaster Series with one flanged and one mechanical joint ends with rubber gaskets (per AWWA/ANSI C 111/A21.11), ductile iron body, stainless steel stem, mechanical joint restraint, and ¾ inch tee head bolts or approved equal. Valves shall open right (clockwise) and be equipped with standard AWWA operating nut. Nut shall be color coded red. Valves shall have a working pressure rating of 250 psi or greater.

- F. All valves used in conjunction with a fire service line shall be Mueller R-2361-6 Outside Screw and Yoke (O.S.&Y.) with sample tap or approved equal. The stem shall be type 304 stainless steel. Sample tap shall have a 4 ½ inch brass nipple, brass ball valve, and brass plug meeting NSF/ANSI Standard 61 requirements. Sample tap shall be ½ inch for 4 inch and smaller valves and ¾ inch for valves larger than 4 inch.
- G. All valves installed using the insertion style method shall be an all stainless steel body Resilient Wedge Gate Valve designed for permanent use in potable water systems. The design will allow the valve to be installed into an existing pressurized pipeline while maintaining constant pressure and service without system shutdown. No restraining devices, restraining fasteners, or transition gaskets shall be required for the installation or operation of the valve. Valves in sizes 4 inches to 12 inches shall be Hydra-Stop Insta-Valve 250 or approved equal. 16 inch valves shall be Hydra-stop Insta-Valve Plus 250 or approved equal.

## 2.03 HYDRANTS

- A. All fire hydrants shall be American Flow Control or EJ and shall meet the requirements of AWWA C502. Hydrants shall be provided as complete units including hydrant, hydrant marker, pipe, pipe fittings and valve meeting section 2.01, 2.03 and 2.04 requirements. Hydrants shall be supplied for a bury depth of 5.5 feet. The hydrant barrel shall be painted safety yellow by the manufacturer. Hydrant caps and operating nut shall be painted John Deere green by the manufacturer.
  - 1. American Flow Control hydrants shall be 5 ¼ inch Waterous Pacer Traffic Model WB67-250. Hydrants shall be supplied with a 16 inch upper standpipe length. The Hydrant will come equipped with a bronze upper valve washer. In lieu of a mechanical joint restraint, hydrants may be equipped with ALPHA joints.
  - 2. EJ hydrants shall be WaterMaster Model 5BR250 with snow barrel.
- B. Hydrants shall come equipped with a Carrol Drain. Drain piping shall be made of type 304 stainless steel. External port shall have removable cap for flushing hydrant. Carrol Drain assembly shall be constructed so that it is removable when replacement of assembly is necessary.
- C. Hydrants shall have two 2 ½ inch national standard hose connections, 7.5 threads per inch, OD of threads 3 1/16 inch and one 5 inch integral "STORZ" type nozzle connection. Hose nozzle cap nut, weather shield hydrant operating nut, Storz nozzle cap nut, and Carrol Drain cap nut shall be square 15/16 inch at bottom of nut tapered to 13/16 inch at top (Waterous reference #19). The hydrant mechanism shall be on a non-rising stem opening clockwise. Chains shall not be supplied with the hydrant caps.
- D. Hydrants shall be equipped drip valve, tapped for plug. The drip valve system shall be bronze. Draining system shall be positively activated by the main operating rod, meaning the drip valve will open when the hydrant is closed. Hydrant shall be provided with plug removed.
- E. Hydrants shall have a 6 inch shoe with mechanical joint connections in conformance to ANSI/AWWA C115/21.11.

## 2.04 FIRE HYDRANT MARKER

- A. The fire hydrant sign shall be installed on a galvanized 2 pound sign post.
- B. The fire hydrant sign shall be aluminum 8 inch x 18 inch (MDOT type III-A) with hydrant symbol and down arrow of a reflective material.
- C. Fire hydrant mounted marker whips shall be 4 feet x 3/8 inch solid pultrusion fiberglass shaft, with seven (7) 6 inch bands of E.G. reflective sheeting of alternating lime green and red color.

Marker shall have a single solid stainless steel spring with aluminum threaded insert, and use Zinc coated bolt & mounting hardware.

## 2.05 TAPPING SLEEVES

- A. Tapping sleeves for size on size taps or 12 inch and larger sleeves:
1. Model shall be American Flow Control series 2800-C, Tyler Union, Smith-Blair series 665, Romac style SST III, Ford style FTSS, Ford MJTS, or approved equal.
  2. Ductile Iron Tapping Sleeves.
    - a. Sleeves shall be of construction meeting ASTM A536. Side flange seals shall be O-ring type of round cross-sectional shape.
    - b. All sleeves to include the end joint accessories and split glands necessary to assemble sleeve to pipe.
    - c. Sleeve shall be coated with asphaltic varnish in compliance with NSF-61.
  3. Stainless Steel Tapping Sleeves.
    - a. Sleeves shall be 18-8 type 304 Stainless Steel in accordance with AWWA C223.
    - b. Bolts, nuts, and washers shall be 18-8 Type 304 Stainless Steel. Nuts shall be heavy hex, and coated to prevent galling.
- B. Tapping sleeves smaller than 12 inch which are not size on size:
1. Model shall be Smith-Blair series 665, Romac style SST III, Ford style FTSS, or approved equal.
  2. Sleeves shall be 18-8 type 304 Stainless Steel in accordance with AWWA C223.
  3. Bolts, nuts, and washers shall be 18-8 Type 304 Stainless Steel. Nuts shall be heavy hex, and coated to prevent galling.
- C. Line Stop Tapping Sleeves and appurtenances:
1. Model shall be Hydra-Stop HSF 250 Patriot or approved equal
  2. Body shall be type 304 Stainless Steel in accordance with AWWA C223.
  3. Blind Flange shall be Epoxy Coated Carbon Steel or type 304 Stainless Steel.
  4. Bolts, Nuts and Washers shall be type 304 Stainless Steel.
  5. Completion Plug shall be HSF 250 Push and Pin Style, made of reinforced composite polymer.
  6. Completion Plug O-ring shall be BUNA-N Rubber
  7. Completion Plug Pins shall be SAE Grade 8, Zinc coated to prevent corrosion
  8. Completion Pin Plug shall be type 304 Stainless Steel, coated to prevent galling.
  9. Flange O-Ring shall be BUNA-N Rubber.
- D. All gaskets shall be Nitrile in compliance with NSF-61.
- E. No special tools shall be required other than standard socket wrench.
- F. Flange end pilot dimensions to be in compliance with MSS-Sp-60.

## 2.06 AIR RELEASE VALVES

- A. Air Release Valves – All air release valves shall be manufactured per ANSI/AWWA C512-04. Cla-Val Series 36 Combination Air Valves, or approved equal. The valves shall be of the size listed in the plans.
1. The combination air valve shall combine the operating features of both an air and vacuum valve and an air release valve in one housing. The air and vacuum valve portion shall automatically exhaust large quantities of air during the filling of the pipeline and automatically allow air to reenter the pipeline when the internal pressure of the pipeline approaches a negative value due to column separation, draining of the pipeline, or other emergency. The air release valve portion shall automatically release small amounts of air from the pipeline while it is under pressure.
  2. The inlet and outlet of the valve shall have the same cross section area. The float shall be guided by a stainless steel guide shaft and seat drip tight against a synthetic rubber seal. 4 inch and larger valves shall have dual guided shafts of hexagonal cross section and a protective discharge hood.
  3. The float shall be of all stainless steel construction and capable of withstanding maximum system surge pressure without failure. The body and cover shall be concentrically located and of ductile iron and the valve internal parts shall be stainless steel or Buna-N rubber.
  4. All 1 inch and 2 inch valves shall be NPT. All valves 4 inch and larger shall be flanged.
- B. Vent piping shall be 2 inch diameter, with copper piping below grade and galvanized piping above grade.
- C. Air vent screens shall be black PVC, with NPT threaded to match the size of the connection pipe. Screen shall be one-piece 304 Stainless, mesh size 100. Silver reflective tape shall be placed on the vent pipe.
- D. An air release valve sign shall be installed on a galvanized 2 pound sign post.
- E. The valve sign shall be aluminum 8 inch x 18 inch (MDOT type III-A) with valve symbol and down arrow of a reflective material.

## 2.07 REPAIR SLEEVES

- A. All repair sleeves shall be certified NSF/ANSI 61-G and 372, and be in accordance with AWWA C230. Sleeves without service tap shall be Smith – Blair model 226, PowerSeal model 3121, or approved equal. Sleeves with service tap shall be Smith – Blair model 238, PowerSeal model 3131, or approved equal.
- B. Sleeves shall use Type 304 Stainless Steel hardware in accordance with ASTM A193/A194. Sleeves shall have conductivity feature.
- C. The repair sleeves shall be of the full circle type designed to repair a fully broken (completely separated) pipe and shall be rated for a working pressure of not less than 150 psi. Repair sleeves 12 inches or under in size will have a single joint.
- D. The length of the sleeves shall not be less than 7 ½ inches. Sleeves shall have no less than three (3) guide bolts of the minimum specified length. Sleeves of longer length shall have an additional guide bolt for every two (2) inches of additional band length.
- E. Each sleeve shall consist of a sealing gasket, a non-magnetic stainless steel band with contact buttons protruding through specially prepared gaskets, clamp lugs, bolts and nuts.
- F. No welding will be permitted in the manufacture of stainless steel repair sleeves except for the addition of the tap to repair sleeve.

- G. The lugs shall not be deformed in the process of attachments to the band during assembly or during removal in the field.
- H. The gasket shall be natural rubber, nitrile or approved equal and shall be of the tapered overlap design to give a pressure tight fit on the pipe surface to form a leak tight, permanent seal when the repair sleeve is installed. The gasket shall have a grid pattern to conform pipe surface irregularities.
- I. The gasket shall have a stainless steel bridge plate flush mounted and securely bonded into the gasket during the molding of the gasket.

## 2.08 POLYETHYLENE ENCASEMENT

- A. Polyethylene encasement must be manufactured using 8 mil thick virgin polyethylene in accordance with ANSI/AWWA C105/A21.10. Provide the tube size recommended by the manufacturer to protect the pipe and fitting sizes. Provide adhesive tape for the polyethylene tube as recommended by the manufacturer. Tape for repairing damage to the polyethylene must have a life expectancy equal to or greater than the life expectancy of the polyethylene.

## 2.09 STEEL BLOW-OFF PIPE

- A. Steel pipe shall be hot dipped galvanized meeting the requirements of ASTM A53.

## 2.10 WATER SERVICES AND APPURTENANCES

### A. Copper Service Lines

- 1. Copper pipe shall be used for service lines which are  $\frac{3}{4}$  inch, 1  $\frac{1}{4}$  inch and 2-inch. All copper services shall conform to AWWA C800. Water service pipe shall be copper meeting the requirements of ASTM B88, type K.
- 2. All appurtenances on copper service lines shall be flare copper connections. Other connections may be used in lieu of flare copper connections if approved by the Engineer prior to installation.

- B. All water service appurtenances shall meet the requirements of AWWA C800 and be from The Ford Meter Box Company, Inc., A.Y. McDonald Mfg. Co., or as approved by the Engineer. All water service appurtenances for 2 inch and smaller are as follows:

#### 1. $\frac{3}{4}$ inch services:

- a. Corporation Stop  $\frac{3}{4}$  inch – FB600-3-NL or AY McDonald 74701B NL (3/4 inch)
- b. Service Saddle – Smith-Blair 311(4 to 12 inch water main), Smith-Blair 313 (16 to 24 inch water main), Romac 101U(4 to 12 inch water main), Romac 202SSU (16 to 24 inch water main), Ford F101(4 to 12 inch water main), or Ford F202(16 to 24 inch water main).
- c. Curb Stop (for use when reducing a 1  $\frac{1}{4}$  inch street service to  $\frac{3}{4}$  inch yard service) – Ford B21-555-NL, C18-35-NL, and C28-33-NL
- d. Curb Stop (when using  $\frac{3}{4}$  inch street service) – Ford B22-333-NL or AY McDonald 76100 NL ( $\frac{3}{4}$  inch)
- e. Brass Fittings – All brass fittings such as tees, elbows, caps, nipples and similar items shall be manufactured in the U.S.A.
- f. Couplings – Ford C22-33-NL or AY McDonald 74758 NL ( $\frac{3}{4}$  inch)

#### 2. 1 $\frac{1}{4}$ inch services:

- a. Corporation Stop – Ford FB600-45-NL or AY McDonald 74701B NL (1 x 1  $\frac{1}{4}$  inch)



- b. Service Saddle – Smith-Blair 311(4 to 12 inch water main), Smith-Blair 313 (16 to 24 inch water main), Romac 101U(4 to 12 inch water main), Romac 202SSU (16 to 24 inch water main), Ford F101(4 to 12 inch water main), or Ford F202(16 to 24 inch water main).
  - c. Curb Stop – Ford B22-555-NL or AY McDonald 76100 NL (1 ¼ inch)
  - d. Brass Fittings – All brass fittings such as tees, elbows, caps, nipples and similar items shall be manufactured in the U.S.A.
  - e. Couplings – Ford C22-55-NL or AY McDonald 74758 NL (1 ¼ inch)
3. 2 inch services:
- a. Tapping Valve – Ford B11-777-NL
  - b. Service Saddle – Smith-Blair 313, Romac 202S, or Ford F202
  - c. Brass Fittings – All brass fittings such as tees, elbows, caps, nipples and similar items shall be manufactured in the U.S.A.
  - d. Couplings – Ford C44-77-NL
4. Water meters – All water meters shall be Neptune Water Meters. They shall be supplied and installed by the City of Kalamazoo.
- C. All water service appurtenances larger than 2 inch shall be in accordance with section 2.01.
- D. All multiple meter settings with more than two meters excluding the fire meter shall use a fabricated meter manifold. Fabricated manifold shall be manufactured as follows:
- 1. Water manifold shall be made using 304 Schedule 40 Stainless Steel pipe.
  - 2. Inlet and outlets shall be threaded or welded flange. End cap shall be welded flange with a blind flange for future additions.
- E. Conduit used as sleeves shall be schedule 40 PVC or approved by Engineer.

## 2.11 METER SETTINGS

- A. Interior meter settings shall use components from the following manufactures.
- 1. 1 inch meter – Ford KV23-454W-NL Angle Valve, Ford C38-44-2-625-NL, Brass Nipple, Apollo 94ALF-105-01A Ball Valve or approved equal
  - 2. 1½ inch and 2 inch meter – Ford FV13-777W-NL Angle Valve, Ford CF35-66NL (1 ½ inch), Ford CF 35-77-NL (2 inch), Brass Nipple, Watts LFFBV-3C Ball valve or approved equal.
  - 3. 3 inch and larger- rubber seated gate valves meeting the requirements of AWWA C515. Valves shall be American Series 2500 Resilient Wedge Gate Valve with hand wheel by American or equal flanged joint with rubber gaskets (per AWWA/ANSI C 111/A21.11), and be equipped with a hand wheel to operate, Hymax 874-56-03008812 (3 inch), 874-56-04010812 (4 inch), 874-56-06016312 (6 inch), or 874-56-08021712 (8 inch) Flange Adaptor, and flange to plain end ductile or type 304 stainless steel spool piece.
- B. Exterior meter settings shall use components from the following manufactures.
- 1. 5/8 inch meter – Ford V81-22-33-NL
  - 2. ¾ inch meter – Ford V83-22-33-NL
  - 3. 1 inch meter – Ford V84-22-55-NL Copper setter

4. 1 ½ inch and 2 inch meter – Watts LFFBV-3C Ball Valve or approved equal. Ford CF-77-1-937-NL Meter Flange, Ford C28-77-NL Coupler, and Brass Nipple.
5. 3 inch and larger – All above ground or in pits/vaults valves 3 inches and larger shall be rubber seated gate valves meeting the requirements of AWWA C515. Valves shall be American Series 2500 Resilient Wedge Gate Valve with hand wheel by American or equal flanged joint with rubber gaskets (per AWWA/ANSI C111/A21.11), and be equipped with a hand wheel to operate, Hymax 874-56-03008812 (3 inch), 874-56-04010812 (4 inch), 874-56-06016312 (6 inch), or 874-56-08021712 (8 inch) Flange Adaptor, and flange to plain end ductile or type 304 stainless steel spool piece.

#### 2.12 FIRE SERVICE APPURTENANCES

- A. All fire service appurtenances shall meet the requirements of AWWA/ANSI C110/A21.10, AWWA C115, and be from the following manufacturers.
  1. Double Check Valve Detector Assembly – Zurn Wilkins Model 350DA or 350ADA with meter setting, AMES Colt LFC300 with meter setting, or approved equal. The City of Kalamazoo will supply the 5/8 inch water meter.
  2. Reduced Pressure Zone Assembly – When using a RPZ in lieu of double check valve for a backflow device, a Zurn Wilkins Model 375DA or 375ADA with meter setting, AMES Colt LFC500 with meter setting, or approved equal shall be required. The City of Kalamazoo will supply the 5/8 inch water meter.

#### 2.13 METER BOXES AND VAULTS

- A. All Meter Boxes, Meter Vaults and components shall be from the following manufactures.
  1. Box – Hancor MP NL1 24 0008 - 24 inch x 48 inch or ADS24X48MP 24 inchx48 inch white corrugated meter pit or Engineer approved equal.
  2. Vault – Precast concrete meter vault shall have a 3 inch minimum wall thickness and size shall be depended on number of meters and meter size. The wall shall have steps that are equally spaced 12 inches apart. Meter vault shop drawings shall be submitted to the Engineer and approved for each installation.
  3. Meter Pit Cover – Vestal 32-497, 32-055, 32-104, and 32-046 or approved equal.
  4. Meter Vault Cover – Ford MC-24HH-MB-T

#### 2.14 VALVE BOXES AND VAULTS

- A. Curb Stop Boxes for 1 ¼ inch Service – Bingham & Taylor Fig. No. 4901-B, 94-F with 2 ½” New Style Flush Fit Cover or approved equal. Cover shall be inscribed with the word “water”.
  1. Curb Stop Box extensions shall be cast iron and manufactured by Bingham & Taylor, capable of being mounted directly to the curb stop box.
- B. Gate Valve Box or 2 inch Service Box – the valve box shall be of adjustable length screw type. The valve box shall be a malleable iron casting conforming to subsection 908.03 of the 2012 Michigan Department of Transportation *Standard Specifications for Construction*. This valve box shall either be a two or three piece screw type and the cover shall be inscribed with the word “water.” Valve box 8550 Series (two piece) or 8560 Series (three piece) manufactured by EJ, 4905 size no. 22 manufactured by Bingham & Taylor, or approved equal.
  1. Gate Valve Box extensions shall be cast iron and manufactured by EJ or Bingham & Taylor, capable of being mounted directly to the gate valve box.
- C. Valve Vaults for Insta-Valves – Valve vaults used in conjunction with Insta-Valves shall be constructed with materials as detailed in WA-8-A of the City of Kalamazoo Standard Plans.

They shall be of the diameter specified and in accordance with subsection 823.02 of the Michigan Department of Transportation *Standard Specifications for Construction* for Gate Wells.

- D. Valve Vaults for Air Release Valves – Valve vaults used in conjunction with Air Release Valves shall be constructed with materials as detailed in the latest WA-4-Series or WA-5-Series of the City of Kalamazoo Standard Plans. They shall be of the diameter specified and in accordance with subsection 823.02 of the Michigan Department of Transportation *Standard Specifications for Construction* for Gate Wells.

#### 2.15 BACKFILL MATERIALS

- A. Use materials meeting the requirements of section 902 of the 2012 Michigan Department of Transportation *Standard Specifications for Construction*.

#### 2.16 BELL JOINT LEAK CLAMP

- A. Bell Joint Leak Clamps shall be Smith-Blair Model 274, Ford Meter Box FBC or MJSC style, or approved equal.
  - 1. The bell spigot ring, section connector, and range spacer shall be ductile iron 80-55-06 in accordance with ASTM 536. Fusion bonded epoxy finish shall meet application methods per AWWA C213. Spigot ring design shall be interlocking to allow ease of installation without interrupting the flow of the pipe. The bolt head pocket shall be integral for one wrench installation.
  - 2. Gasket shall be Nitrile Buna-N per ASTM D2000, and certified to NSF/ANSI 61-G & 372.
  - 3. Restraint Rods and Nuts shall be Type 304 Stainless Steel. Restraint Rod shall have rolled threads, and Nut shall be fluoropolymer coated to prevent galling.
- B. Bell encapsulating couplings shall be Ford Meter Box MJBE style.
  - 1. The coupling shall be designed to fully encapsulate the pipe bell. The coupling shall be of split mechanical joint design with independent end seal and side seal gaskets.
  - 2. All welded components shall be constructed with ASTM A 36 carbon steel.
  - 3. The end seal and side seal gaskets shall be virgin NBR formulated for water service. The gaskets shall not require field trimming, cutting or modification.
  - 4. The end seal compression ring shall be manufactured with ductile iron per ASTM A 526 Grade 65-45-12 or ASTM A 36 carbon steel.
  - 5. The coupling shall be coated to an average of 12 mills thickness with a fusion-bonded epoxy that is NSF 61 listed and meeting application methods of AWWA C213.

#### 2.17 COUPLINGS

- A. Wide range couplings shall be Romac Alpha or approved equal.
  - 1. All cast components shall be ductile iron, meeting or exceeding ASTM A 536, grade 65-45-12
  - 2. Grippers shall be ductile iron, meeting or exceeding ASTM A 536, grade 65-45-12.
  - 3. Gaskets shall be SBR compounded for water service per ASTM D2000 and meet NSF61 classification.
  - 4. Bolts and nuts shall be 304 stainless steel.
  - 5. Body shall be epoxy coated, and NSF61 Certified.

2.18 STRUCTURE CASTINGS

- A. All 24 inch structure covers shall be a malleable iron casting conforming to subsection 908.03 of the 2012 Michigan Department of Transportation *Standard Specifications for Construction*. The structure cover shall be series 1040 manufactured by EJ, inscribed with the word "Water".

2.19 STEEL CASING PIPE AND APPURTENANCES

- A. Steel casing pipe shall meet the requirements in accordance with subsection 909.05.D of the 2012 Michigan Department of Transportation *Standard Specifications for Construction* with the exceptions listed below:

- 1. For steel casing pipe jacked under a railroad, replace in its entirety the entry for 30 inch nominal size listed in Table 909-18 with the following:

**Nominal OD and Wall Thickness in Inches Jacked in Place Steel Pipe**

Nominal Size	Nominal Outside Diameter	Wall Thickness
30	30.000	0.406(a)
a. Coated or cathodically protected (0.469 inch minimum if uncoated and unprotected)		

- 2. Steel casing must have a minimum yield strength of 35,000 pounds per square inch (psi) and be in accordance with ASTM A53, Type E or S, Grade A or B and be designed for Cooper E80 loading requirements. In all cases, the allowable jacking strength capacity of the casing pipe shall be capable of withstanding the maximum jacking forces imposed by the operation.

- B. Stainless steel band spacer shall be Advance Products & Systems model SSIM or approved equal. The bands shall be constructed of circular stainless steel bands, which bolt together forming a shell around the carrier pipe. The spacers shall be designed with runners to support the carrier within the casing and maintain a minimum clearance of 1.00 inches between the casing inside diameter (ID) and the spacer outside diameter (OD). The spacers shall contain four modular runners – two on each half. Stainless steel bolts, nuts and washers shall be supplied with the casing spacers.

The band shall be manufacture of 8 inch wide 14-guage T-304 stainless steel. Abrasion resistant runners, having a minimum length of 7 inches and a minimum width of 1 inch, shall be attached to each band to minimize friction between the casing pipe and the carrier pipe as it is installed. Runner material shall be of glass filled polymer with compression strength of 33,000 psi, flexural strength of 40,000 psi, and tensile strength of 27,000 psi. The ends of thall runners shall be beveled to facilitate installation over rough weld beads or the welded ends of misaligned or deformed casing pipe.

Interior surfaces of the circular stainless steel band shall be lined with PVC, or EPDM alternate, having a minimum thickness of .090 inches with a harness of Durometer "A" 85-90.

Recommended position of the spacers is one placed not more than one foot from each end of the casing and pipe joint. Subsequent spacers shall be placed every 6-8 feet apart thereafter.

- C. Casing end seal shall be Advance Products & Systems model AC or approved equal. Pull-on casing end seals shall be manufactured of 1/8 inch thick neoprene rubber assuring excellent chemical resistance and resiliency. End seals must be effectively used in the temperature range of -20 degrees to 190 degrees Fahrenheit. End seals shall include ½ inch wide T304 stainless steel bandings with 100% nonmagnetic worm gear mechanism. End seals shall be seamless, have vulcanized edges, and can be pulled on at the time of construction.

## PART 3 EXECUTION

### 3.01 CONSTRUCTION

- A. The plans show the locations of existing utilities in accordance with available data. If the work requires precise information on the location of existing utilities, the Contractor will expose utilities shown on the plans to determine the actual locations.

Do not disturb or cut into existing in-service water mains. If the operation of valves in existing water mains is required, notify the City of Kalamazoo a minimum of 3 working days in advance. Coordinate scheduling of water main connections with the City of Kalamazoo. Secure the Engineer's or authorized representative's approval of the schedule before beginning the work.

The City of Kalamazoo will open or close in service valves and provide on-site inspections for all water main and water service installations. The City of Kalamazoo will perform this work for an estimated time and material charge. The cost of opening and closing valves and on-site inspection will need a separate contract with the City of Kalamazoo prior to start of work. This does not apply to work being contracted by the City of Kalamazoo.

Minimize the out of service time for existing water mains. Make connections at night, on Sundays, or on holidays, as conditions require or as approved by the City of Kalamazoo. Minimize interference with the water supply if abandoning existing water mains and incorporating new water mains into the water system.

No trees or permanent structures shall be placed within 10 feet of the centerline of the water main or service line.

### 3.02 TRENCH EXCAVATION

- A. Excavate water main trenches to the lines and grades shown on the plans in accordance with modifications approved by the Engineer, or authorized representative, or to meet or bypass existing utility structures. Excavate trenches to the depths shown on the plans to provide 5 feet of cover from top of water main to the final grade. Excavate trenches to the widths shown on Michigan Department of Transportation Standard Plan R-83 Series.
- B. Excavate the bottom of the trench to the required grade to allow 6 inches of bedding for the pipe. Do not block under the pipe.
- C. Maintain trenches for water mains free of ground or surface water by pumping or as otherwise approved by the Engineer or authorized representative
- D. Install, and later remove, temporary timber bracing, as required to prevent movement or damage to new or existing water mains or adjacent utilities.
- E. During backfilling, carefully remove supports for sheeted and braced excavations to prevent earth banks or adjacent streets from collapsing.
- F. The Contractor may leave sheeting and bracing in place during backfilling and remove after completing backfilling operations. The Contractor may leave sheeting and bracing in place, if approved by the Engineer and the Contractor cuts it off 5 feet below the ground surface.

### 3.03 DISPOSAL

- A. Dispose of waste material as specified in section 205 of the 2012 Michigan Department of Transportation *Standard Specifications for Construction*.

### 3.04 LAYING OF THE PIPE

- A. Install the pipe joint restraint system in accordance with the manufacturer's recommendations, or as directed by the Engineer. Assemble the pipe in the trench. If deflections at joints are required by changes in grade, alignment, or to plumb valve stems, ensure deflections of bell and spigot joints and mechanical fitting joints do not exceed three-quarters of the maximum deflection recommended by the joint manufacturer or that allowed by AWWA C600, whichever is less. Do not store or leave tools or other objects in the pipe.
- B. Provide restrained joints as indicated on the plans. No tie rods or thrust blocks shall be allowed unless approved by the Engineer or authorized representative.
- C. Proper actuation of the gripping wedges of the mechanical joint restraint shall be ensured with torque limiting twist off nuts.
- D. The Contractor shall provide a written statement of warranty (Warranty Bond) for a period of 2 years from the date of **final acceptance (after meter is installed)**. Warranty work shall cover any necessary cost to repair water main or appurtenance leaks and water main or appurtenance leak damage at no cost to the City of Kalamazoo. Final acceptance will only be given **once the water service meter is installed**.
- E. Pipe shall be laid with bell ends facing the direction of laying, unless otherwise directed by the Engineer or authorized representative. When pipe is laid on a grade of 10 percent or greater, the laying shall start at the bottom and proceed upward with the bell ends of the pipe upgrade.
- F. Install silicon bronze wedges between all push-on joint pipes to allow for underground location and thawing of pipeline. 4 to 6 inch pipe shall use 2 wedges, 8 to 12 inch pipe shall use 3 wedges, and 16 inch and above shall use 4 wedges at each pipe joint.
- G. Pipe shall be restrained in accordance with Table 3.1.

**Table 3.1 Pipe Thrust Restraint Table**

NON-POLYWRAPPED PIPE								
Pipe Size (Inches)	90° Bend	45° Bend	22.5° Bend	11.25° Bend	Tee*	Reducer (One Size)	Reducer (Two Sizes)	Dead End
4	44	18	9	5	42	-	-	42
6	62	26	13	7	59	31	-	59
8	82	34	17	9	78	33	56	78
10	100	42	20	10	94	32	58	94
12	119	50	24	12	110	33	59	110
16	157	65	32	16	143	61	85	143
20	195	81	39	20	173	61	109	173
24	233	97	47	23	204	61	111	204
30	288	120	58	29	246	86	134	246
POLYWRAPPED PIPE								
Pipe Size (Inches)	90° Bend	45° Bend	22.5° Bend	11.25° Bend	Tee*	Reducer (One Size)	Reducer (Two Sizes)	Dead End
4	62	26	13	7	60	-	-	60
6	88	37	18	9	84	44	-	84
8	117	49	24	12	111	47	80	111
10	142	59	29	14	133	45	82	133
12	170	71	34	17	158	47	84	158
16	224	93	45	23	203	87	121	203
20	278	116	56	28	247	87	155	247
24	332	138	66	33	291	87	159	291
30	411	171	82	41	351	123	191	351
* Length of restraint for branch; use the size of the branch Consult Engineer for scenarios not included in table.								

**3.05 INSTALLATION OF PIPE INVOLVING HORIZONTAL DIRECTIONAL DRILLING**

- A. Horizontal direction drilling (HDD) is a method of trenchless construction using a surface launched steerable drill tool controlled from a mobile drilling frame, and includes a field power unit, drilling fluid mixing system, and mobile spoils extraction system. The work generally consists of three phases:
1. Drilling a pilot hole from the surface or pit at a starting point to an exit pit at the surface beyond the obstacle or area that is to be avoided.
  2. Reaming the pilot hole to make it large enough for the pipeline to be installed.
  3. Pipeline is pulled into place. During the pipe pulling operation, drilling fluid (a bentonite, water, and polymer solution) is injected to stabilize the hole, remove cuttings, and lubricate the pipe.
- B. Coordination

1. Drilling operations shall not interfere with, interrupt or endanger surface features or surface activities.
2. When rock stratum, boulders, underground obstructions, or other soil conditions that impede the progress of drilling operation are encountered, the Contractor and Engineer shall review the situation and jointly determine the feasibility of continuing drilling operations, making adjustments or switching to an alternative construction method.
3. The contractor shall familiarize themselves with the geologic characterization of the soil stratum at the proposed drilling path. The Contractor shall be responsible for informing the Engineer of any changes that are required in the directional drilling procedure due to geologic conditions.
4. Launching and recovery pits shall be as small as practical. Dewatering of pits and excavations shall be done in accordance with the City of Kalamazoo Standard Specifications. When groundwater is encountered, the Contractor shall provide a dewatering system of sufficient capacity to keep any excavation free from water until the backfill operation is in progress. Dewatering shall be performed in a manner that removal of soil particles is held to a minimum. Water from the dewatering system shall be desilted before discharge. Methods of dewatering and desilting, including all costs shall be the Contractor's responsibility and are included in the Horizontal Directional Drilling Water Main pay item.
5. Utilities shown on the plans are approximate. In areas where there is a potential conflict, the Contractor shall dig up and verify the locations and elevations of the utilities at no additional expense to the City. The Contractor shall assume full responsibility for the protection fall utilities, structures and their foundations which may be affected by the work.
6. Before beginning the drilling process, the Engineer shall stake the proposed drill path.

C. Drill Path Survey

1. The Drill path shall be walked in the presence of the Engineer and the Contractor with the guidance system that shall be used for each segment of drill path. The contractor shall locate and record any surface and subsurface magnetic variations or abnormalities and all points of interference, as well as verifying all utility locations and corresponding utility maps. Should any discrepancies arise between utility maps, field locations and guidance system findings, the Contractor shall clarify all discrepancies prior to beginning drilling operations. The drill path survey shall be performed no earlier than two days prior to commencing drilling operations. Provide the Engineer 48-hour notice of drill path survey.

D. Equipment

1. The drilling equipment shall be capable of placing the pipe within the planned line and grade without inverted slopes.
2. The drilling equipment shall be capable of pulling product pipe from either the downstream or upstream pit locations. The equipment must be adequately sized for the application.
3. The guide system shall have the capability of measuring inclination, roll and azimuth. The guidance system shall have an independent means to ensure the accuracy of the installation. The Contractor shall demonstrate a viable method to eliminate accumulated error due to the inclinometer (pitch or accelerometer). The guidance



system shall be capable of generating a plot of borehole survey for the purpose of a record drawing. The guidance system shall meet the following specifications:

Inclination:	Accuracy	+0.05
	Range	+90
	Repeatability	+0.02
Roll:	Accuracy	+0.05
	Range	+90
Azimuth	Accuracy	+0.05
	Range	+90

4. Equipment setup requirements at the launch and recover locations shall be determined by the Contractor in accordance with the Plans and shall be submitted to the Engineer prior to commencement of drilling operations.

E. Pilot Hole Drilling

1. The entry angle of the pilot hole and the drilling process shall maintain a curvature that does not exceed the allowable bending radii of the carrier pipe per the manufacturer's recommendations.

F. The contractor shall follow the pipeline alignment as shown on the Plans, within the specification requirements. The location and depth of the drill head in relation to the profile and centerline of the alignment shall be determined at a maximum of ten-foot intervals. Acceptable tolerance shall be 0.5 feet variation from the centerline of the pipe in both vertical and horizontal directions (1-foot tolerance window).

G. In the event of difficulties at any time during drilling operation requiring the complete withdrawal from the tunnel, the Contractor shall either be allowed to withdraw and abandon the tunnel and begin a second attempt at a different location. The alternate locations shall be approved by the Engineer before the Contractor withdraws.

H. Access pits shall be at the beginning and end segments shown on the Plans. Intermittent pits shall be approved by the Engineer prior to proceeding with drilling operations. No intermittent access pits shall be allowed in Railroad Right of Ways.

I. Installing the Carrier Pipe:

1. After the pilot hole is completed, the Contractor shall install a swivel to the reamer and commence pullback operations.
2. Reaming diameter shall not exceed 1.5 times the diameter of the carrier pipe being installed.
3. The carrier pipe being pulled into the tunnel shall be protected and supported so that it moves freely and is not damaged by stones and debris on the ground during installation.
4. Pullback forces shall not exceed the allowable forces for the carrier pipe.

J. The Contractor shall allow sufficient lengths of carrier pipe to extend past the termination point to allow connections to adjacent pipe sections, tees, or fittings. Pulled pipe shall be allowed 24 hours of stabilization prior to making tie-ins. The length of extra carrier pipe shall be at the Contractor's discretion.

K. Field Inspection

1. All pipe sections, specials, and jointing materials shall be carefully examined for defects and no piece shall be laid that is known to be defective. Any defective piece discovered installed shall be removed and replaced with a sound one in a manner satisfactory to the Engineer at the Contractor's expense.
2. Defective material shall be marked with an "X" in pink paint and shall be removed from the job site.

L. Drilling Fluid Containment and Disposal Requirements

1. The contractor shall contain, handle, and dispose of drilling fluids in accordance with the following requirements:
  1. All drilling fluid and fluid additives shall be disclosed, and Material Safety Data Sheets (MSDS) shall be provided to the permit agency and the Engineer upon request.
  2. Excess drilling fluid shall be confined in a containment pit at the entry and exit location until recycled or removed from the site.
  3. Precautions shall be taken to ensure that drilling fluid does not enter the roadways, streams, municipal storm or sanitary sewer lines, and/or any other drainage system or body of water.
  4. When installing below railroads, vents shall be installed on either side of the railroad tracks to direct any excess drilling fluid to a containment area and to prevent unintended surfacing of drilling fluid within the Railroad Right of Way.
  5. Unintended surfacing of drilling fluid shall be contained at the point of discharge and recycled or removed from the site.
  6. Drilling fluids that are not recycled and reused shall be removed from the site and disposed at an approved disposal site.
  7. Drilling fluids shall be completely removed from the construction site prior to backfilling or restoring the site.

3.06 ABANDONING WATER MAINS

- A. Remove and dispose of abandoned pipe, gate boxes, or other appurtenances, as necessary for placement of a new water main at no additional cost to the City of Kalamazoo. Remove portions of gate boxes to at least 3 feet below the pavement surface under the road, and to at least 12 inches below the planned grade outside the road. If the Engineer determines abandoned mains may remain in place, cap the end of pipe with cap and megalug or as directed by the Engineer or authorized representative. If shown on the plans or directed by the Engineer or authorized representative, fill abandoned water mains with non-structural flowable fill.

3.07 VALVES

- A. Prior to installation, all valves shall be fully operated open and close to verify its functionality and number of turns. Set and join valves to the water mains as required for cleaning, laying, and jointing the required type of pipe, as shown on the plans. Install valves as required by the contract, or as approved by the Engineer. Place the valve stems plumb. Install valves to not bear on the pipe. Install anchor coupling with valves installed on tees or crosses, with swivel gland located on the valve side of the anchor coupling.
- B. When installing 12 inch and larger valves (Butterfly Valves), the operating nut shall be located on the side of the valve furthest from the centerline of the roadway, unless otherwise directed by the Engineer.

### 3.08 LIVE TAPS TO IN SERVICE WATER MAINS

- A. Prior to tapping of the main contractor shall disinfect all pipe, appurtenances, tapping machine with chlorinated water.
- B. Contractor shall install all necessary tapping appurtenances according to manufacturer's recommendation.
- C. Contractor shall use equipment which allows the tapping machine to rinse out metal shavings and tap water main per manufacturer's recommendations. No tap 4 inches or larger shall be allowed within 4 feet from any joint, fitting, or exiting tap regardless of location of tap. 1 ¼ inch taps located within 10 feet of previous tap shall be offset 15 degrees.
- D. Once tapping is complete Contractor shall disinfect all exposed water main and appurtenances with chlorinated water.

### 3.09 VALVE BOXES.

- A. Provide valve boxes that do not transmit shock or stress to the valve. Place valve boxes plumb over the operating nut of the valve, with the box cover flush with the pavement, or as approved by the Engineer or authorized representative. Provide firm support for valve boxes.
- B. Valve boxes shall be installed, centered and plumbed over the operating nut of the gate valve. The area around the valve box shall be back-filled with Granular Material Class II placed in layers not to exceed 12 inches, and thoroughly compacted to the required density. The Contractor shall take due care to prevent the box from shifting during backfilling operations. The tops of the valve boxes shall be flush with the established pavement or ground surface.

### 3.10 ADJUSTING OR RECONSTRUCTING WATER SHUT OFFS OR VALVE BOXES

- A. Adjust and reconstruct water shutoffs or valve boxes to the final grade or as approved by the Engineer or authorized representative. Replace shutoff or gate box materials damaged during adjustment or reconstruction, as determined by the Engineer, or authorized representative, at no additional cost to the City of Kalamazoo.

### 3.11 WATER SERVICES

- A. Water Services shall not be connected to the water main until approved by the Engineer or authorized representative.
  - 1. The standard size for all new services shall be 1 ¼ inch. The property owner/developer may request a larger size if needed.
  - 2. ¾ inch service materials may only be used when performing repairs or partial replacements of an existing ¾ inch service, or when replacing the yard service of a ¾ inch service. When replacing a complete street side service of a ¾ inch service, a new 1 ¼ inch tap will be completed, new 1 ¼ inch street service line installed, and reduced down at the curb shut off per section 2.10.
- B. Tap water main per section 3.08.
- C. When more than two meters excluding the fire meter are required to be set on a single service line, a fabricated meter manifold shall be installed.
- D. Water Services 2 inch and Smaller
  - 1. Construct services from the distribution main to the water meter. Lay services in a straight line perpendicular to the water main unless approved by the Engineer or authorized representative. Construct service with a continuous piece of copper from the corporation stop to the curb stop and curb stop to the water meter unless

approved by the Engineer or authorized representative. Services over 300 feet will require an exterior meter setting (meter pit).

2. All couplings shall be located as close to the water main as possible, but outside roadway unless approved by the Engineer.
3. The use of thread sealant shall be not be allowed on flare fittings.
4. No splices shall be allowed for 1 ¼ inch or smaller yard services 90 feet and shorter in length.
5. Tap and curb shut off locations shall be no closer than 5 feet to edge of driveways. If a service is required to be abandoned due to improper location, service shall be fully abandoned at the water main tap location and new service installed the developer's expense. Corporation stop shall be shut off, copper piping removed, and copper disc installed on the corporation stop.
6. If finish grade changes from plan grade after installation of service, curb shutoff shall be adjusted to 5 foot bury depth at the developer's expense.
7. When the street service is installed separately from the yard service a copper disk shall be installed on the yard side of the curb valve per the manufactures recommendations as approved by the Engineer or authorized representative.

E. Water Services Greater than 2 inch

1. For services entering a building with no basement, install the stand pipe flange 12 inch from the finished floor elevation and 6 to 12 inches away from any walls. Install the flange pipe so two bolt holes are parallel from each wall (two hole). For services entering a building with a basement or into a concrete vault, install the stand pipe flange 6 to 12 inches off the wall. Install the flange pipe so that two bolt holes are parallel to the floor, normal to the wall. For all services entering a building, the service line shall be located in room located on an outside wall of the building, with enough room to maintain the service.
2. Contractor shall complete installation of service prior to pressure testing and disinfection. The Contractor shall hydrostatic test the complete fire service from the nearest outside valve to first valve (OS&Y) before installing the fire check valve per section 3.22. Service shall be cleaned, flushed and tested per section 3.23. No connection shall be made to these services until after pressure test is complete and consecutive negative bacterial test results have been received in accordance with sections 3.22 and 3.23 of this specification, and the water main approved by the Engineer or authorized representative.
3. No adapter flange or grooved pipe joint shall be used on any portion of the service to be maintained by the City of Kalamazoo, with the exception of the meter side of an OS&Y fire service valve.
4. For service lines with multiple meter settings, a valve the same size as the incoming service line shall be installed prior to the tee or manifold. If one of the meter settings is for a fire service, the valve shall be an OS&Y valve in accordance with section 2.02.F.

F. Construct the service pipe with at least 5 feet of cover, unless Engineer or authorized representative requires additional depth.

G. Make all service connections, and transfers. Maintain and protect, at no additional cost, existing service connections requiring transfer, but not shown on the plans, until reconnection or disposal.

- H. If relocating a portion of water service, shut down the water service by method approved by the Engineer or authorized representative.
- I. Service lines entry points into the structure shall be sealed with hydraulic cement or mastic putty and oakum to prevent groundwater infiltration. For ductile iron pipe services, link seals should be used as the preferred method.
- J. FIRE SERVICES
  - 1. The Contractor shall notify the Engineer or authorized representative a minimum of 3 working days prior to flushing the fire service or testing the fire system capacity.
  - 2. All fire services shall have an OS&Y valve meeting the requirements of 2.02.F installed. The sample tap on the OS&Y Valve shall be installed on the downstream side of the valve.
- K. INTERIOR METER SETTINGS (PREFERED)
  - 1. Interior valve and meter inlet connection shall be installed by the Contractor in accordance with the Engineer, or authorized representative's recommendations and final approval.
  - 2. The meter setting shall be located in a heated portion of the building. The meter setting shall not be located in a crawl space, above electrical appliance, or near an electrical panel. A clear and unobstructed access to the meter of not less than 24 inches by 24 inches shall be provided.
    - a. 1 ¼ meter settings must be placed in basements. Meter setting shall be placed in the front of the building facing the street or within three feet of the front on the side unless otherwise approved by the Engineer or authorized representative. Water Services shall not be placed under footings. If service enters house under the porch and the porch footing extends below water service, a 2 inch PVC sleeve will be required.
    - b. A ½ inch schedule 40 PVC conduit, or larger, shall be installed from the meter setting to the remote reading point. There shall be no more than 75 feet of conduit between pull boxes. There shall be no more than four (4) 90-degree bends between pull boxes. All pull boxes must be installed no more than 96 inches above the floor. Pull boxes shall not be installed in attics or crawl spaces.
  - 3. The City of Kalamazoo will install the meter, readout, readout wire, copper ground wire, outlet meter connection and valve.
- L. EXTERIOR METER SETTINGS
  - 1. Exterior meter settings shall be installed by the Contractor according to the Engineer's or authorized representative's recommendations, and in accordance with City of Kalamazoo Standard Plans. Meter settings will be required for services greater than 300 feet, slab on grade, crawl spaces, where minimum 5 foot bury depth cannot be maintained, and other reasons. Contractor shall verify proper meter location with the Engineer prior to construction.
  - 2. Meter boxes or vaults shall not be installed in any street, alley, parking area, driveway, or sidewalk. Major landscaping (shrubs, boulders, etc.) and structures (retaining walls, fences, buildings, etc.) shall not be placed within seven and a half (7.5) feet or trees shall not be planted within ten (10) feet of any meter box or vault, unless otherwise directed by the Engineer.

3. The ground surrounding meter boxes, pits and vaults shall slope away from the lid at a minimum grade of 2%
4. No plumbing or electrical connections will be allowed inside the meter box or vault, unless otherwise directed by the Engineer.
5. All tees, connections, and couplings shall be a minimum of five (5) feet downstream from the meter box or vault wall on the outlet side. Tees and connections shall not be installed between the curb stop and the meter setter or copper horn.
6. Meters shall be installed by the City of Kalamazoo upon inspection and acceptance of the meter setting.
7. Meter boxes shall be used for all 1 inch exterior meter settings. The Contractor shall install meter boxes to horizontal location and to final grade as determined by grade stakes. Meter boxes shall be installed 5 feet outside the right of way in private property. All work shall be in accordance with the current WS-8 of the City of Kalamazoo Standard Plans.
8. For services 1 ¼ inch and smaller, curb shutoffs shall be located in the right of way, centered in the curb lawn area, or as directed by the Engineer.
9. The Contractor shall install meter vaults for 1 ½ inch and larger meter settings.
10. Meters shall be installed by the City of Kalamazoo upon inspection and acceptance of the meter setting.

### 3.12 WATER MAINS, CUT AND PLUG

- A. All work related to water main, cut and plug shall be in accordance with section 3.06.A. If the plans show cutting and plugging water mains, arrange for the City of Kalamazoo to shut down the main. Remove the section of pipe and plug the water main as shown on the plans or as approved by the Engineer or authorized representative. Construct the required restraint as directed by the Engineer or authorized representative.

### 3.13 FIRE HYDRANTS

- A. Set fire hydrants at the locations shown on the plans and in accordance with City of Kalamazoo standard plans and manufacturer's recommendations or as coordinated with the City of Kalamazoo. When installed, the hydrant shall be located on the side of the water main furthest from the centerline of the roadway, unless otherwise directed by the Engineer. Equip the hydrant with auxiliary valves, as shown on the plans. Stand hydrants plumb, with side nozzles parallel to the curb, and with the pumper nozzle normal to the curb, unless otherwise directed by the Engineer. Place the nozzles at the height specified by the City of Kalamazoo.
- B. For all gate valves connected adjacent to a tee or hydrant, the anchor between the fitting or hydrant and the valve shall be a 6 inch by 13 inch swivel by solid adapter with swivel gland. The swivel gland shall be located on the hydrant side of the solid adapter.
- C. Install a valve box over hydrant valve in accordance with section 3.09.
- D. Hydrants shall have a protective cover placed over hydrants prior to backfilling to ensure the hydrant is not damaged. If hydrant is damaged, the contractor shall repair or replace the hydrant at no cost to the City.
- E. If site conditions are such that it is not desirable for hydrant drain into the surrounding soil (i.e. when hydrant has less than 10 feet of separation from a sewer, high ground water, impervious or contaminated soils, etc.), hydrant drip valve plug(s) shall be installed by the Contractor onsite. Final determination on drip valve plug installation shall be made by the

Engineer or his representative. As constructed records shall be noted whether or not the drip valve plug was installed.

### 3.14 FIRE HYDRANT MARKER

- A. The sign shall be located between the hydrant and curb and offset from the pumper nozzle, or as directed by the Engineer. The sign shall be placed 3 feet away from the hydrant. The sign shall be single sided or double sided as directed by the Engineer or authorized representative. The sign shall have an installed height to the bottom of the sign of 7 feet above the final grade in areas with sidewalk and 5 feet above the final grade in areas without sidewalk.
- B. A fire hydrant mounted whip may be installed in addition to fire hydrant sign if approved by the Engineer. Fire hydrant whip shall be mounted to the fire hydrant opposite the pumper nozzle in accordance with the manufacturer's specifications.

### 3.15 FIRE HYDRANT REMOVAL

- A. If the plans show removal of a fire hydrant, remove the entire hydrant assembly, including the following:
  - 1. Auxiliary gate valve and box, unless otherwise approved by the Engineer or authorized representative.
  - 2. Internal valve assembly;
  - 3. Top bonnet;
  - 4. Standpipe; and
  - 5. Hydrant inlet body, unless otherwise approved by the Engineer.
- B. If the City of Kalamazoo approves leaving the auxiliary gate valve and box in place, remove to at least 3 feet below the pavement surface under the road, or at least 12 inches below planned grade outside the road.
- C. Stockpile the removed material at a location accessible to the City of Kalamazoo. The City of Kalamazoo will maintain ownership of the hydrant, and will remove the assembly from the project site

### 3.16 RELOCATING FIRE HYDRANTS

- A. If the plans show relocating a hydrant, arrange for the City of Kalamazoo to shut down the hydrant auxiliary valve. Remove the hydrant and reinstall at the required location. Reconnect the hydrant to the water main by shutting down the main, tapping a new hydrant outlet, or using the existing outlet. Install piping as required. If the relocated hydrant does not pass testing the hydrant shall be replaced with new at no cost to the City of Kalamazoo.

### 3.17 MISCELLANEOUS FITTINGS

- A. Install the following at the locations shown on the plans and in accordance with good construction practices and manufactures recommendations:
  - 1. Elbows,
  - 2. Tees,
  - 3. Corporation stops,
  - 4. Blow offs,
  - 5. Pipe adapters,
  - 6. Pipe couplings,

7. Retaining glands, and
8. Other miscellaneous fittings.

### 3.18 AIR RELEASE VALVES AND VAULTS

- A. Construct air release valves and vaults in accordance with the current WA-4-Series and WA-5-Series of the City of Kalamazoo Standard Plans.
- B. When installing the air release valves in conjunction with new water main construction, the contractor shall use ductile iron fittings.
- C. When installing the air release vaults as a retrofit to existing water main, live taps may be performed as directed by the engineer.

### 3.19 BACKFILLING AND COMPACTING

- A. Backfill and compaction shall be in accordance with Michigan Department of Transportation Standard plan for utility trenches R-83-Series.
- B. Backfilling Under Existing Conduits – Where it is necessary to undercut or replace existing utility conduits and/or service lines, the excavation beneath such lines shall be backfilled the entire length with granular bedding material tamped in place in 6-inch layers to the required density. The granular bedding shall extend outward from the spring line of the conduit a distance of 2-feet on either side and thence downward at its natural slope.
- C. Backfilling with Excavated Material – Unless otherwise specified or directed, material excavated in connection with the work shall be used for backfilling and other filling purposes, if it meets all requirements given elsewhere in this specification.
- D. Backfill Immediately Following Inspection – All trenches and excavations shall be backfilled immediately after pipe is laid therein, unless otherwise directed by the Engineer or authorized representative. Under no circumstances shall water be permitted to rise in un-backfilled trenches after pipe has been placed.
- E. Service leads shall not be backfilled until the pipe ends are referenced and the Engineer or authorized representative has measured the pipe for payment.
- F. Backfilling around and over structures and pipes shall be carefully done by hand and tamped with suitable tools of approved weight to a point 1-foot above the top of pipe. Selected material or, where specified or ordered by the Engineer, special backfill material shall be used in this area. The material shall be placed in uniform layers not exceeding 6-inch in depth up each side. Each layer shall be placed, then carefully and uniformly tamped to the specified density so as to eliminate the possibility of lateral displacement of pipe or structure.
- G. Backfilling by Machinery – After the backfill has been placed and compacted around the boxes and pipe to a height of 1-foot above the top. The remainder of the trench may be backfilled by machine. The backfill material shall be deposited in horizontal layers and each layer shall be thoroughly compacted to the specified density by approved methods before a succeeding layer is placed. In no case will backfill material from a bucket be allowed to fall directly on a structure or pipe and in all cases the bucket must be lowered so that the shock of the falling material will not cause damage.

### 3.20 COMPACTION REQUIREMENTS

- A. Compact each layer to 95% (90% if outside the influence of the roadway) maximum density as tested by the Michigan Department of Transportation Density Testing and Inspection Manual.

### 3.21 COMPACTION TEST



- A. Trenches and excavation around structures shall be backfilled and consolidated in layers, as specified, to the existing ground surface. Compaction tests shall be performed on each layer immediately after compaction.
- B. Initial test series for each type of backfill material shall be continued until the method of consolidation employed has proven to attain the required compaction. Any change in the proven method of consolidations will require additional testing and field verification of compaction.
- C. Subgrade below pavements, curbs, sidewalks, and structures shall be consolidated as specified. Compaction tests shall be performed to verify specified consolidation.

3.22 HYDROSTATIC TESTING

- A. Perform hydrostatic testing of water mains in accordance with AWWA C600.
- B. Ensure City of Kalamazoo personnel witness pressure testing. Give the City of Kalamazoo personnel at least 1 full working day notice before testing.
- C. Provide the personnel, temporary timber bracing, plugs, test pumps, temporary connections to the Municipal water system, and any other required apparatus. Provide the water for hydrostatic testing if not available from the City of Kalamazoo. Water must be pumped from a measurable source in order to determine testing allowance water.
- D. Before applying test pressure, expel air from the pipe in increments of no greater than 1,000 feet. Pressure test each section of water main. If the Contractor chooses not to pressure test against an existing valve, a new valve may be installed at the expense of the Contractor.
- E. Pipe shall be pumped with water to a minimum test pressure of 150 pounds per square inch (psi) at the highest point of elevation to begin test. Test shall last for at least 2 hours, with a maximum drop of pressure of 5 psi. If the pressure drop is greater than 5 psi but less than 20 psi, a testing allowance water test shall be performed. Testing allowance water, as measured by the quantity of water pumped into the pipe to attain the pressure at which the test began must not exceed the testing allowance.
- F. Testing allowance water is determined using the following formula

$$L = \frac{SD\sqrt{P}}{148,000}$$

Where

- L= testing allowance water in gallons per hour
- S= length of pipe in feet
- D= actual pipe diameter in inches, and
- P= 150 psi

- G. If testing allowance water is above the allowable limit occurs during hydrostatic testing, remove backfill to expose pipe and repair the joints. Repeat testing after repairs are complete. If multiple leaks occur the contractor may be required to reinstall main at Contractors expense.
- H. Correct visible leaks regardless of the amount of leakage. Replace faulty pipes, fittings, gate valves, or other accessories disclosed by testing. Repeat the test until the pipes, fittings, gate valves, and other accessories meet the requirements.

### 3.23 DISINFECTION, FLUSHING, AND BACTERIOLOGICAL TESTING

- A. Disinfect the water main in accordance with AWWA C651 and applicable Michigan Department of Environment, Great Lakes, and Energy (EGLE) regulations after successful hydrostatic testing.
- B. Disinfect and flush new, and portions of existing, water mains as required by the EGLE.
- C. Use blow offs, fire hydrants, or other means as shown on the plans or approved by the Engineer, or authorized representative, to flush water mains in accordance with AWWA C651, with a velocity of at least 3 feet per second. Provide hoses and other equipment and arrange a means of disposing of the water without damaging the work or adjacent property.
- D. Use the continuous feed method with chorine added simultaneously with the water. Add chlorine or liquid hypochlorite to meet the requirement of at least 25 milligrams per liter of chlorine. Slowly add the water to the main and allow it to stand for at least 24 hours. At the end of the 24-hour period, ensure the chlorine residual is a minimum of 10 milligrams per liter. If not met, re-chlorinate and flush the water main until a minimum 10 milligrams per liter residual remains after 24 hours.
- E. After completing disinfection, initially flush the water mains with water at a velocity of at least 3 feet per second to replace the entire volume of chlorinated water in the pipeline. After initial flushing, perform final flushing until the residual chlorine content meets the standard level for the water distribution system. The City of Kalamazoo may require a waiting period after flushing and before bacteriological sampling.
- F. Dispose of chlorinated water in accordance with applicable state and local requirements. If necessary, apply a reducing agent to the water to neutralize the chlorine and create a chlorine residual of no greater than 1 ppm. Dechlorination shall be in accordance with AWWA C655.
- G. After flushing, perform bacteriological testing in accordance with AWWA C651 and EGLE requirements. Test chlorine residuals before taking each bacteriological sample. Ensure the chlorine residual is less than 1.5 milligrams per liter before taking a bacteriological sample. The City of Kalamazoo will collect samples from each branch of pipe in the presence of the Engineer, or authorized representative, and contractor personnel. The City of Kalamazoo will be responsible for the transportation of the samples to a State of Michigan approved lab for testing. Two consecutive bacteriologically safe tests at 24-hour intervals for each section of pipe are required. Acceptable tests are negative for bacteria and as otherwise defined by AWWA C651 and EGLE regulations.
- H. If a bacteriological test fails, repeat disinfection, flushing, and testing.
- I. Pressure and chlorination taps shall be removed within one business day of passing tests, so main can be activated.

### 3.24 POLYETHYLENE ENCASEMENT

- A. Polyethylene encasement will be required for all ductile iron installations when the soil test evaluation is greater than or equal to 10 points based as indicated in AWWA/ANSI C105/A21.5 or as directed by the Engineer. Sampling of the soils is to be completed by the developer or municipality responsible for the installation.
- B. Install polyethylene encasement on water mains and fittings installed through concrete floor and foundations and as indicated on the plans in accordance with the manufacturer's installation instructions and AWWA/ANSI C105/A21.10. Appropriately sized polyethylene encasement shall be used so that there are no longitudinal splices. This may require using one or more size larger diameter encasement than the pipe installed.

- C. Polyethylene encasement shall be required for all installations when groundwater is detected in the utility trench.
- D. Polyethylene encasement shall be required for all directional drilling installations involving ductile iron pipe.

3.25 WATER INFRASTRUCTURE IN STEEL CASING

- A. Work shall be performed in accordance with section 401 of the Michigan Department of Transportation *Standard Specifications for Construction* and as detailed herein. In all cases, the Contractor shall submit a work plan detailing the following:
  - 1. Means and methods for bracing and shoring;
  - 2. Methods of maintaining and adjusting line and grade;
  - 3. Drilled/bored diameter;
  - 4. Drill hole stabilization procedures;
  - 5. Size and location of the auger head relative to the casing;
  - 6. Methods of dealing with cobbles/boulders and obstructions;
  - 7. Estimated jacking thrust required;
  - 8. Method of monitoring casing elevation;
  - 9. Thrust block design calculations;
  - 10. Record keeping system to document casing advance and jacking pressures;
  - 11. Grouting procedures;
  - 12. Temporary dewatering measures and;
  - 13. Mitigation procedures if sinkholes or settlement above the pipe occurs or excessive movement of the settlement monitors is observed.
- B. Minimum Allowable Depths.
  - 1. The minimum allowable depth of the Horizontal Auger Bore (HAB) installed casing pipe shall be in accordance with Table 3.2

<b>Table 3.2 Minimum Allowable Depths Table</b>	
<b>Location</b>	<b>Minimum Depth</b>
Base of Rail	6 Feet
Existing Ground	5 Feet
Roadway	5 Feet
Ditch Flowline	5 Feet

- C. Access Pits.
  - 1. Excavate jacking and receiving pits as necessary. Provide and install all sheeting, shoring, bracing and any other earth retention measures in accordance with section 704 of the Michigan Department of Transportation *Standard Specifications for Construction*. Provide site drainage and subsurface dewatering and other items associated with the operation as necessary to facilitate the proposed work.
- D. Lead Auger/Overcut Allowance.

1. A full-size auger section shall be used as the lead section of the casing. The auger shall not protrude from the leading edge of the casing. However, if soil conditions halt the movement of the casing, the auger shall be allowed to protrude not more than 1 inch in front of the casing during the boring operation. Overcut is the annular space between the excavated hole and the outside diameter of the casing pipe. The allowable overcut diameter is one inch greater than the casing pipe radius.
- E. Watertight joints.
1. Watertight joints are required to ensure the integrity of the road and railroad bed. Casing pipe shall be constructed to prevent water leakage or earth infiltration and must be certified free from any breaks or leaks throughout its entire length.
- F. Lubrication Fluids.
1. Lubrication fluids are specifically required for this method regardless of the soil conditions. Any deviations from the use of lubrication shall require prior approval for the Engineer. The Contractor shall install vents on either side of the casing pipe to prevent fracking during installation. These vents shall also be used as relief in case of a water main break. Lubrication fluids, consisting of a mixture of water and bentonite or bentonite/polymer, shall be used in the annular space between the casing being installed and the native soil to stabilize and lubricate the drill hole. Grease will not be allowed for use as lubrication for this purpose.
- G. Pipe Locating and Tracking.
1. One of the following tracking, locating, and guidance systems shall be used:
    - a. Waterline system.
    - b. Mechanical control head.
    - c. Electronic (inertial) control head.
    - d. Walkover system.
    - e. Laser guided tunnel attachment.
    - f. Laser guided pilot rod.
  2. The Contractor will be responsible for submitting their proposed pipe locating tracking method at the preconstruction meeting for approval.
- H. Settlement/Heaving Monitoring.
1. Settlement/Heaving monitoring shall be performed in a manner that will minimize the movement of the ground in front of, above, and surrounding the horizontal auger bore operation; and will minimize subsidence of the surface above and in the vicinity of the boring. The ground shall be supported in a manner to prevent loss of ground and keep the perimeter and face of the boring stable at all times, including during shutdown periods. A survey shall be performed one day prior to initiating this operation at each required monitoring location. A similar survey shall then be performed at each location, on a daily basis, until the permitted activity has been completed. All survey readings shall be recorded to the nearest one-hundredth (0.01) of a foot. Digital photographs of the pavement and rail conditions shall also be taken prior and after the pipe installation. Specific monitoring locations and requirements may also be provided for railway crossings.
- I. Ground Water Control.

1. Dewatering shall be conducted whenever there is a high ground water table level to prevent flooding and facilitate the operation. The water table elevation shall be maintained at least 1 foot below the bottom of the casing at all times. When needed, dewatering may be initiated prior to any excavation.
2. Minor water seepage or pockets of saturated soil may be effectively controlled through bailing or pumping. This control shall be accomplished without removing any adjacent soil that could weaken or undermine any access pit, its supports, or other nearby structures.
3. Larger volumes of ground water shall be controlled with one or more well points or with staged deep wells. Well points and staged deep well pumping systems shall be installed and operated without damage to property or structures, and without interference with the right of the public, owners of private property, pedestrians, vehicular traffic, or the work of other contractors. Any pumping methods used for dewatering and control of ground water and seepage shall have properly designated filters to ensure that the adjacent soil is not pumped along the water. Well diameter, well spacing and the pump's pumping rate shall provide adequate draw down of the water level. Wells shall be located to intercept ground water that otherwise would enter the access pit excavation and interfere with the work. Upon removal of a well, the hole shall be filled and grouted.
4. Existing storm sewers shall only be used to discharge water from the dewatering operation in accordance with a permit obtained from the appropriate storm sewer owner. Filters or sediment control devices shall be required to ensure that the existing system is not adversely affected by construction debris or sediment.

J. Casing End Seals/Bulkheads

1. Casing ends shall be enclosed using 1/8 inch thick synthetic rubber casing ends seals in accordance with section 2.19.C of this document. Ensure end seals are water tight and attach securely to the casing pipe and the carrier pipe (water main). Ensure end seals are acceptable to the Engineer.

K. Backfill Requirements.

1. Remove the pits and backfill the excavations as necessary with material meeting the standard specifications as approved by the Engineer.

L. Railroad Specific Requirements.

1. For Steel casing pipe jacked in place under a railroad, the following will apply in accordance with the current AREMA Manual;
  - a. When steel casing pipe is used, the joints must be fully closed by welding or mechanical means as approved by the Engineer.
  - b. Minimum cover over the casing must be at least 6.0 feet from the bottom of the railroad tie to the top of the casing pipe at its closest point.
  - c. Casing pipe must extend beyond the limits of the entire railroad right-of-way.
  - d. Jacking construction requirements must be in accordance with the current AREMA Manual, Chapter 1, Part 4.

3.26 INSTALLATION OF LINE STOPS AND INSERTION VALVES

- A. Line Stops and Insertion Valves shall be performed in the locations as detailed on the plans or as directed by the Engineer. Prior to installation of the line stop or insertion valve, coordinate the deactivation of the water main so that all customers have been given proper notification

of the shutdown. No work shall be performed without the Engineer or authorized representative present.

B. Excavate and expose the water main. Remove scale from the water main and make sure there are no flaws which would affect the seal with the saddle.

C. Line Stops

1. Install permanent line stop body on the pipeline and perform line stop according to manufacturer's instructions. Upon completion of the work associated with the line stop, reactivate the water main and install permanent blind flange on the line stop body. Ensure that all as built information is recorded and submitted as detailed in section 1.03.

D. Insertion Valves

1. Install Insertion Valve body on the pipeline and perform valve insertion according to manufacturer's instructions. Operate the valve to ensure that it is fully functional.

2. Construct valve vault as detailed in WA-8-A of the City of Kalamazoo Standard Plans. Ensure that all as built information is recorded and submitted as detailed in section 1.03.

### 3.27 FINAL RESTORATION

A. Contractor shall restore site to preconstruction condition or better, or as detailed on the plans.

B. Final grade shall be 5 feet above completed water main or water service line, unless otherwise approved by the Engineer. If final grade is changed greater than 6 inches from the approved plans, the Developer or Contractor shall raise or lower water main and water services so that they are maintained at 5 feet below final grade. All costs associated with this work shall be paid for by the Developer or Contractor.

PART 4 MEASUREMENT AND PAYMENT

4.01 PAY ITEMS

Measurement a payment may not apply if construction is not being funded with City of Kalamazoo funds. Please review signed construction contract for actual measurement and payment specifications.

<b>Pay Item</b>	<b>Pay Unit</b>
Water Main, DI __ inch, Tr Det __ .....	Foot
Water Main, DI __ inch, in Casing.....	Foot
Water Main, DI __ inch, HDD.....	Foot
Gate Valve and Box, __ inch,.....	Each
Butterfly Valve and Box, __ inch.....	Each
Polyethylene Encasement.....	Foot
Water Main, __ inch, Cut and Plug .....	Each
Fire Hydrant .....	Each
Hydrant, Rem .....	Each
Hydrant Relocate, Case __ .....	Each
Water Serv .....	Each
Water Serv, Long.....	Each
Water Serv, Conflict .....	Each
Water Serv, Yard .....	Each
Copper Tubing, Additional Length .....	Foot
Water Serv, 2 inch.....	Each
Water Serv, Conflict, 2 inch .....	Each
Copper Tubing, Additional Length, 2 inch .....	Foot

Steel Casing Pipe, \_\_ inch, Jacked in Place.....Foot

4.02 MEASUREMENT OF PAY ITEMS

- A. Payment for Water Mains shall be measured based on the sizes and trench details required, along the centerline of the pipe, with no deductions for fittings. The unit price of Water Main, DI, includes the cost of the following:
  - 1. Excavation and backfill;
  - 2. Dewatering operations (trench and/or pipe);
  - 3. Provide temporary water system to maintain service during construction;
  - 4. Hydrostatic testing;
  - 5. Disinfecting and flushing the water main and bacteriological testing;
  - 6. All material, labor and equipment necessary to remedy an unsatisfactory hydrostatic test, including removing and replacing any backfill;
  - 7. Providing and installing fittings, gaskets, bracing or sheeting, blocking and miscellaneous items for installing pipe and reconnecting to the Municipal Water System;
  - 8. Preparing and providing as-constructed plans.
  
- D. The City of Kalamazoo may withhold payment and/or final acceptance until the City of Kalamazoo accepts the as-built plans.
  
- E. The cost of dewatering of trenches, pipe, or both associated with alterations to the Municipal Water System, is included in the unit price for relevant items of work.
  
- F. The cost of excavating, disposing of excess material, and providing, placing, and compacting the backfill, is included in the unit price for related items of work.
  
- G. The cost of removing or abandoning existing water mains, gate valve boxes, and other appurtenances to provide clearance for the proposed water main or roadway, is included in the unit price for relevant items of work.
  
- H. Payment for Gate Valves, Butterfly Valves, and Valve Boxes, shall be as follows:
  - 1. The unit prices of **Gate Valve and Box** and **Butterfly Valve and Box**, of the types and sizes required, include the cost of providing and installing the valve and valve box, complete and ready for use.
  
- I. Payment for water services 1 ¼ and smaller shall be as follows:
  - 1. **Water Serv** refers to services between the water main and the curb shut off no greater than 33 feet long. **Water Serv, Long** refers to services between the water main and the curb shut off greater than 33 feet long and up to 66 feet in length. **Water Serv, Yard** refers to the services between the curb shut off and the water meter setting, up to 25 feet in length. **Copper Tubing, Additional Length** refers to the additional copper tubing and work needed when services between the curb shut off and the water meter setting are over 25 feet in length, and when the length of the service between the center of the road and the curb shut off exceeds 66 feet. **Water Serv, Conflict** refers to relocating only a portion of a water service.
  
- J. Payment for water services 2 inches in size shall be as follows:
  - 1. **Water Serv, 2 inch** refers to the services between the water main and the water meter setting no greater than 58 feet in length. **Water Serv Conflict, 2 inch** refers to relocating only a portion of a 2 inch water service. **Copper Tubing, Additional length, 2 inch** refers to the additional copper tubing and work needed when services exceed 58



feet in length.

- K. Services with a diameter larger than 2 inches will be measured and paid for as water mains.
- L. The unit prices for **Water Serv, Water Serv, Long, Water Serv, Yard, Copper Tubing, Additional Length, Water Serv Conflict, Water Serv, 2 inch, Water Serv Conflict, 2 inch,** and **Copper Tubing, Additional Length, 2 inch**, include the cost of the following, unless otherwise accounted for in other pay items:
  - 1. Earth excavation;
  - 2. Removing pavement;
  - 3. Replacing pavement;
  - 4. Jacking and boring;
  - 5. Providing and installing type K copper tubing, service saddle, corporation stops, service stops, and service boxes;
  - 6. Disinfecting;
  - 7. Providing, placing, and compacting backfill;
  - 8. Slope Restoration to equal or better conditions; and
  - 9. Miscellaneous material, equipment, or operations.
- M. Payment for additional service connections, not shown on the plans, but maintained, protected, and reconnected or disposed of by the Contractor will be paid for as **Water Serv**, or **Water Serv, Long**.
- N. The pay item **Water Serv, Conflict** will apply only to portions of water services requiring relocation due to direct conflict with utilities, other items of work, or as otherwise approved by the City of Kalamazoo. Payment for all other relocations requiring replacement of corporation or service stops will be paid for as Water Serv or Water Serv, Long.
- O. Payment for **Water Main, \_\_inch, Cut and Plug** includes the cost of cutting the existing water main, providing and placing the required plug, and thrust blocks.
- P. Payment for **Fire Hydrant** includes the cost of providing and installing the hydrant, hydrant valve, valve box, and all pieces between the valve and hydrant, including the coarse gravel and concrete base, fire hydrant marker at the locations shown on the plans in a ready-for-use condition unless noted otherwise.
- Q. Payment for **Hydrant, Rem** includes the cost of breaking down the auxiliary gate valve, gate box, the hydrant assembly, backfilling, and plugging the opening in the existing main.
- R. Payment for **Hydrant, Relocate, Case \_\_** (of the case required), includes the cost of vertically adjusting the relocated hydrant to final grade and the following:
  - 1. Case 1 includes the cost of removing the hydrant, extending the existing hydrant lead from the gate valve, reinstalling the hydrant in a ready-for-use condition, adjusting the existing gate box and hydrant to final grade, and providing and installing sleeves, fittings, and joint restraints.
  - 2. Case 2 includes the cost of removing the existing hydrant, gate valve and box, and reinstalling the hydrant and gate valve in a ready-for-use condition, adjusting the existing gate box and hydrant to final grade, and providing and installing the cutting-in-sleeve, pipe coupling, tee, elbow, and joint restraints.
- S. Payment for **Steel Casing Pipe, \_\_inch, Jacked in Place** of the size required will be paid for by the length installed. The unit price for **Steel Casing Pipe, Jacked in Place** includes the cost of excavating the pits, providing and installing sheeting, bracing, and any other safety devices, providing jacking equipment: drainage and dewatering; bulkheading and sealing the casing, providing and installing vents, grouting the annular space between the casing and native soil and any other items associated with the operation.

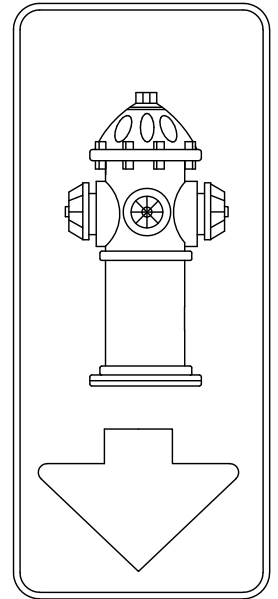
- T. Payment for **Water Main, DI, \_\_inch, in Casing**, of the size required will be paid for by the length installed. The unit price for **Water Main, DI \_\_inch, in Casing** shall include the cost for furnishing and installing the water main and casing spacers inside the casing.
- U. Payment for **Water Main, DI, \_\_inch, HDD**, of the size required will be paid for by the length installed. The unit price shall include the cost of all equipment and materials, excavation and backfill, dewatering operations (trench, pit or pipe), temporary water system to maintain service during construction, hydrostatic testing, disinfecting and flushing the water mains, and bacteriological testing, all materials, labor and equipment necessary to remedy and unsatisfactory hydrostatic test, including removing and replacing any backfill, providing and install all, gaskets, bracing or sheeting, blocking and miscellaneous items for installing pipe of the required size and material and reconnecting to the water system as shown on the plans.

END OF SECTION

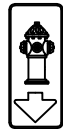
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WA-1-D

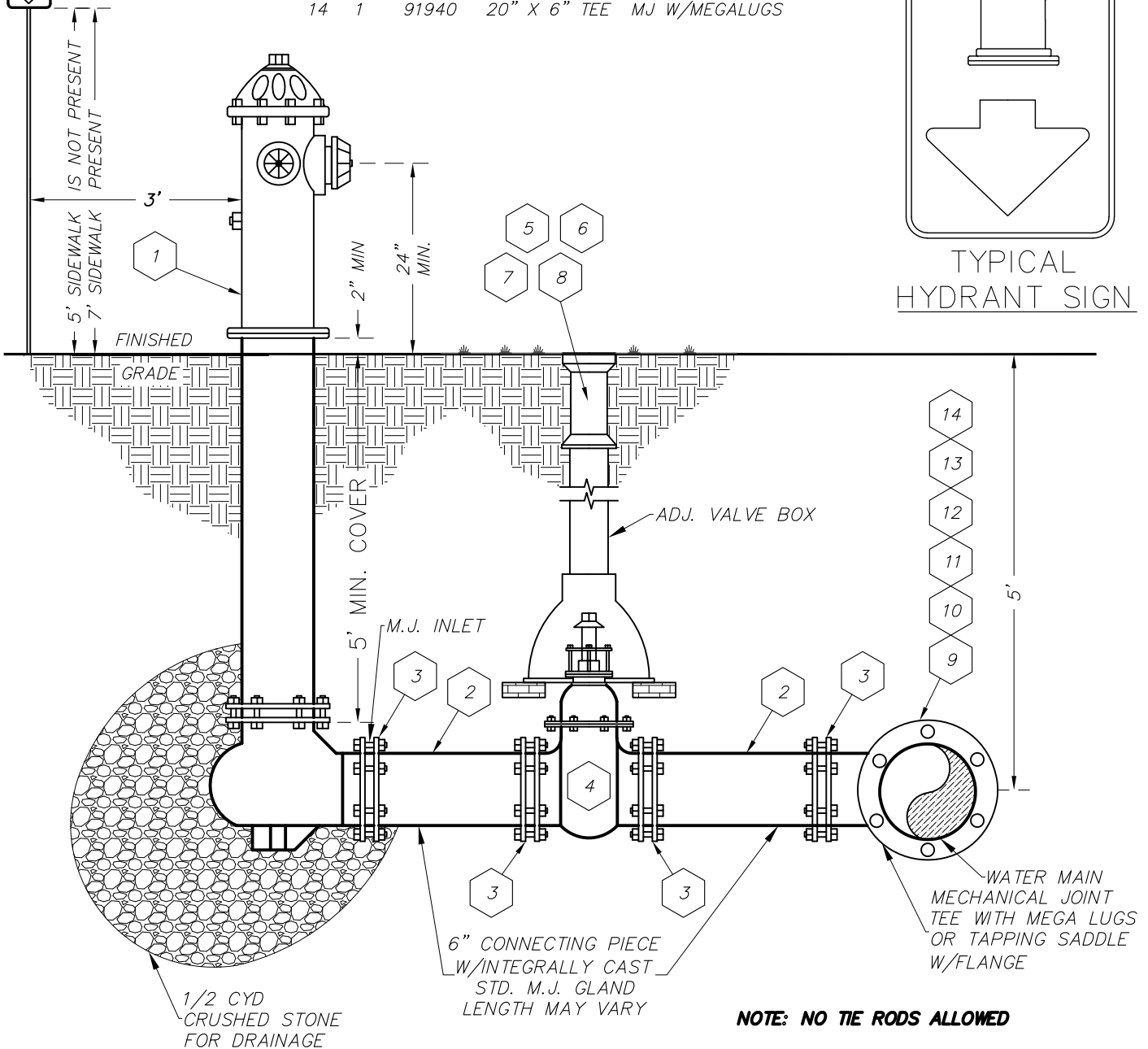
ITEM	QTY.	#	DESCRIPTION
1	1	39887	6" HYDRANT W/CARROLL DRAIN
2	2	70000	CONNECTING PIECE (13")
3	4	33801	6" GASKET (MJ)
4	1	96696	6" GATE VALVE (MJ)
5	1	08550	VALVE BOX BOTTOM
6	1	08520	VALVE BOX TOP SECTION
7	1	08500	VALVE BOX RING CASTING
8	1	08490	VALVE BOX COVER
9	1	91440	6" TEE MJ
10	1	91525	8" X 6" TEE MJ W/MEGALUGS
11	1	91750	10" X 6" TEE MJ W/MEGALUGS
12	1	91825	12" X 6" TEE MJ W/MEGALUGS
13	1	91909	16" X 6" TEE MJ W/MEGALUGS
14	1	91940	20" X 6" TEE MJ W/MEGALUGS



TYPICAL HYDRANT SIGN



DOUBLE SIDED HYDRANT SIGN



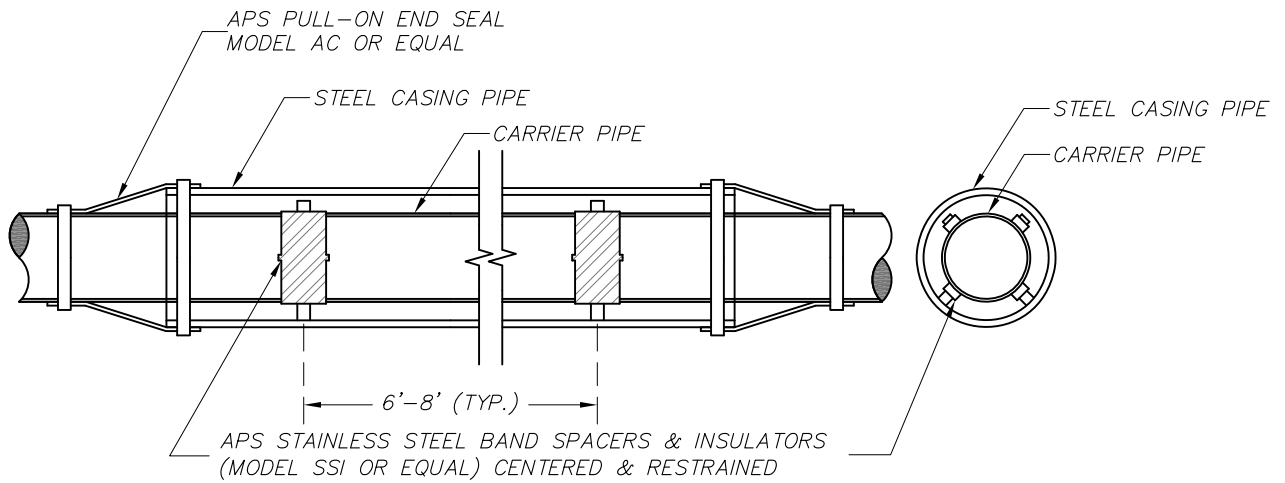
**NOTE: NO TIE RODS ALLOWED**



CITY OF KALAMAZOO  
Department Of Public Services

**TYPICAL FIRE HYDRANT & GATE VALVE DETAIL**

	DATE
RECOMMENDED BY _____	
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	



**CASING CARRIER PIPE DETAIL**

SIZE CASING AND CARRIER PIPES PER PLAN AND SPECIFICATIONS

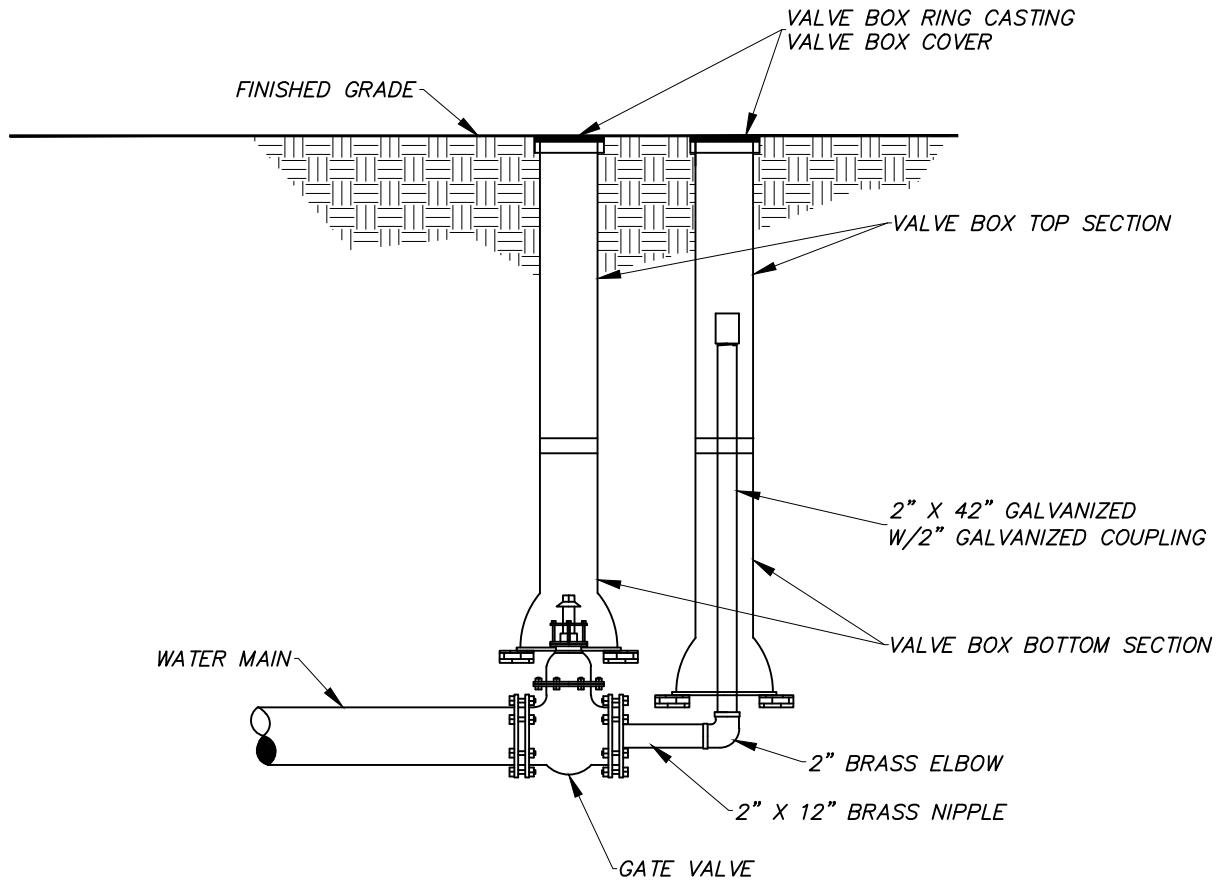
TYPICAL BAND SPACER POSITIONING:  
 ONE PLACED NOT MORE THAN 1 FOOT FROM EACH END OF THE CASING AND  
 PIPE JOINTS WITH SUBSEQUENT SPACERS PLACED EVERY 6-8 FEET THEREAFTER.  
 FOR 18 FOOT PIPE THERE SHALL BE THREE BAND SPACERS.  
 FOR 20 FOOT PIPE THERE SHALL BE FOUR BAND SPACERS.



CITY OF KALAMAZOO  
 Department Of Public Services

**CASING CARRIER PIPE**

RECOMMENDED BY _____	DATE _____
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	



NOT TO SCALE

J:\CAD STANDARDS\STANDARD DETAILS\WATER\UPDATED DRAWINGS\ACAD DRAWINGS\WA-3-B BLOW OFF CONNECTION 2 INCH.dwg, 6/12/2016 12:01:24 PM

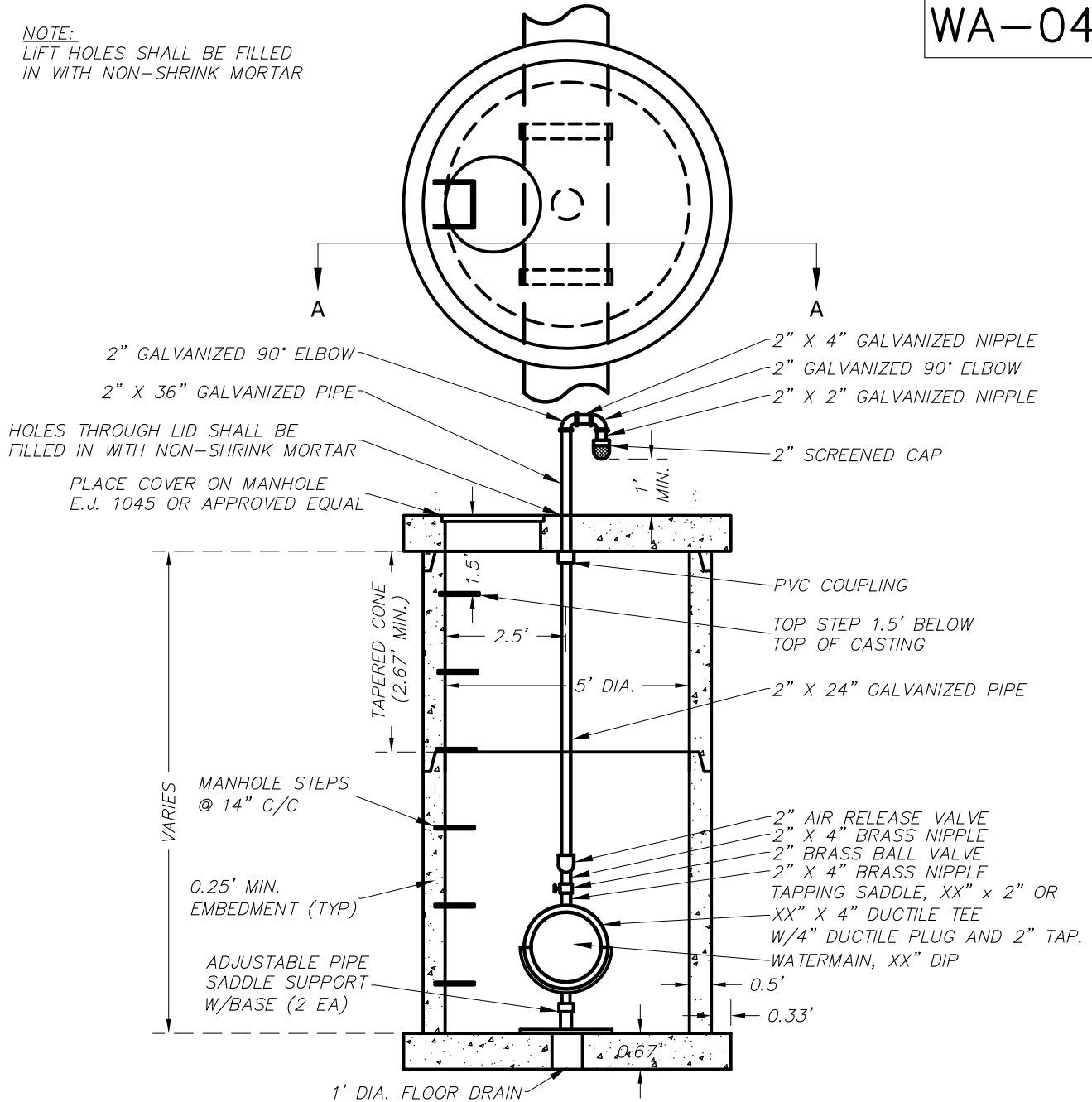


CITY OF KALAMAZOO  
Department Of Public Services

**2" BLOW OFF  
CONNECTION**

RECOMMENDED BY _____	DATE _____
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	

**NOTE:**  
LIFT HOLES SHALL BE FILLED  
IN WITH NON-SHRINK MORTAR



### TYPICAL 2" AIR RELEASE MANHOLE

PRECAST REINFORCED CONCRETE SHOWN (OTHER OPTIONS INCLUDE CONCRETE BLOCK, BRICK OR CAST IN PLACE WALL SECTIONS)

#### SCHEDULE OF FITTINGS

ITEM DESCRIPTION	QUANTITY
AIR RELEASE VALVE, 2"	1
GALVANIZED PIPE, 2" X 60"	1
GALVANIZED NIPPLE, 2" X 4"	1
GALVANIZED NIPPLE, 2" X 2"	1
GALVANIZED 90° ELBOW, 2"	2
PIPE SUPPORT BASE	2

ITEM DESCRIPTION	QUANTITY
TAPPING SADDLE, XX X 2"	1
BRASS BALL VALVE, 2"	1
BRASS NIPPLE, 2" X 4"	2



CITY OF KALAMAZOO  
Department Of Public Services

## AIR RELEASE MANHOLE

RECOMMENDED BY \_\_\_\_\_

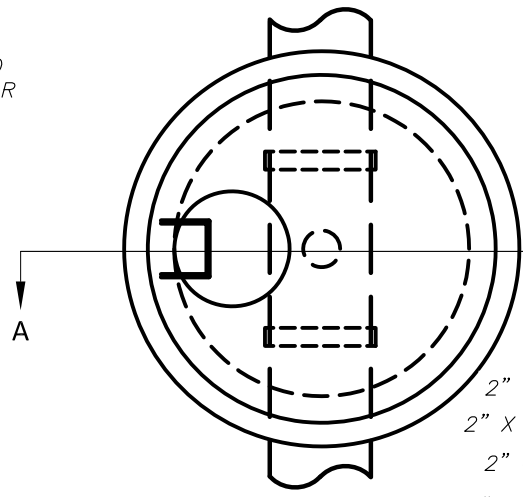
APPROVED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

ACCEPTED BY \_\_\_\_\_

DATE

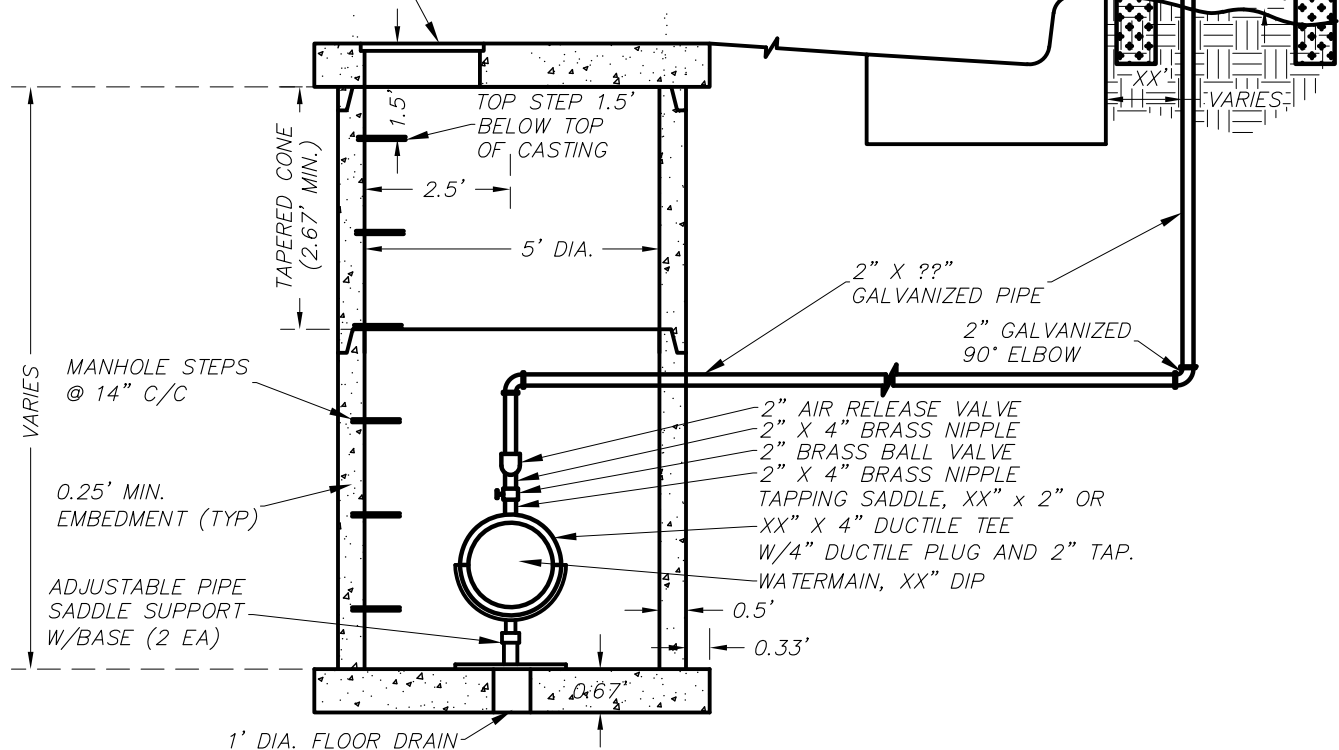
**NOTE:**  
LIFT HOLES SHALL BE FILLED  
IN WITH NON-SHRINK MORTAR



- 2" GALVANIZED 90° ELBOW
- 2" X 4" GALVANIZED NIPPLE
- 2" GALVANIZED 90° ELBOW
- 2" X 2" GALVANIZED NIPPLE
- 2" SCREENED CAP

BOLLARD POSTS  
AS SPECIFIED  
BY ENGINEER

PLACE COVER ON MANHOLE  
E.J. 1045 OR APPROVED EQUAL



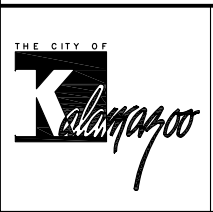
### TYPICAL 2" AIR RELEASE MANHOLE

PRECAST REINFORCED CONCRETE SHOWN (OTHER OPTIONS INCLUDE  
CONCRETE BLOCK, BRICK OR CAST IN PLACE WALL SECTIONS)

#### SCHEDULE OF FITTINGS

ITEM DESCRIPTION	QUANTITY
AIR RELEASE VALVE, 2"	1
GALVANIZED PIPE, 2" X 60"	1
GALVANIZED NIPPLE, 2" X 4"	1
GALVANIZED NIPPLE, 2" X 2"	1
GALVANIZED 90° ELBOW, 2"	2
PIPE SUPPORT BASE	2

ITEM DESCRIPTION	QUANTITY
TAPPING SADDLE, XX X 2"	1
BRASS BALL VALVE, 2"	1
BRASS NIPPLE, 2" X 4"	2

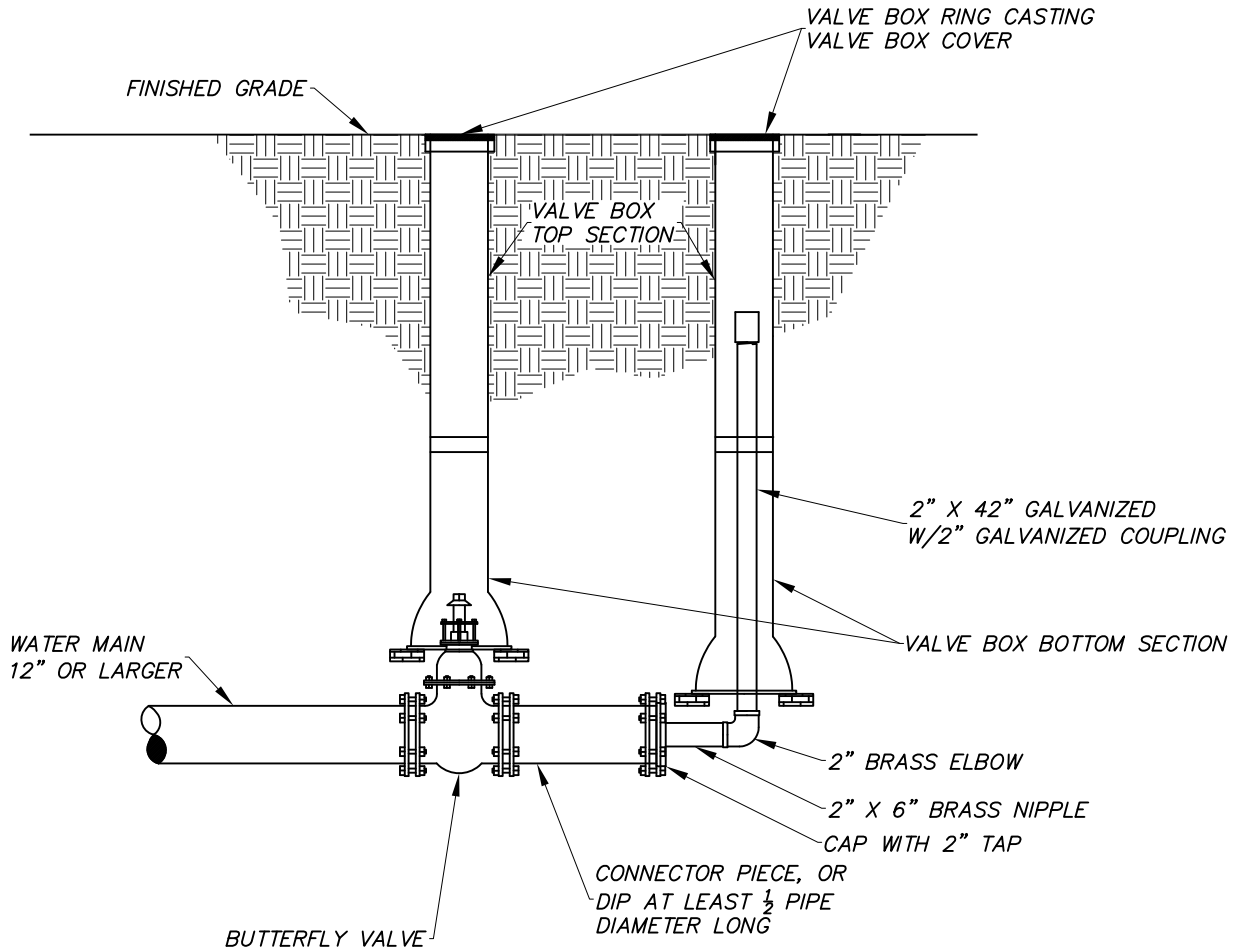


CITY OF KALAMAZOO  
Department Of Public Services

## AIR RELEASE MANHOLE IN ROADWAY

RECOMMENDED BY	DATE
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	





NOT TO SCALE

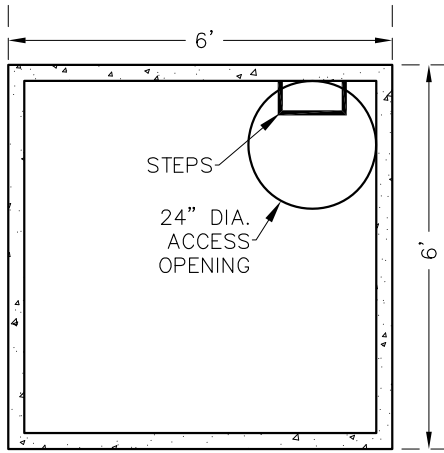


CITY OF KALAMAZOO  
Department Of Public Services

**2" BLOW OFF  
CONNECTION  
12" OR LARGER MAIN**

RECOMMENDED BY \_\_\_\_\_  
APPROVED BY \_\_\_\_\_  
APPROVED BY \_\_\_\_\_  
ACCEPTED BY \_\_\_\_\_

DATE

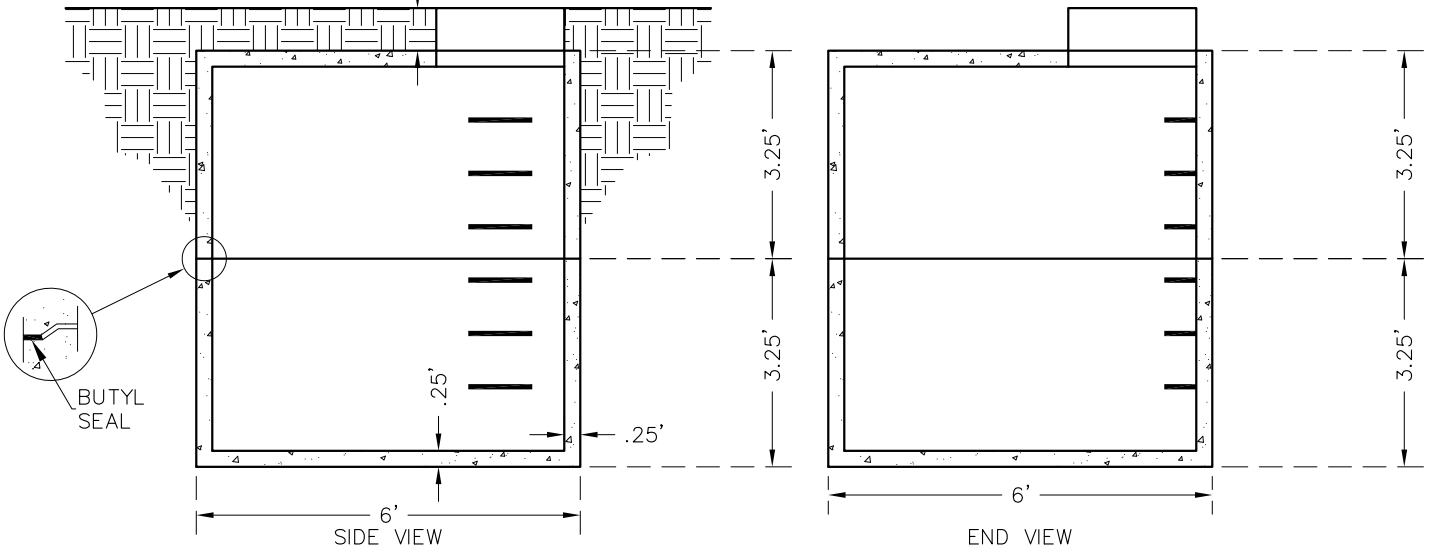


TOP VIEW

NOTES:

1. METER VAULT DESIGN TO BE SUBMITTED AND APPROVED FOR EACH INDIVIDUAL INSTALLATION. DESIGN SHALL CONFORM TO KALAMAZOO WATER ENGINEERING STANDARDS LATEST REVISION.
2. THE DISTANCE BETWEEN RUNGS, CLEATS AND STEPS SHALL NOT EXCEED 12 INCHES AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE LADDER.
3. PLACEMENT OF CURB BOX CAN VARY FROM A MAXIMUM OF 5 FEET OUTSIDE THE PROPERTY LINE TO A MAXIMUM OF 5 FEET INSIDE THE PROPERTY LINE. PLACEMENT OF THE CURB BOX OUTSIDE THE PROPERTY LINE IS PREFERRED.
4. ACCESS COVER - FORD MC-24-MB-T WITH AN INNER LID, VESTAL 32-055, 32-104, AND 32-046 OR APPROVED EQUAL.

TOP OF PIT TO FINAL GRADE SHALL NOT EXCEED 8"



SIDE VIEW

END VIEW



CITY OF KALAMAZOO  
Department Of Public Services

STANDARD METER PIT

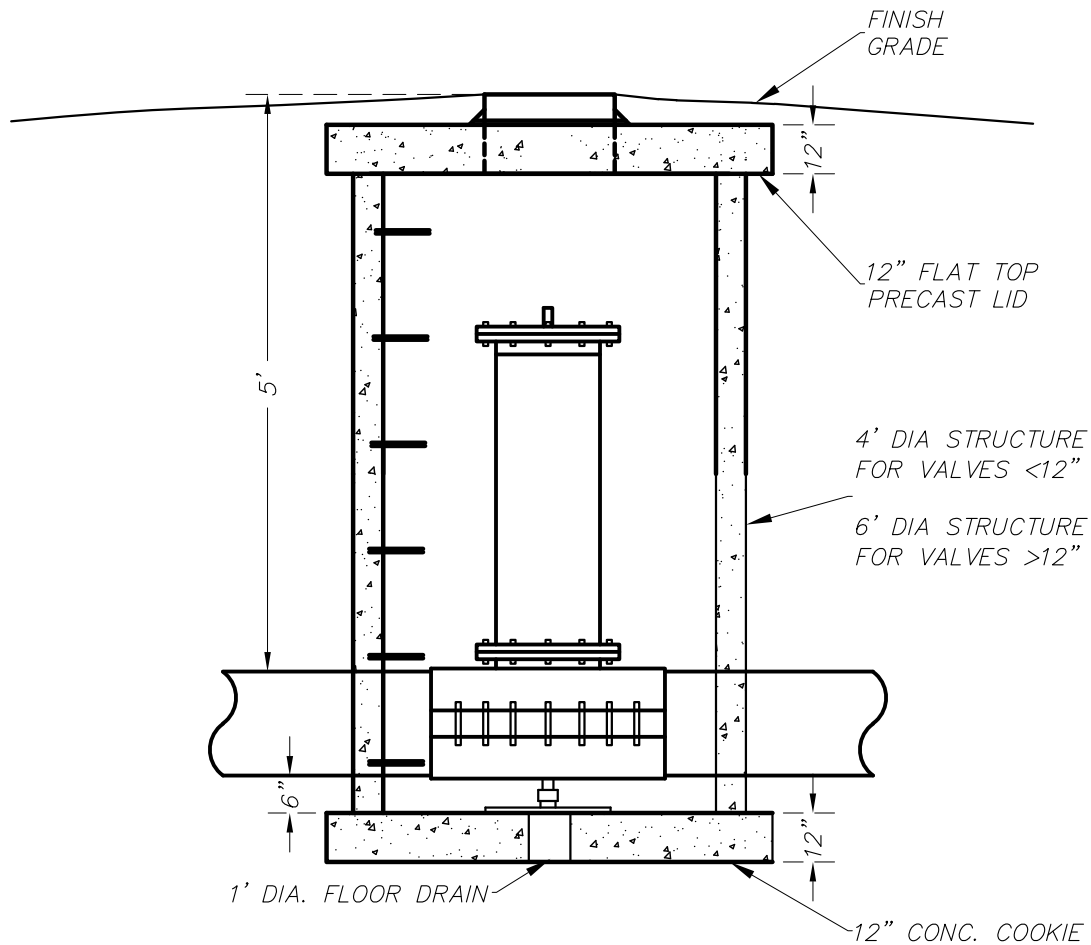
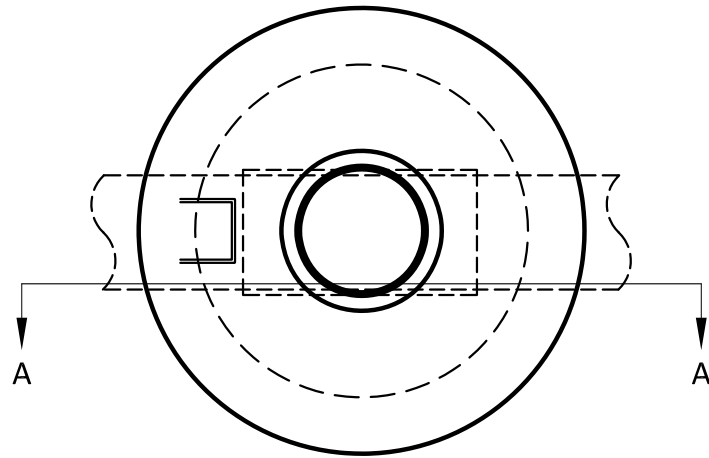
RECOMMENDED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

ACCEPTED BY \_\_\_\_\_

DATE



**TYPICAL INSERTA – VALVE**  
*PRECAST REINFORCED CONCRETE SHOWN*



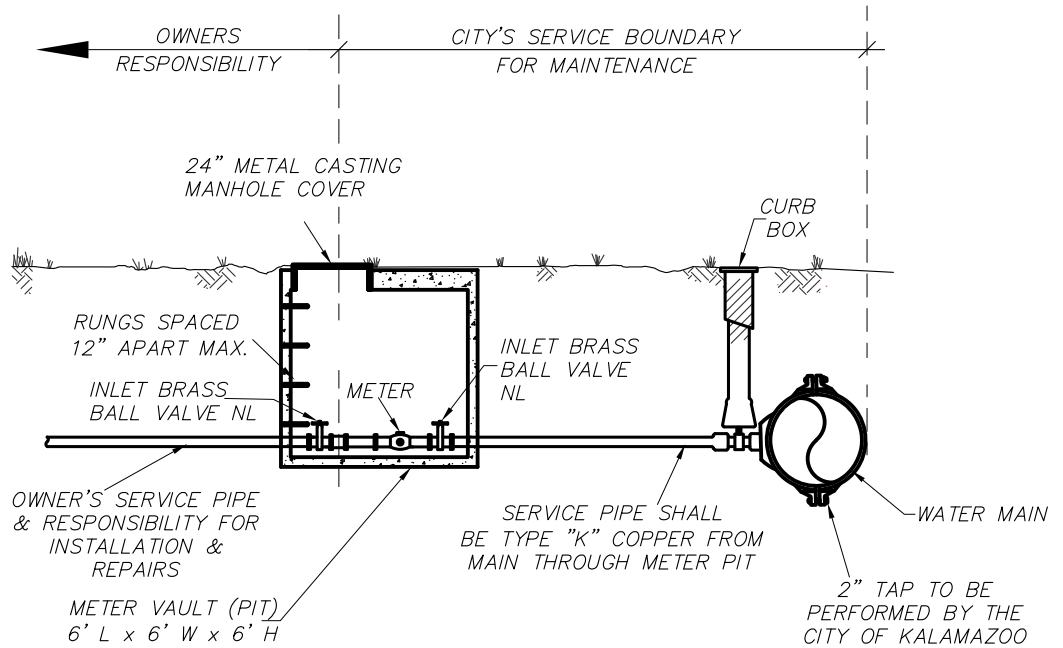
CITY OF KALAMAZOO  
 Department Of Public Services

**INSERTA-VALVE  
 STRUCTURE**

RECOMMENDED BY _____	DATE _____
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	

NOTES:

1. METER VAULT (PIT) DESIGN MUST BE SUBMITTED AND APPROVED FOR EACH INDIVIDUAL INSTALLATION. DESIGN SHALL CONFORM TO THE CITY OF KALAMAZOO STANDARD SPECIFICATIONS FOR WATER MAIN AND SERVICE INSTALLATION LATEST REVISION.
2. THE DISTANCE BETWEEN RUNGS, CLEATS & STEPS SHALL NOT EXCEED 12 INCHES AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE LADDER.
3. CURB BOX WILL BE INSTALLED AT THE WATER MAIN.
4. COVER FOR METER PIT & CURB BOX SHALL BE INSTALLED & MAINTAINED LEVEL WITH THE ADJACENT GROUND.



CITY OF KALAMAZOO  
Department Of Public Services

**2" SERVICE LINE  
METER VAULT**

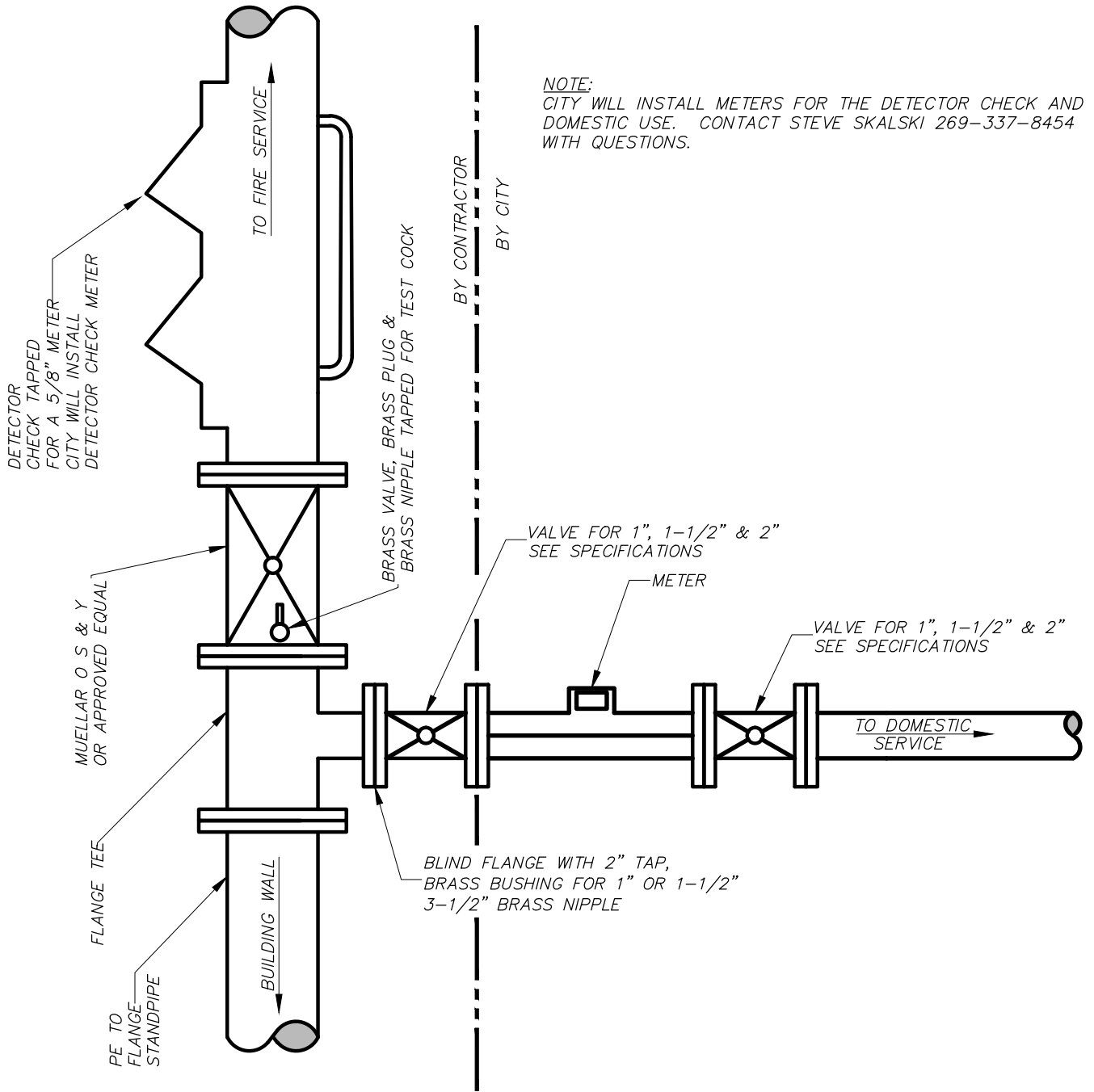
RECOMMENDED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

ACCEPTED BY \_\_\_\_\_

DATE



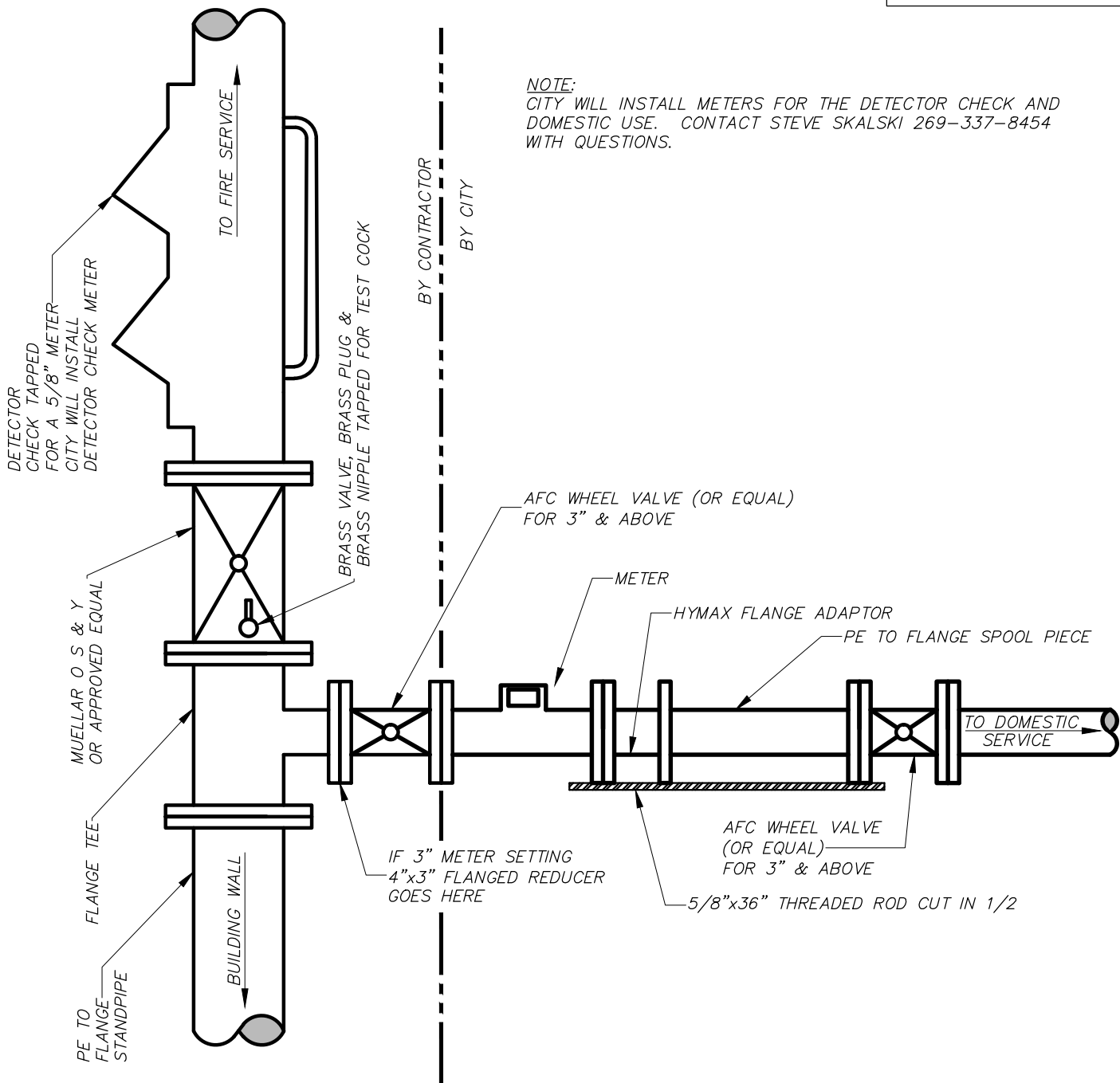
**NOTE:**  
 CITY WILL INSTALL METERS FOR THE DETECTOR CHECK AND DOMESTIC USE. CONTACT STEVE SKALSKI 269-337-8454 WITH QUESTIONS.

BY CONTRACTOR  
 BY CITY



CITY OF KALAMAZOO  
 Department Of Public Services  
**TYPICAL FIRE SERVICE**  
**DETAIL**  
 1" 1-1/2" 2"

RECOMMENDED BY _____	DATE _____
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	



**NOTE:**  
 CITY WILL INSTALL METERS FOR THE DETECTOR CHECK AND DOMESTIC USE. CONTACT STEVE SKALSKI 269-337-8454 WITH QUESTIONS.

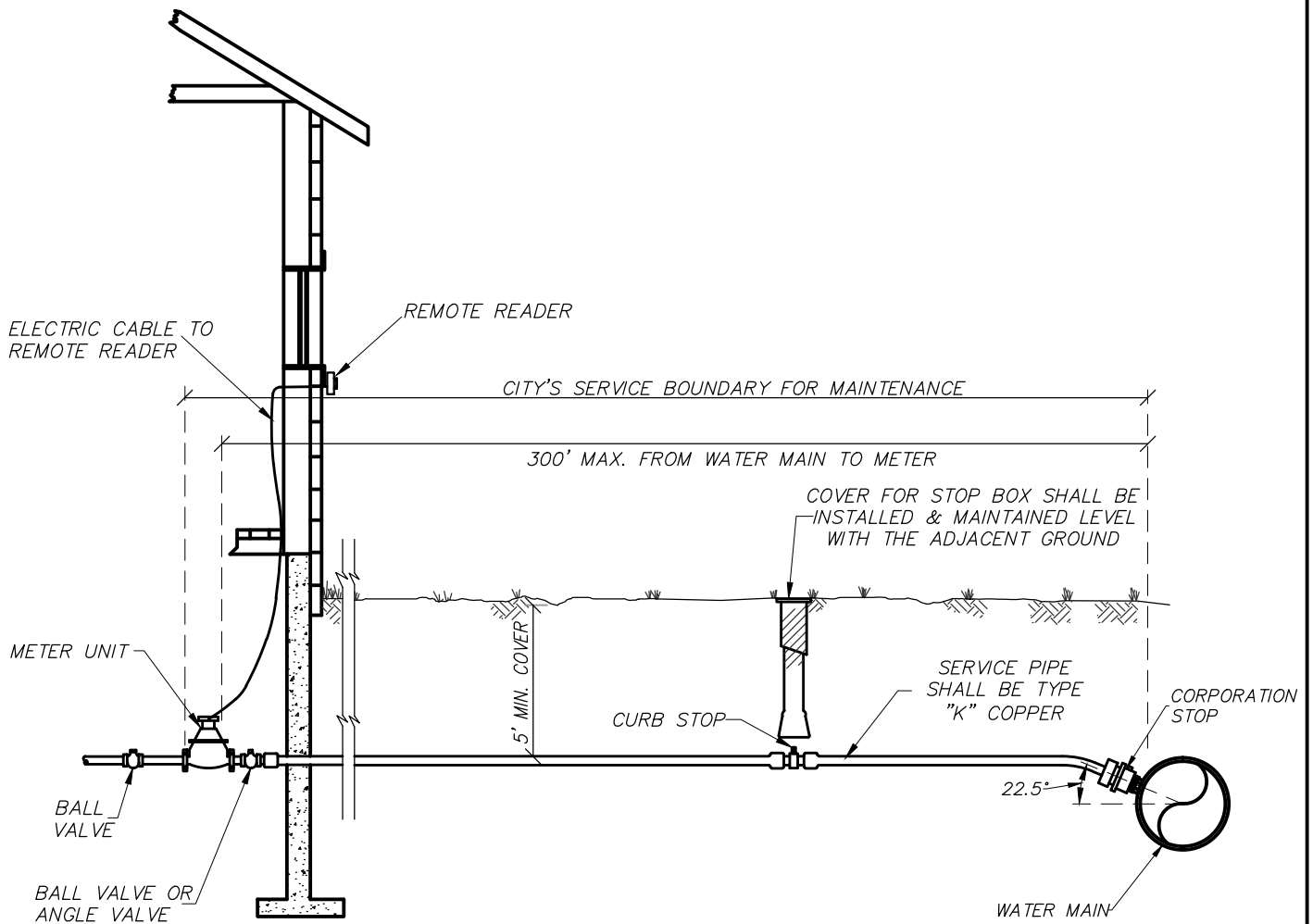


CITY OF KALAMAZOO  
 Department Of Public Services  
**TYPICAL FIRE SERVICE  
 DETAIL**  
 3" 4" 6"

RECOMMENDED BY _____	DATE _____
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	

NOTES:

1. PLACEMENT OF STOP BOX CAN VARY FROM A MAXIMUM OF 5 FEET OUTSIDE THE PROPERTY LINE TO A MAXIMUM OF 5 FEET INSIDE THE PROPERTY LINE. PLACEMENT OF THE STOP BOX OUTSIDE THE PROPERTY LINE IS PREFERRED.
2. CITY WATER WILL REPAIR LEAKS ON SERVICE LINES WHEN NOTIFIED, FROM THE CORPORATION STOP TO METER.



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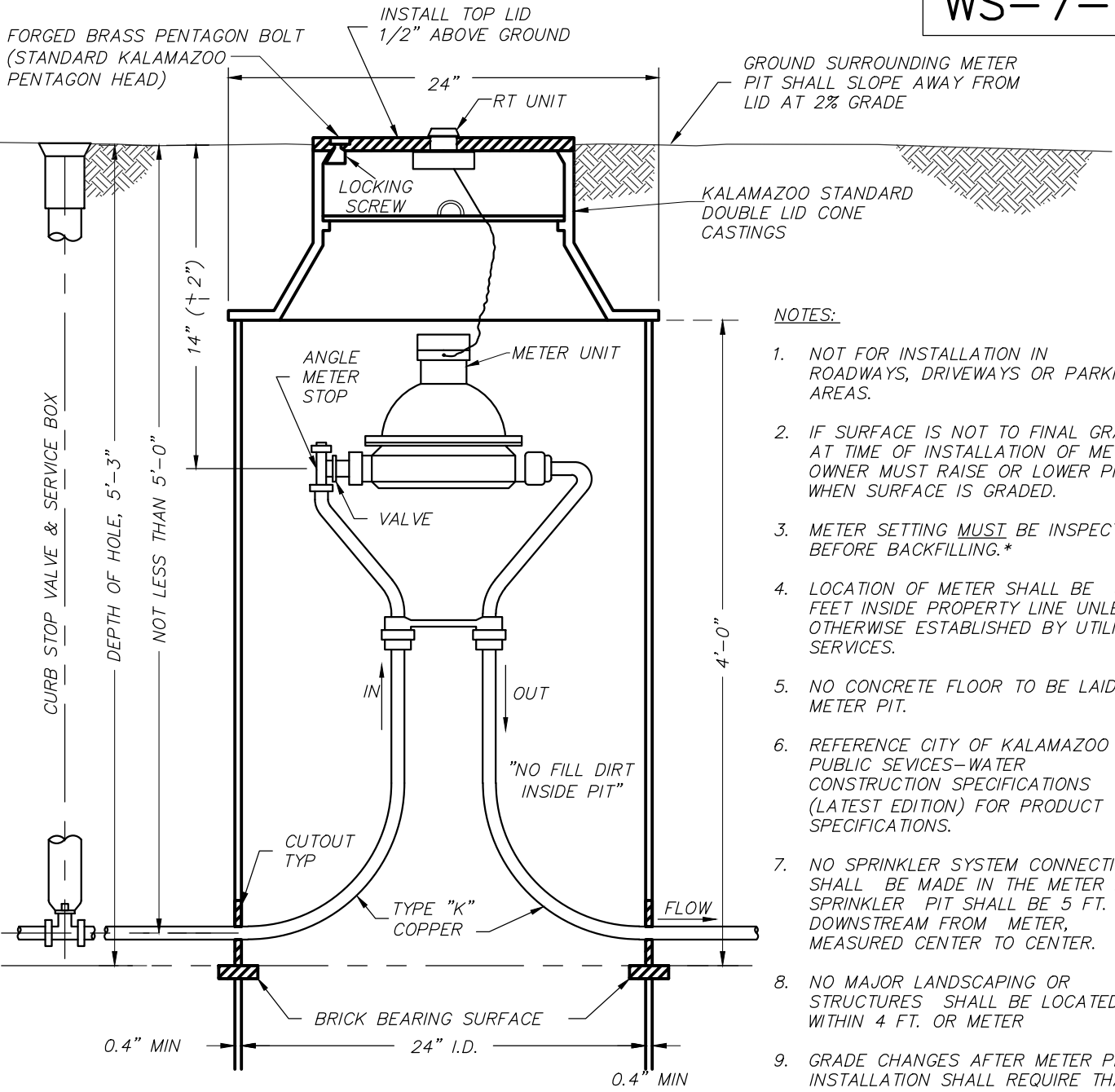


CITY OF KALAMAZOO  
Department Of Public Services

**SERVICE LINE, STOP BOX AND  
INSIDE METER INSTALLATION  
1-1/4" SERVICE & 1" METER**

	RECOMMENDED BY _____	DATE
APPROVED BY	_____	
APPROVED BY	_____	
ACCEPTED BY	_____	

WS-7-A



NOTES:

1. NOT FOR INSTALLATION IN ROADWAYS, DRIVEWAYS OR PARKING AREAS.
2. IF SURFACE IS NOT TO FINAL GRADE AT TIME OF INSTALLATION OF METER, OWNER MUST RAISE OR LOWER PIT WHEN SURFACE IS GRADED.
3. METER SETTING MUST BE INSPECTED BEFORE BACKFILLING.\*
4. LOCATION OF METER SHALL BE 5 FEET INSIDE PROPERTY LINE UNLESS OTHERWISE ESTABLISHED BY UTILITY SERVICES.
5. NO CONCRETE FLOOR TO BE LAID IN METER PIT.
6. REFERENCE CITY OF KALAMAZOO PUBLIC SERVICES-WATER CONSTRUCTION SPECIFICATIONS (LATEST EDITION) FOR PRODUCT SPECIFICATIONS.
7. NO SPRINKLER SYSTEM CONNECTIONS SHALL BE MADE IN THE METER PIT. SPRINKLER PIT SHALL BE 5 FT. DOWNSTREAM FROM METER, MEASURED CENTER TO CENTER.
8. NO MAJOR LANDSCAPING OR STRUCTURES SHALL BE LOCATED WITHIN 4 FT. OF METER
9. GRADE CHANGES AFTER METER PIT INSTALLATION SHALL REQUIRE THAT THE OWNER ADJUST METER PIT COVER TO 1/2" ABOVE FINAL GRADE.
10. IF PRESSURE REDUCING VALVE IS REQUIRED BY PLUMBING CODE, IT SHALL BE INSTALLED INSIDE THE BUILDING, IMMEDIATELY FOLLOWING THE MAIN SHUT OFF VALVE.
11. COPPER PIPE SHALL SHOW NO VISIBLE CRIMPING.

\* FOR INSPECTION CALL (269) 998-6433 INSPECTOR  
 \* FOR INSPECTION CALL (269) 337-8769 ENGINEER

J:\COK CAD STANDARDS\STANDARD DETAILS\WATER\UPDATED DRAWINGS\WS-7-A OUTSIDE METER 1 INCH.dwg, 4/1/2014 8:18:07 AM



CITY OF KALAMAZOO  
 Department Of Public Services  
**OUTSIDE SETTING FOR  
 1" METER**

RECOMMENDED BY _____	DATE _____
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	



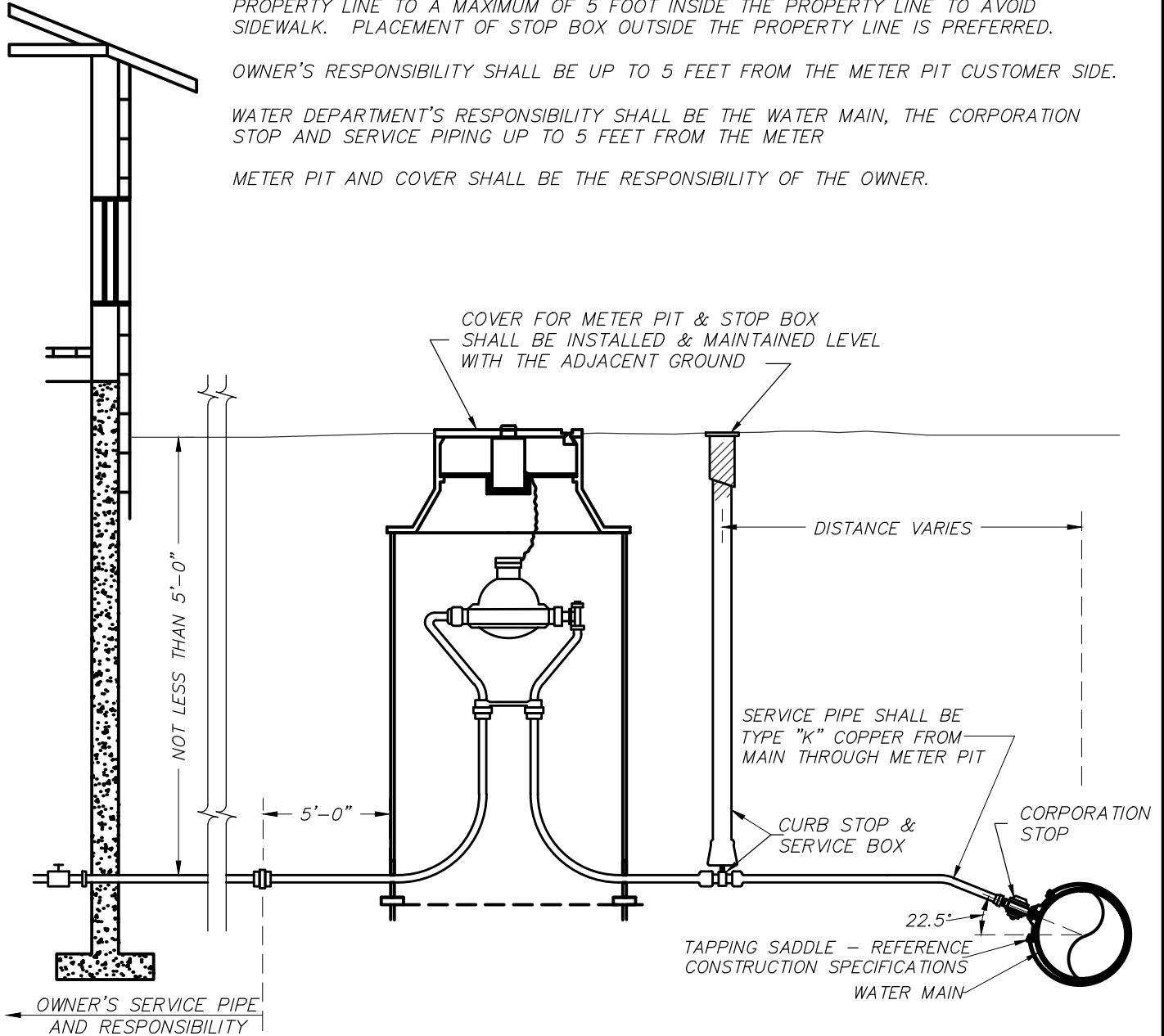
NOTES:

PLACEMENT OF STOP BOX CAN VARY FROM A MAXIMUM OF 5 FOOT OUTSIDE THE PROPERTY LINE TO A MAXIMUM OF 5 FOOT INSIDE THE PROPERTY LINE TO AVOID SIDEWALK. PLACEMENT OF STOP BOX OUTSIDE THE PROPERTY LINE IS PREFERRED.

OWNER'S RESPONSIBILITY SHALL BE UP TO 5 FEET FROM THE METER PIT CUSTOMER SIDE.

WATER DEPARTMENT'S RESPONSIBILITY SHALL BE THE WATER MAIN, THE CORPORATION STOP AND SERVICE PIPING UP TO 5 FEET FROM THE METER

METER PIT AND COVER SHALL BE THE RESPONSIBILITY OF THE OWNER.



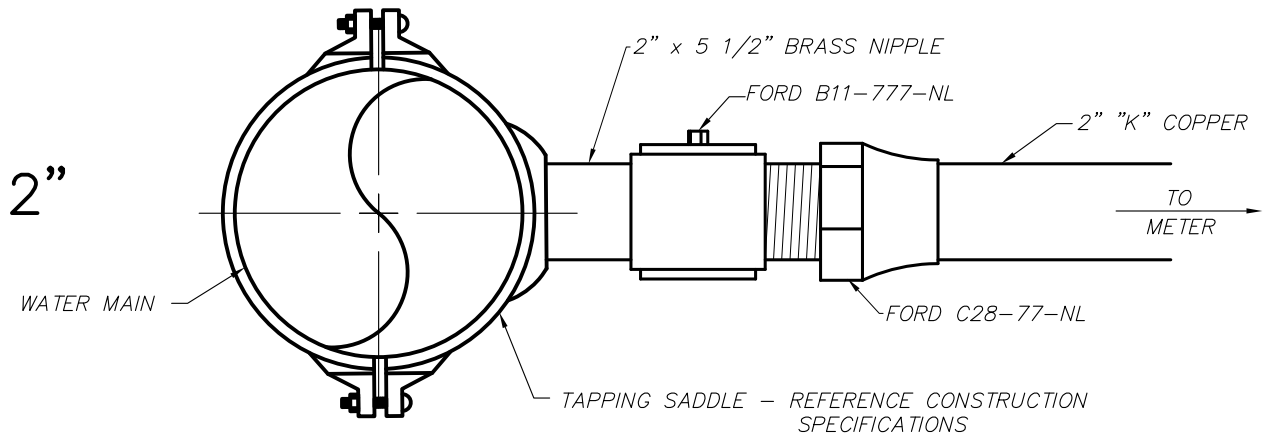
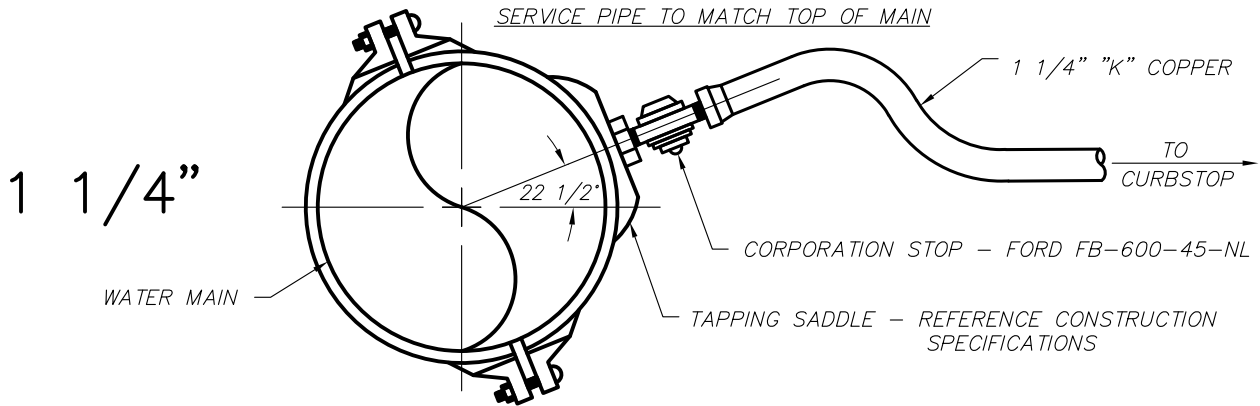
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CITY OF KALAMAZOO  
Department Of Public Services

**1-1/4" SERVICE LINE,  
STOP BOX AND OUTSIDE  
METER INSTALLATION**

RECOMMENDED BY _____	DATE
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	



CITY OF KALAMAZOO  
Department Of Public Services

**WATER SERVICE  
TAPPING SLEEVE**

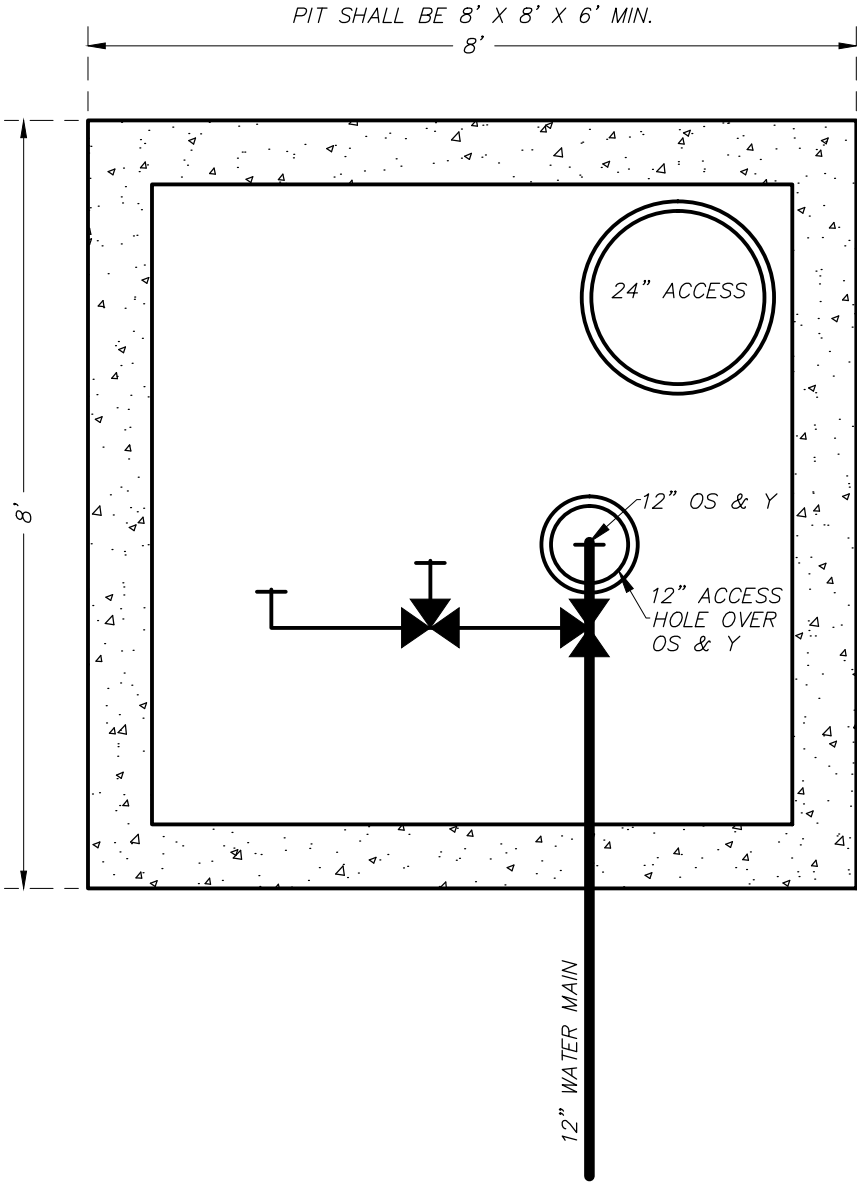
RECOMMENDED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

ACCEPTED BY \_\_\_\_\_

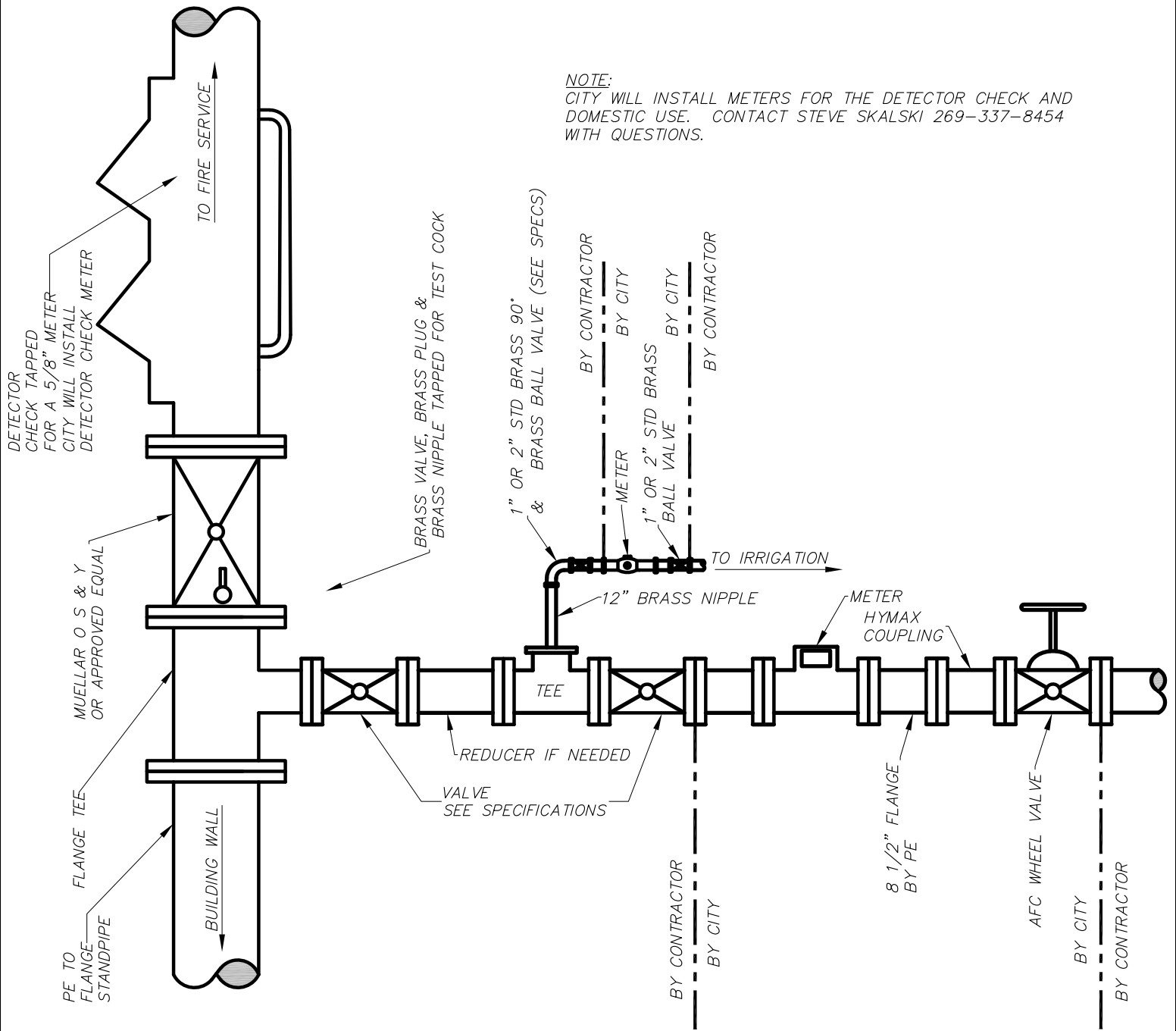
DATE



CITY OF KALAMAZOO  
Department Of Public Services

### 12 INCH METER PIT

	DATE
RECOMMENDED BY _____	
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	



**NOTE:**  
CITY WILL INSTALL METERS FOR THE DETECTOR CHECK AND DOMESTIC USE. CONTACT STEVE SKALSKI 269-337-8454 WITH QUESTIONS.



TYPICAL FIRE SERVICE  
DETAIL, DOMESTIC 3", 4",  
& 6" & IRRIGATION 1" OR  
2" VERTICAL SETTING

RECOMMENDED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

ACCEPTED BY \_\_\_\_\_

DATE

**NOTE:**  
CITY WILL INSTALL METERS FOR THE DETECTOR CHECK AND DOMESTIC USE. CONTACT STEVE SKALSKI 269-337-8454 WITH QUESTIONS.

1" OR 2" STD. 90°  
W/1" OR 2" BRASS BALL VALVE  
OR FORD ANGLE VALVE  
(FV13-777W-NL) 2"  
(KV13-444W-NL) 1"

1" OR 2" X 12" BRASS NIPPLE

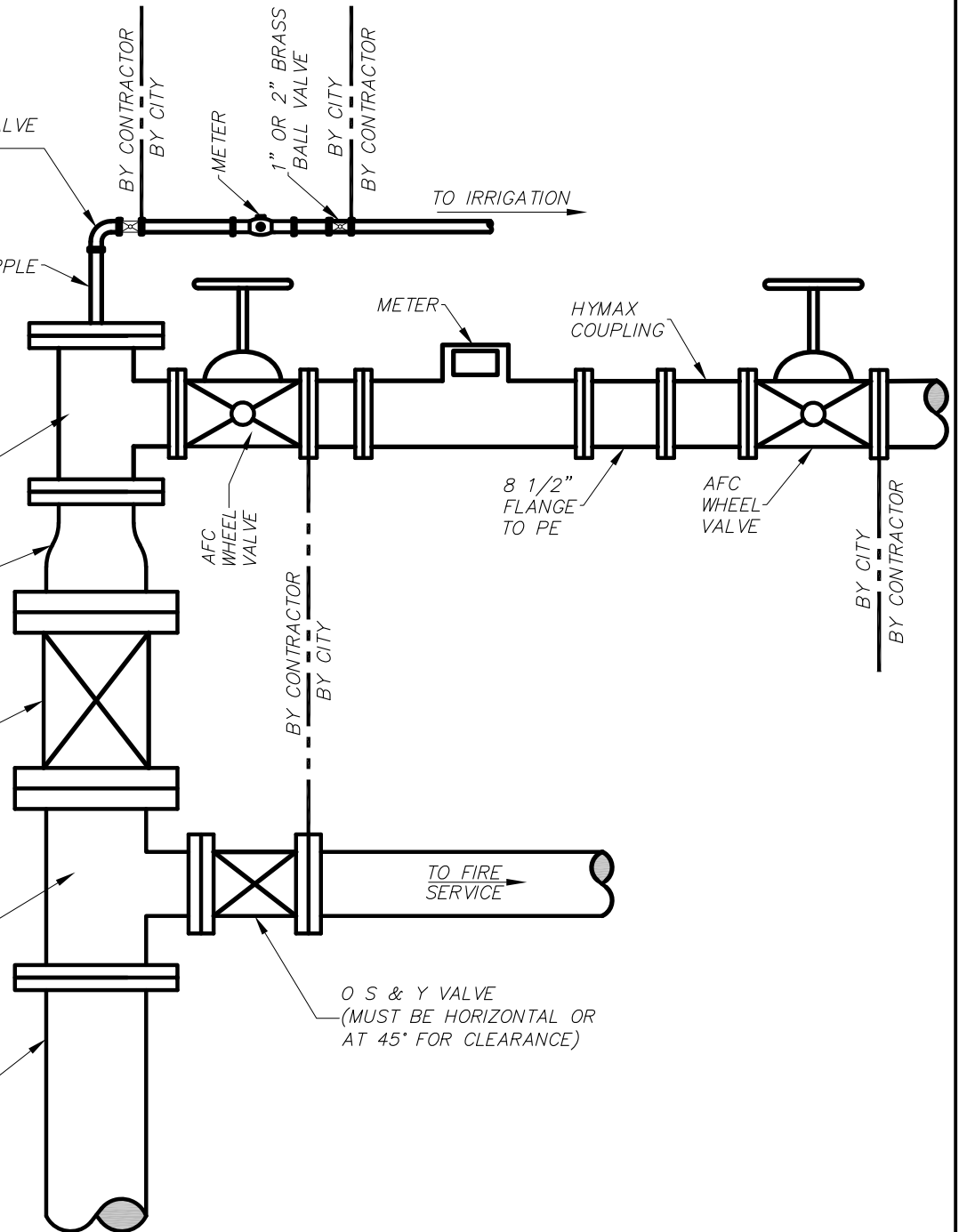
VALVE  
SEE SPECIFICATIONS

REDUCER  
(IF NEEDED)

TEE

TEE

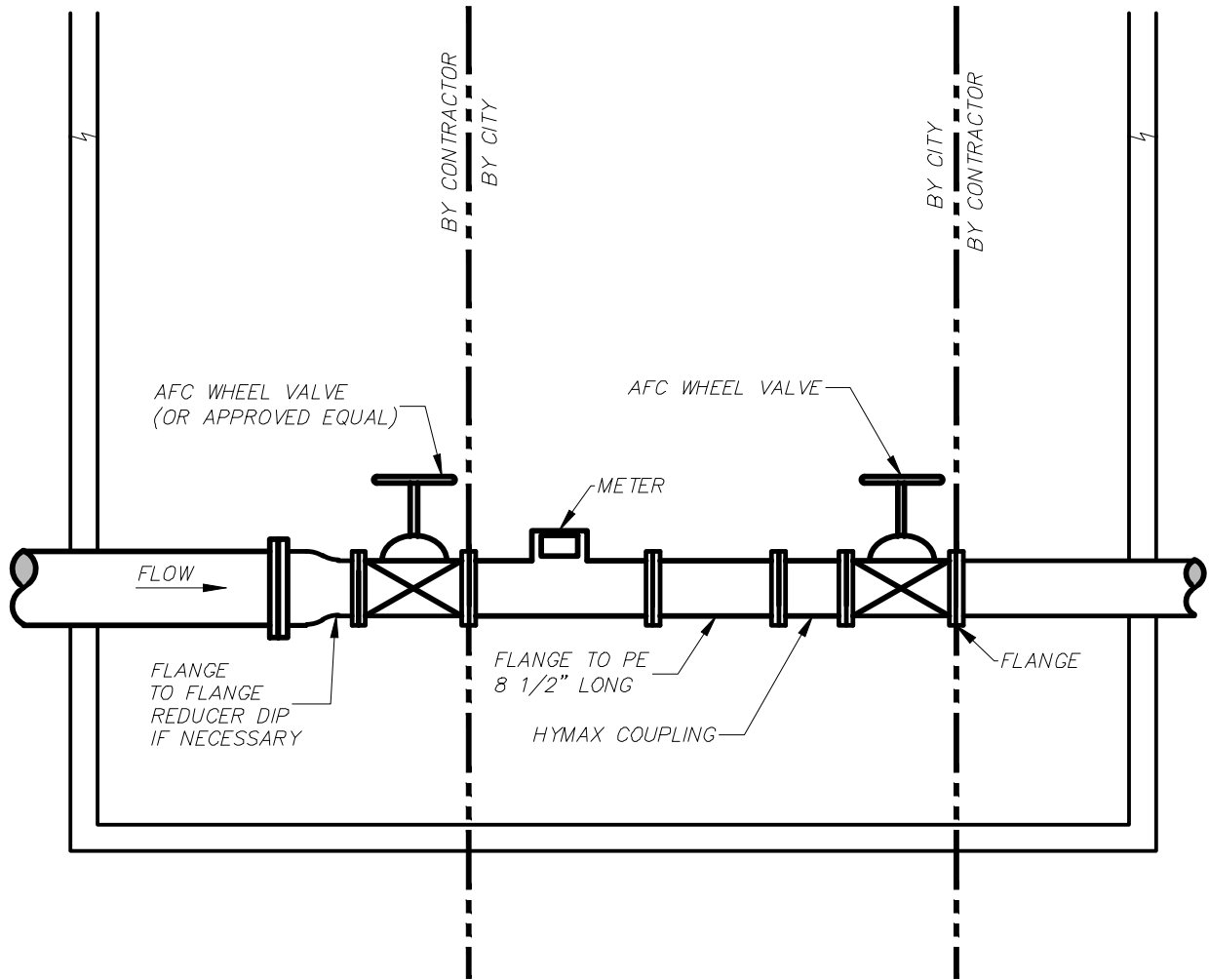
PE TO  
FLANGE  
STANDPIPE



CITY OF KALAMAZOO  
Department Of Public Services  
**TYPICAL FIRE SERVICE DETAIL  
HORIZONTAL SETTING  
W/3", 4", OR 6" DOMESTIC  
& 1" OR 2" IRRIGATION**

RECOMMENDED BY _____	DATE _____
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	

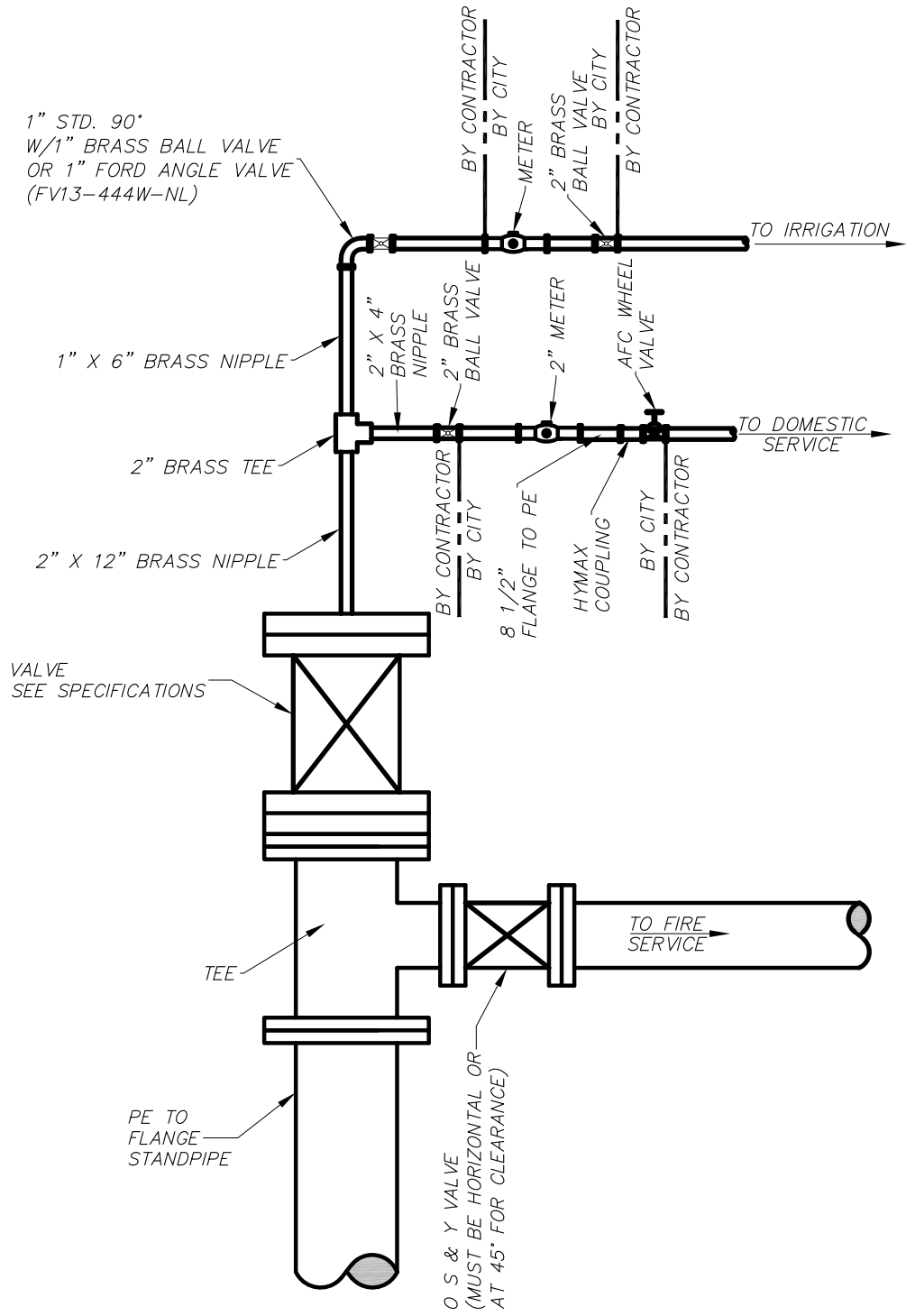
NOTE:  
 CITY WILL INSTALL METERS FOR THE DETECTOR CHECK AND  
 DOMESTIC USE. CONTACT STEVE SKALSKI 269-337-8454  
 WITH QUESTIONS.




CITY OF KALAMAZOO  
 Department Of Public Services  
**PIT METER SETTING  
 DETAIL FOR  
 3", 4", 6" & 8"**

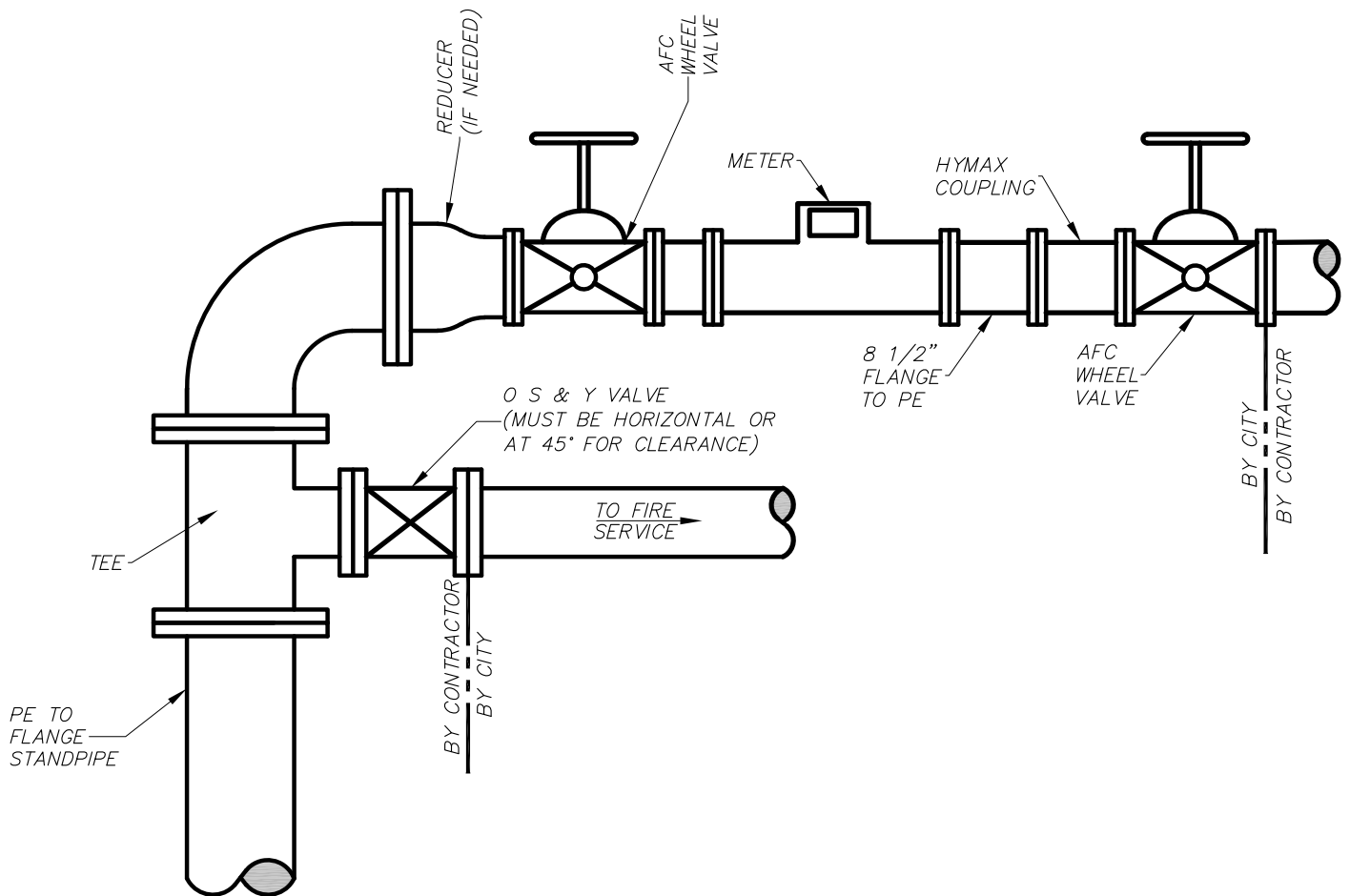
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APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	

**NOTE:**  
CITY WILL INSTALL METERS FOR THE DETECTOR CHECK AND DOMESTIC USE. CONTACT STEVE SKALSKI 269-337-8454 WITH QUESTIONS.



	CITY OF KALAMAZOO Department Of Public Services	RECOMMENDED BY _____	DATE
	<b>TYPICAL FIRE SERVICE DETAIL                  HORIZONTAL SETTING                  2" DOMESTIC                  1" IRRIGATION</b>	APPROVED BY _____	
		APPROVED BY _____	
		ACCEPTED BY _____	

NOTE:  
 CITY WILL INSTALL METERS FOR THE DETECTOR CHECK AND  
 DOMESTIC USE. CONTACT STEVE SKALSKI 269-337-8454  
 WITH QUESTIONS.



CITY OF KALAMAZOO  
 Department Of Public Services

**TYPICAL FIRE SERVICE DETAIL  
 HORIZONTAL SETTING  
 W/3", 4", OR 6" DOMESTIC**

RECOMMENDED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

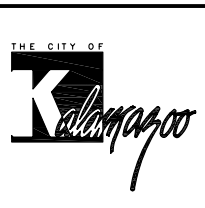
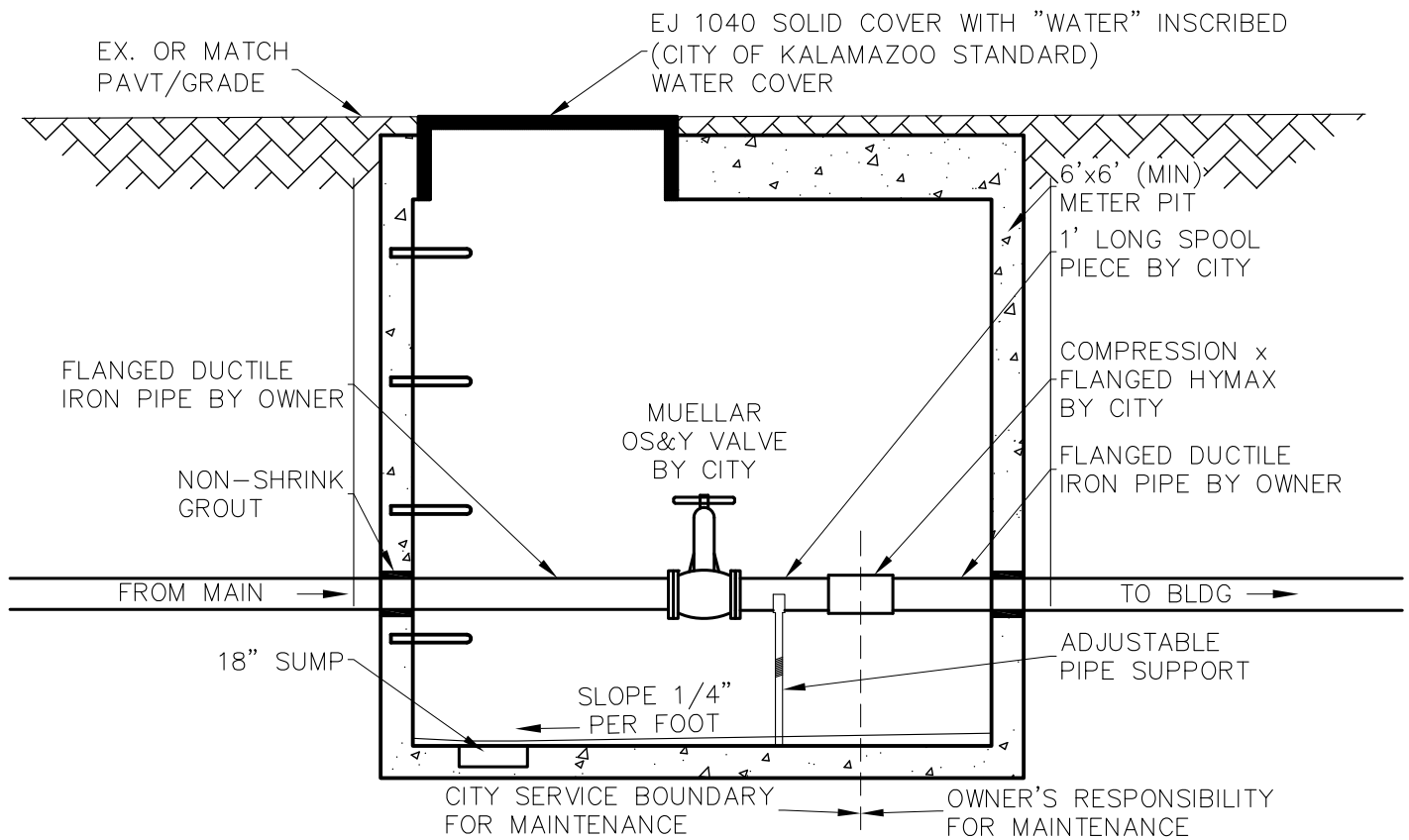
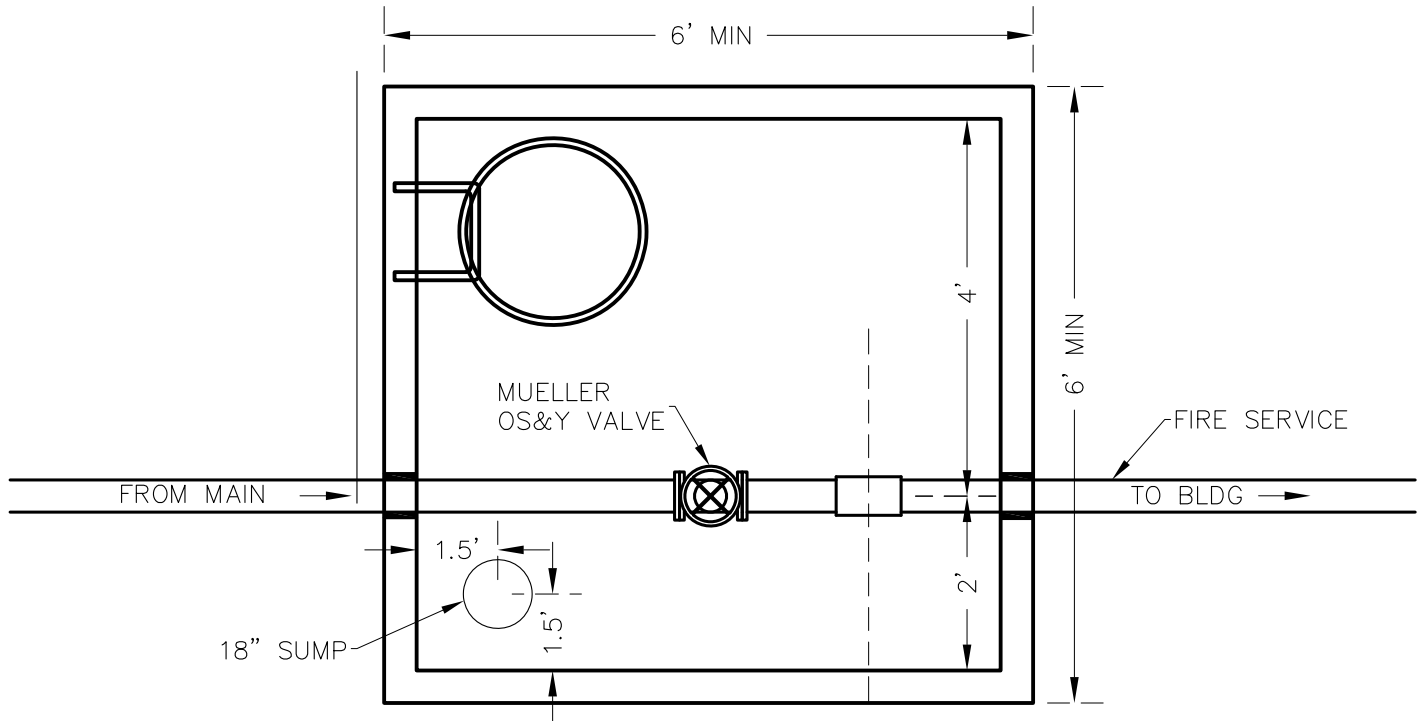
APPROVED BY \_\_\_\_\_

ACCEPTED BY \_\_\_\_\_

DATE



WS-16-A



CITY OF KALAMAZOO  
Department Of Public Services

**FIRE SERVICE  
IN PIT DETAIL**

RECOMMENDED BY _____	DATE _____
APPROVED BY _____	
APPROVED BY _____	
ACCEPTED BY _____	

**CITY OF KALAMAZOO  
DEPARTMENT OF  
PUBLIC SERVICES**

**ENGINEERING DIVISION**



**PUBLIC SERVICES DEPARTMENT**

ENGINEERING DIVISION  
415 STOCKBRIDGE AVE.  
KALAMAZOO, MICHIGAN 49001-2898  
PHONE 269-353-8769  
FAX 269-353-8533

**Standard Specifications for  
Wastewater Sewer Installation  
2012**

## SANITARY SEWERS

### PART 1 GENERAL

#### 1.01 SCOPE

- A. This Section includes furnishing and installing sanitary sewer systems.
- B. Reconstruction of existing sewers and house connections shall be in conformance with requirements of this Section.
- C. This Section shall include furnishing and installing all required pipe, bends or beveled pipe, tees, wyes, tee manhole base pipes, bulkheads and stoppers, jointing material, granular material for pipe bedding, concrete used for encasement or bedding, making watertight connections to existing and new sewers and existing manholes, cleaning, testing, and videotaping sewers, removing temporary bulkheads, and other work incidental to the sewer installation unless specifically included under other Items.

#### 1.02 SUBMITTALS

- A. Submittals shall be the responsibility of the Contractor :
  - 1. Shop Drawings for Review:
    - a. Manufacturer's Shop Drawings indicating physical dimensions, and joint details for each size, type, and class of pipe, fittings and specials furnished for the project.
  - 2. Information for the Record:
    - a. Manufacturer's certification indicating that the pipe and joints meet specifications for each production run for each size, type, and class of pipe furnished. The Engineer may request test results to verify certification. Certification documents shall be according to the Source Quality Control of this Section.
    - b. Manufacturer's installation instructions.
    - c. The laboratory shall submit test certifications of pipe ordered tested under "Field Quality Control," of this Section.
  - 3. Engineer may request additional Shop Drawings or Information for the Record as required.

#### 1.03 AS CONSTRUCTED RECORD

- A. During construction the contractor shall be required to keep current a set of "as constructed" drawings. Before final payment shall be made, the contractor shall submit for approval to the City of Kalamazoo the complete set of as constructed drawings. Each set of "as constructed" drawings shall be labeled "As Constructed", dated, and contain at a minimum the following information (additional information may be required by the City of Kalamazoo):

Structures:	Pipes:	Laterals:
1. Rim Elevations	1. Diameter	1. Address
2. Diameter	2. Length	2. Wye Station
3. Adjustment Ring Height	3. Material	3. Property Line Station
4. Cone/Top Material	4. Slope	4. Wye Elevation
5. Cone/Top Shape		5. Property Line Elevation
6. # of IN pipes		6. Wye Depth
7. # of Out pipes		7. Cleanout Depth
8. # of IN drops		8. Diameter

- 9. # of Out drops
- 10. Invert Elevations
- 11. Depth of Structure

- 9. Material
- 10. Lead Length
- 11. Riser Height
- 12. Distance from DS MH
- 13. Tie downs of CO and horizontal bends
- 14. Distance and direction from edge of house

## PART 2 PRODUCTS

### 2.01 PIPES

#### A. Polyvinyl Chloride (PVC) Sewer Pipe Specifications:

1. For pipe 15-inch diameter and smaller: Pipe, fittings, and jointing systems shall conform to ASTM D-3034, except that the standard dimension ratio of the outside diameter of the pipe to wall thickness shall be 35.
2. For pipe 18-inch thru 24-inch diameter: Pipe, fittings, and jointing systems shall conform to ASTM D-3034 except that the standard dimension ratio of the outside diameter of the pipe to wall thickness shall be 26.
3. For pipe 27-inch thru 54-inch. Pipe, fittings, and jointing systems shall conform to ASTM F-1803 and UNI-B-9 (Vylon Pipe) and shall comply with the requirements for a minimum cell classification of 12364 as defined by ASTM D-1784. Impact resistance shall be 220 ft-lbs for 27-inch and 440 ft-lbs for 30-inch and larger. Test shall be per ASTM D 2444 and ASTM F 1803.
4. Joint systems shall be elastomeric seal (gasket) type. Seals shall conform to ASTM F-477 requirements. Joint materials and testing shall conform to ASTM D-3212 requirements.
5. All service connections shall be made using a wye and a bend. Tees shall be used only as directed by the Engineer. Tees and wyes shall be die cast or factory fabricated. All service pipes shall be SDR 35.

### 2.02 ACCESSORIES

#### A. Flexible Pipe Repair Couplings:

1. Flexible repair couplings shall be made of elastomeric polyvinyl chloride boot with series 300 stainless steel shield and clamps. Couplings shall be Strong Back RC series as manufactured by Fernco Joint Sealer Co., Ferndale, Michigan; Logan Clay Pipe Co., Logan, Ohio; Mission Clay Products Corp., or equal.

#### B. Flexible Watertight Joints:

1. Flexible watertight joints used in connecting to existing sewers shall be a "boot" type sealed to the pipe wall with an internal expanding band and around the connecting pipe with an external adjustable band. Other types of applicable flexible joints may be submitted for approval.

#### C. Granular Pipe Bedding Material:

1. Granular pipe bedding material shall be Class IIIa as specified in table 902-3 of the 2012 Michigan Department of Transportation Standard Specifications for Construction. .

## 2.03 REPLACEMENT DRAINS, SEWERS, AND APPURTENANCES

- A. All existing sanitary sewer pipe removed shall be replaced using pipe and joints as specified in this section. Connections to existing sewers shall be as specified in this section.

## 2.04 SOURCE QUALITY CONTROL

### A. Pipe Manufacturer's Certification:

1. The pipe manufacturer's certificate shall state that the materials have been sampled and tested in accordance with the provision for and meet the requirements of the designated specification and shall be signed by an authorized agent of the seller or the manufacturer.
2. A test results report shall accompany that manufacturer's certificate. The report shall compare test results to Specification requirements. Test specimens shall be selected in conformance with the designated specification, except that no less than two tests shall be made for each production run of each size, type, and class of pipe furnished, and further, that in case tests are unsatisfactory, additional tests shall be made to the maximum number in the referenced ASTM Specification.

### B. Profile Wall Basis of Design:

1. In addition to the above certifications, and if required by the Engineer, for pipe 18-inch and larger or greater than 20 feet in depth, the manufacturers of plastic profile wall pipes shall provide a certification that shows the basis of design for each pipe class furnished and that they are satisfactory for use as shown on the Drawings. Basis of design limits provided shall include but are not limited to; crushing resistance of pipe wall, pipe deflection, and constrained buckling resistance.
2. The following constraints shall be used as minimum conditions for the basis of design:
  - Safety Factor = 2
  - Bedding Class = ASTM D-2321 Class 1A
  - Loads = Soil weight (120 lb/cft)+H20
  - Depth of burial as shown of Drawings
  - Depth of submergence as indicated on soil borings or 4-feet minimum.

## PART 3 EXECUTION

### 3.01 PREPARATION OF TRENCH

- A. The trench shall be excavated so the pipe can be laid to the alignment and grade required. Removed material (regardless of nature encountered) shall be stockpiled if approved to be reused or removed from site and disposed of according to all applicable laws and regulations.
- B. For pipes the width of trench at the top of pipe 18-inch in diameter or less shall be 36 inches. For pipe having a diameter greater than 18-inch, the width of trenches at the top of the pipe shall be two (2) times the inside diameter of the pipe. .
- C. Trenches shall be of such extra width as to permit the placing of sheeting and bracing where required. The contractor shall furnish and put in place all bracing, shoring or sheeting as may be required for the protection of the work and public or adjacent property. The bracing, shoring or sheeting shall be removed as the work progresses in such a manner as to prevent the caving in of the excavations or any damage to the sewer or structure. Any voids left by removal of said materials must be filled in with granular material as specified and compacted. This work shall be included in the pay item and will not be paid for separately.

- D. Unless otherwise indicated all sewer trenches shall be excavated below the proposed pipe invert as required to accommodate the depths of pipe bedding material as shown on Michigan Department of Transportation (MDOT) R-83 Series Standard Plans
- E. The Contractor shall at all times during construction provide and maintain ample means and devices with which to remove promptly and dispose of properly all water entering the excavations or other parts of the work and shall keep said excavations dry until the structures to be built or pipelines to be placed therein are completed. In waterbearing sand, well points and/or sheeting shall be supplied, together with pumps and other appurtenances of ample capacity to keep the excavation free of water and in compliance with government regulations.
- F. The Contractor shall dispose of water from the Work in a suitable manner without damage to adjacent property or structures and in compliance with all regulations.

### 3.02 PIPE INSTALLATION

- A. All loose dirt shall be removed from the bottom of the trench and the trench backfilled with specified bedding material to pipe laying grade, as detailed on the Drawings. Pipe trenches shall be excavated to the depth indicated on MDOT R-83-Series Standard Plans to provide adequate depth of pipe bedding and the pipe shall be placed and supported on bedding material the full length of the barrel. Bedding material shall then be placed 4-inch maximum depth along both sides of the pipe and tamped firmly under the pipe haunches. Hand tampers shall be used for installing bedding material around pipes smaller than 36-inch diameter and mechanical hand tampers shall be used around pipes 36-inch diameter and larger unless otherwise directed by the Engineer. The remainder of the trench shall be backfilled as specified in the R-83-series standard with a maximum size of 1.5 inches within two feet of the pipe.
- B. Concrete bedding and encasement in lieu of bedding material shall be installed as shown on the Drawings or specified.
- C. The laying of pipe in finished trenches shall be commenced at the lowest point, with the bell end or groove end laid upgrade. All pipe shall be laid with ends abutting and true to line and grade. They shall be carefully centered to form a sewer with a uniform invert of line and grade shown on the Drawings.
- D. All pipe shall be laid to lines and grades by use of a laser beam and checked for conformance. Pipes installed more than 0.04 feet above or below specified elevation shall be removed and reinstalled to grade.

### 3.03 PIPE JOINTS

- A. Pipe jointing surfaces shall be clean and dry when preparing surfaces for joining. Lubricants, primers, adhesives, etc., shall be used as recommended by the pipe or joint manufacturer's specifications. The jointing materials or factory fabricated joints shall then be placed, fitted, joined, and adjusted in such a manner as to obtain a watertight joint. Trenches shall be kept water-free and as dry as possible during bedding, laying, and jointing. As soon as possible after the joint is made, sufficient backfill material shall be placed along each side of the pipe to prevent movement of the pipe from any cause.
- B. Flexible Plastic Gasket Joints - Materials used for gaskets shall be as specified in this Section. Cross section size of gaskets and method of installation shall conform to the manufacturer's recommendations.

### 3.04 CONNECTIONS TO EXISTING SEWERS

- A. Unless indicated otherwise connections to existing sewers shall be connected in conformance with the manufacturer's recommendations as approved by the Engineer.

### 3.05 BACKFILLING AND COMPACTING

- A. Backfilling Under Existing Conduits - Where it is necessary to undercut or replace existing utility conduits and/or service lines, the excavation beneath such lines shall be backfilled the entire length with granular bedding material tamped in place in 6-inch layers to the required density. The granular bedding shall extend outward from the spring line of the conduit a distance of 2-feet on either side and thence downward at its natural slope.
- B. Backfilling With Excavated Material - Unless otherwise specified or directed, material excavated in connection with the work shall be used for backfilling and other filling purposes, if it meets all requirements given elsewhere in this specification. No material shall be used for backfilling that contains stones, rock, or pieces of masonry greater than 12-inch, frozen earth, debris, earth with an exceptionally high void content, organic material, or marl. No large pieces of rock or masonry greater than 1.5 inches shall be deposited closer than 24-inch from the completed outside surface of any structure or pipe.
- C. Backfill Immediately - All trenches and excavations shall be backfilled immediately after pipe is laid therein, unless otherwise directed by the Engineer. Under no circumstances shall water be permitted to rise in unbackfilled trenches after pipe has been placed.
- D. House Leads shall not be backfilled until the pipe ends are referenced and the Engineer has measured the pipe for payment.
- E. Backfilling around and over structures and pipes shall be carefully done by hand and tamped with suitable tools of approved weight to a point 1-foot above the top of pipe. Selected material or, where specified or ordered by the Engineer, special backfill material shall be used in this area. The material shall be placed in uniform layers not exceeding 6-inch in depth up each side. Each layer shall be placed, then carefully and uniformly tamped to the specified density so as to eliminate the possibility of lateral displacement of pipe or structure.
- F. Backfilling by Machinery - After the backfill has been placed and compacted around the structures and conduits to a height of 1-foot above the top. The remainder of the trench may be backfilled by machine. The backfill material shall be deposited in horizontal layers and each layer shall be thoroughly compacted to the specified density by approved methods before a succeeding layer is placed. In no case will backfill material from a bucket be allowed to fall directly on a structure or pipe and in all cases the bucket must be lowered so that the shock of the falling material will not cause damage.

### 3.06 COMPACTION REQUIREMENTS

- A. Compact each layer to 95% maximum density as tested by the Michigan Department of Transportation Density Testing and Inspection Manual.

### 3.07 COMPACTION TESTS

- A. Trenches and excavation around structures shall be backfilled and consolidated in layers, as specified, to the existing ground surface. Compaction tests shall be performed on each layer immediately after compaction.
- B. Initial test series for each type of backfill material shall be continued until the method of consolidation employed has proven to attain the required compaction. Any change in the proven method of consolidations will require additional testing and field verification of compaction.
- C. Subgrade below pavements, curbs, sidewalks, and structures shall be consolidated as specified. Compaction tests shall be performed to verify specified consolidation.

- D. Subsequent tests or series of tests shall be in locations and at depths ordered by the Engineer.

### 3.08 FIELD QUALITY CONTROL

- A. The Engineer may select one sample of pipe on the job site of each production run of each size and type of pipe to be tested by the Contractor's laboratory. The Contractor shall furnish the first test piece or pipe core and any additional samples required because of failures. The Contractor shall pay for tests on the first sample. Should the sample fail to meet specifications, retests shall be conducted by the Contractor's laboratory in conformance with the specifications and shall be at no additional expense to Owner.

- B. Deflection of PVC Pipe:

1. Vertical Ring Deflection - Before final acceptance of sewer lines, all sections of sewer pipe 8-inch and larger specified diameter shall be measured for vertical ring deflection by the Contractor and witnessed by the Engineer. Maximum deflection under full load shall not exceed 5 percent of the ASTM designated average inside diameter as determined by the laboratory for the specified piping.
2. Failures - Should a pipe exceed the allowable deflection, the Contractor shall replace those pipes and retest the section.
3. Equipment used in testing shall be go-no-go pull through gauges of a type approved by the Engineer. A metal or plastic gauging ring of diameter equal to 95 percent of the specified average inside pipe diameter shall be furnished with each gauge.
4. The Contractor shall furnish testing equipment and personnel and perform the required tests. Tests shall be witnessed by the Engineer.
5. Use of mechanical pulling devices is not permitted.
6. Deflection testing shall not be performed until the completed and accepted trench backfill has been in place for at least 30 days.

- C. Field Inspection:

1. Individual sections of pipe may be rejected at any time because of defective joints, dimension variations, fractures, cracks, chips, or blisters exceeding the permissible tolerances.
2. Rejected pipe shall be so marked with a lumber crayon or paint and shall be removed from the job site before the end of the following work day.

### 3.09 LOW PRESSURE AIR ACCEPTANCE TESTS

- A. The Contractor will perform low pressure air acceptance tests in lieu of infiltration or exfiltration tests. Test shall be made in accordance with ASTM F-1417-Plastic Gravity Sewer Lines.

1. If the air pressure required for the test is greater than 5.0 psig, the low pressure air acceptance test shall not be used.

- B. The Contractor shall furnish all equipment, materials, and labor, and conduct the tests under observation of the Engineer.

- C. Safety:

1. The air test may be dangerous if the line is improperly prepared. All plugs shall be installed and braced in such a manner to prevent blowouts. No one shall be allowed in manholes during testing.



2. Pressurizing equipment shall include a regulator set at the maximum pressure.

D. Line Preparation:

1. Sewers to be air tested shall be prepared and inspected as specified herein for infiltration and exfiltration tests.
2. Where porous pipe materials are used, the pipe walls may be wetted to temporarily reduce the porosity of the material.
3. All pipe outlets shall be plugged, braced, and the joints restrained adequately to prevent blowouts.

E. Test Procedure:

1. Low pressure air shall be slowly introduced into the sealed line until the internal air pressure reaches 4.0 psig greater than the average back pressure of any ground water above the invert of the pipe.
2. When a constant pressure of 4.0 psig greater than the average back pressure of any ground water above the pipe is reached, the air supply shall be throttled to maintain that internal pressure for at least 2 minutes to permit temperature equalization.
3. When temperatures have been equalized and the pressure stabilized at 4.0 psig greater than the average back pressure of any ground water above the pipe, the air supply shall be shut off or disconnected.
4. Decrease the pressure in the sealed line until the continuous monitoring pressure gauge reads 3.5 psig greater than the average back pressure of any ground water above the pipe. When this pressure is reached, timing shall commence with a stop watch.
5. Determine the time, as shown on the stop watch, required for the pressure in the sealed line to drop 1.0 psig.

F. Test Method ASTM F-1417-Plastic Gravity Sewer Line:

1. Low pressure air test method shall be the Time-Pressure Drop Method.
2. The pressure used in the test shall be the stated pressure plus the average back pressure of any groundwater above the pipe.
3. The time required for the pressure in the test section to drop 1.0 psig shall be measured using a stop watch. If the time is less than the time determined from ASTM F-1417, the section fails. The table below has been reprinted from ASTM F-1417 for Contractor's information.

Pipe Diameter, Inches	Minimum Time, Min.: Sec.	Length for Minimum Time, Feet	Time for Longer Length, Sec. (L=Ft)
6	5:40	398	0.854 L
8	7:34	298	1.520 L
10	9:26	239	2.374 L
12	11:20	199	3.418 L
15	14:10	159	5.342 L
18	17:00	133	7.692 L
21	19:50	114	10.470L
24	22:40	99	13.674L

Note: Minimum time applied to all lengths less than or equal to the length shown. For more information, see ASTM F-1417, Table 1.

G. Air Pressure Adjustment For Groundwater:

1. In areas where groundwater is known to exist, the Contractor shall install a one-half inch diameter capped pipe nipple, approximately, 10-inch long, through the manhole wall on top of one of the sewer lines entering the manhole. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the line acceptance test, the groundwater level shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground to clear it, and then connecting a clear plastic tube to the pipe nipple. The hose shall be held vertically and a measurement of the height in feet of water shall be taken after the water stops rising in this plastic tube.
2. The air pressure correction, for the average back pressure of the groundwater above the pipe, shall be calculated by subtracting the average invert elevation from the measured groundwater elevation and dividing the difference by 2.31 psi/ft.. This correction must be added to the test pressures stated in the test procedure.

3.10 CLOSED CIRCUIT TELEVISION INSPECTIONS (CCTV)

- A. Perform CCTV television inspections on sanitary mains and laterals per the City of Kalamazoo Standard Specifications for Closed Circuit Television Inspections of Sewer Mains, Manholes, and Laterals

PART 4 MEASUREMENT AND PAYMENT

<b>Pay Item</b>	<b>Pay Unit</b>
Sanitary Sewer, PVC, _ inch, TR Det .....	Foot
Sanitary Service, PVC, _ inch, TR Det .....	Foot
Sanitary Cleanout, PVC, _inch, TR Det _ .....	Each

Sanitary sewer shall be measured in place per foot as measured from center of manhole to center of manhole.

Sanitary service shall be measured in place per foot as measured from the wye connection to the center of each bend, tees, wyes, or plugs until the pipe terminates or is connected to the existing service. Connection to the existing service shall be considered incidental to construction and will not be paid for separately

Sanitary cleanouts shall be measured per unit installed and include the riser pipe, plug/cap, and any additional items as detailed on the drawings.

Payment for each item includes all excavation, trenching, backfilling, compacting, shoring/bracing cleaning and CCTV inspection, labor and equipment to complete pay item.

END OF SECTION

## PRECAST SEWER MANHOLES

### PART 1 GENERAL

#### 1.04 SCOPE

- A. This Section includes furnishing and installing precast sewer manholes, including drops and manhole stacks of types and at locations shown on the Drawings and scheduled.
- B. This Section includes removing existing structures, additional excavation to widen and deepen trenches for manhole construction, furnishing and installing concrete of classes called for, Portland cement mortar, reinforcing steel, precast concrete pipe integral base sections, bottom riser sections, transition sections, and riser sections, eccentric cones, flat slab tops and grade rings, flexible manhole connections, pipe for drop connections, manhole steps, manhole frames and covers, plugging lifting holes, pointing joints, forming channels through manhole bottoms, making watertight connections to new and existing sewers, and other work incidental to manhole construction and testing.

#### 1.05 SUBMITTALS

- A. Submittals shall be the responsibility of the Contractor :
  - 1. Shop Drawings for Review:
    - a. Manufacturer's Shop Drawings indicating physical dimensions, joint details, and reinforcing steel layout for each size and type of manhole components furnished for the project.
    - b. Manufacturer's certification indicating that the manhole components and joints meet specifications for each production run for each size and type furnished.
  - 2. Information for the Record:
    - a. The Engineer may request test results to verify certification. Certification documents shall be according to the Source Quality Control of this Section.
  - 3. Engineer may request additional Shop Drawings or Information for the Record as required.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Type of Manhole Sections:
  - 1. Manhole Stacks - Manhole stacks shall mean 4-foot diameter manholes used for access to reinforced concrete manhole chambers and precast manhole riser tee sections.
  - 2. Type I Manholes - Type I manholes shall mean 4-foot diameter manholes with precast integral base sections for sanitary sewers. All connections to manholes shall be made with flexible water tight joints. Type I manholes are intended for installation on sewers 18-inch diameter and smaller.
  - 3. Type II Manholes - Type II manholes shall mean manholes with 5-foot diameter precast integral base sections. All connections to manholes shall be made with flexible water tight joints. Type II manholes are intended for installation on 21-inch through 30-inch diameter sewers.

4. Type III Manholes – Type III manholes shall mean manholes with precast integral base sections or precast bottoms that are larger than 5-foot diameter. The diameter of the bottom riser sections shall be as shown on the Drawings. All connections to manholes shall be made with flexible water tight joints. Type III manholes are intended for installation on pipes where the additional wall area is needed for installation of flexible joints and on 36-inch through 48-inch diameter sewers.
  5. Type IV Manholes - Type IV manholes shall mean manholes with cut-outs in the bottom riser sections installed on cast-in-place concrete bases. The diameter of the bottom riser sections shall be as shown on the Drawings. All connections to manholes shall be made with flexible water tight joints. Type IV manholes are intended for installation on sewers 48-inch diameter and larger and on existing sewers where identified on Drawings.
  6. Type S Manholes - S following manhole type shall mean the designated type manhole constructed with a precast flat slab top in lieu of a precast cone.
- B. Precast manhole sections, integral base sections, transition sections, eccentric cones, flat slab tops, and adjusting rings shall conform to ASTM C-478. Reinforcing in transition sections shall be equal to that specified for wall sections of the larger diameter.
  - C. Joints shall be manhole gaskets conforming to ASTM C-923.
  - D. The standard length of riser sections shall be 48-inch. Lengths of 32-inch or 16-inch shall be used to meet required dimensions and as specified.
  - E. Openings for connecting pipes in riser sections, bottom riser sections, and integral base sections, and for access in flat slabs shall be preformed or cored by the manufacturer, except “cut-out” openings may be made in bottom riser sections for Type IV manholes. Cut-out openings shall be made immediately after the pipe is removed from the casting form. All cored openings for sewer pipe connections shall have flexible joints.
  - F. Precast integral base sections shall be of monolithic construction. Base flat slab floors or integral floors shall have a minimum thickness of 6-inch for risers up to and including 48-inch in diameter and 8-inch for larger diameters. A layer of reinforcement shall be placed above the midpoint, and shall have a minimum area of 0.12 square inch/linear feet in both directions.

## 2.02 ACCESSORIES

- A. Manhole Steps - Manhole steps shall be of polypropylene plastic reinforced with a 1/2-inch No. 60 grade reinforcing rod. Steps shall be M. A. Industries Model PS-1, or equal.
  1. Specified manhole steps shall be factory installed to provide a continuous ladder of 14-inch Center-to-Center rung spacing. Steps shall be placed in the forms and cast in pipe wall or placed immediately after the pipe is removed from casting and carefully mortared in place with nonshrink mortar to insure a watertight joint. Manhole step installation shall be in compliance with OSHA regulations. If the outer surface of the pipe wall is pierced the patch shall be completely covered with a bituminous sealer.
- B. Manhole frames and covers shall be as shown on the Drawings.
  1. Where pressure tight manhole frames and covers are called for, threaded inserts shall be cast in eccentric cones or flat slab tops and holes formed or cored in adjusting rings to match bolt size and spacing specified for manhole casting.

- C. Mortar:
  - 1. Mortar used for the structures herein specified shall conform to ASTM C-270 Type S, containing no masonry cement. The mortar shall be composed of one part portland cement to two parts sand by volume.
  - 2. Non-shrinking Mortar - Materials for nonshrinking mortar shall be Sauereisen F-100, Five-Star, or equal.
- D. Cast-in-Place Concrete:
  - 1. All cast-in-place concrete used for concrete bases and for forming channels in manhole bottoms shall be Class A as shown in table 1
  - 2. All concrete used for supporting precast concrete manhole bases shall be Class B as shown in table 1

**Table 1: Concrete Requirements**

Concrete Class	Min 28-Day Compressive Strength (psi)	Maximum Water - Cement Ratio	Minimum Cement Content Sacks/CY	Slump Min.	Inches Max
A	4000	.45 (5.1*)	6.5	1	4
AA	3000	.53 (6*)	6	2	4
B	1750	.71 (8*)	4	1	6

\* - Water in U.S. gallons per 94 -lb. sack of cement

- E. Reinforcing Steel - Reinforcing steel used in cast-in-place concrete shall meet the requirements of the City of Kalamazoo pre-cast concrete manhole drawings.
- F. Pipe for Manhole Drops - Pipe for manhole drops shall conform to specifications of Sanitary Sewer for the required size and type shown on the Drawings.

**PART 3 EXECUTION**

**3.01 COORDINATION**

- A. Location and type of manholes installed shall be as shown on the Drawings or directed.
- B. Construction shall be in conformance with details shown on the Drawings and as specified.
- C. Excavation for manhole construction shall be prepared as directed in applicable paragraphs of the Sanitary Sewer Specification.

**3.02 INSTALLATION OF INTEGRAL BASE SECTIONS**

- A. Class B concrete shall be poured as to provide a minimum 4-inch thick pad under the entire area of the manhole base. Place the manhole base on the pad before the concrete is completely set so that final leveling adjustment can be made. Alternatively, the manhole base may be placed on 4-inch compacted granular bedding material. Bottom sections placed on bedding shall be a minimum of 6-inch thick.

**3.03 INSTALLATION OF BOTTOM RISER SECTIONS (WITHOUT INTEGRAL BASE)**

- A. Unless otherwise called for on the Drawings or directed, precast bottom riser sections shall be placed with cast-in-place reinforced concrete bases.
- B. The base shall be of Class A concrete 12-inch thick minimum placed on undisturbed earth. Reinforcing shall be as shown on the Drawings.

- C. The cut-out riser section shall be blocked in place above the pipe and the concrete base poured in place. Concrete shall be extended above the lower rim of the riser wall as required to provide a watertight seal around the entire circumference of the riser section. The sewer pipe shall be bedded in concrete monolithic with the base to the first joint each way from the manholes.
- 3.04 CHANNELING MANHOLE BOTTOMS
- A. The bottoms of all manholes shall be channeled to conduct flow in the planned direction. The channel walls shall be formed or shaped to the full height of the crown of the outlet sewer in such a manner to not obstruct maintenance of flow in the sewers and shall match inverts of connection pipe at the manhole wall.
  - B. In integral base sections (only) channels may be constructed using brick and Portland cement mortar. Mortar shall be 3/4-inch thick minimum between bricks and between bricks and concrete and 1-inch thick minimum on all exposed surfaces.
- 3.05 PRECAST CONCRETE RISER SECTIONS
- A. The shortest length of riser section to be incorporated into the manhole shall be installed immediately below the eccentric cone section or the flat slab top.
  - B. Pipe section joints shall be pointed and lifting holes filled with nonshrinking mortar.
- 3.06 INSTALLATION OF MANHOLE FRAMES
- A. Manhole frames and covers shall be installed to grades shown on the Drawings or as directed.
  - B. Adjustment of manhole castings shall be made using specified precast grade rings and Portland cement mortar joints or preferred bitumen seals.
  - C. Each pressure tight manhole casting shall be anchored in place using four 5/8-inch stainless steel bolts with nuts as detailed on the Drawings or directed.
  - D. The maximum depth of adjustment below any manhole casting shall be 12-inch and the minimum depth of adjustment shall be 4-inch
  - E. In concrete pavement, separate frame from pavement with 1/2-inch thick premolded mastic joint material extending from the base of the frame to the top of the frame.
- 3.07 MANHOLE TESTING
- A. Each manhole shall be tested after assembly and after all lift holes have been plugged with an approved non-shrink grout, after backfilling is complete and prior to installation of any specified chimney seals.
  - B. Testing shall be by drawing a vacuum on the manhole using equipment specifically designed for such testing. All pipes entering the manhole shall be plugged and braced to prevent being drawing into the manhole. A test head with necessary gauges and connections shall be placed at the inside of the top of the cone section and sealed in accordance with the manufacturer's instructions. A vacuum of 10 inches of mercury shall then be drawn and the vacuum pump shut off. With valves closed, the time shall be measured for the vacuum to drop to 9 inches. The test shall be successful if the time measured is greater than 60 seconds. If the test is unsuccessful, necessary repairs shall be made and retesting shall proceed until a satisfactory test is obtained.

PART 4 MEASUREMENT AND PAYMENT

<b>Pay Item</b>	<b>Pay Unit</b>
Sanitary Manhole, _ inch .....	Each
Sanitary Manhole, _ inch, Add Depth, 8 foot to 15 foot .....	Foot
Sanitary Manhole, _ inch, Add Depth, more than 15 foot .....	Foot
Sanitary Manhole, Tap, _ inch .....	Each
Sanitary Manhole Cover .....	Each

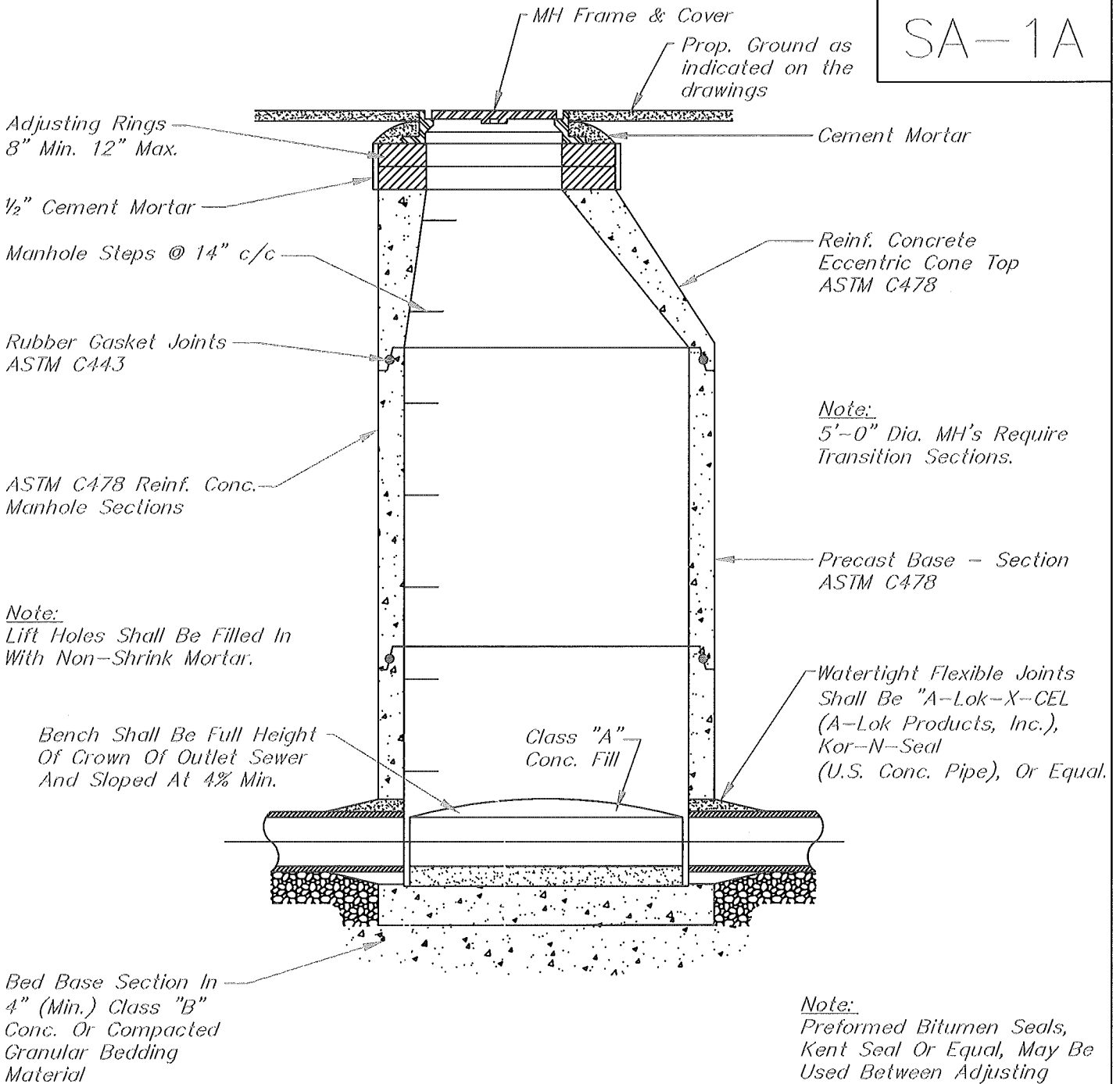
Payment for each item includes all excavation, trenching, backfilling, compacting, shoring/bracing cleaning and videotaping, labor and equipment to complete pay item.

Payment for Sanitary Manhole, \_inch shall include the concrete footing and no greater than 8 feet of concrete structure depth measured from the flow line to the bottom of the chimney or adjustment rings. The price also includes the cost of temporary and/or final adjustments of structure.

Payment for Sanitary Sewer, \_ inch, Add Depth, \_\_\_\_\_ shall be the cost of the structure portions which are greater than 8 feet but less than 15 feet and more than 15 feet.

END OF SECTION

SA-1A



TYPE I & II MANHOLES

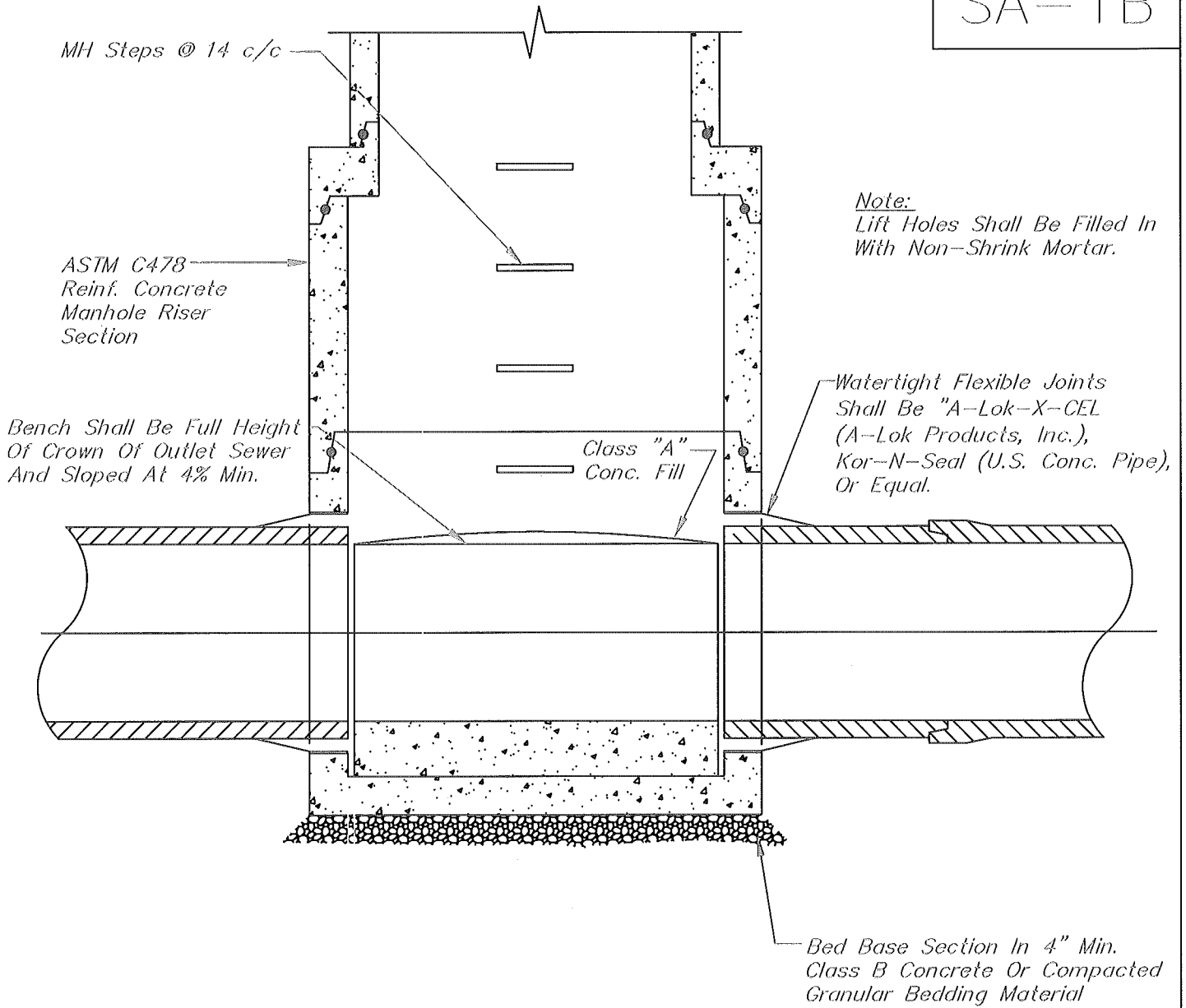
1/4" = 1'-0"



CITY OF KALAMAZOO  
 DEPT. OF PUBLIC SERVICES  
 STD. MANHOLES  
 TYPE-I & II  
 MARCH 2012



SA-1B

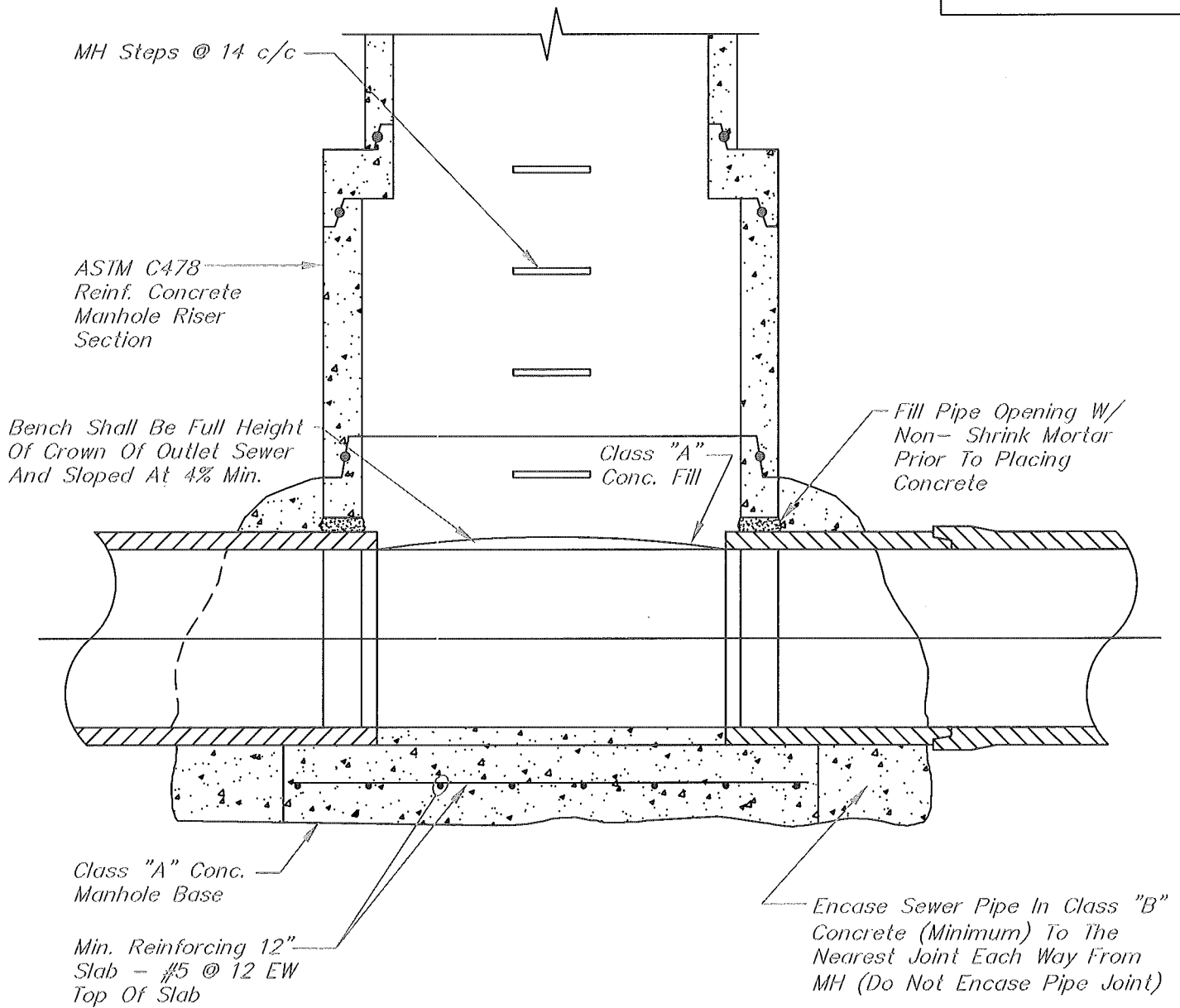


TYPE III MANHOLE  
 $\frac{1}{4}'' = 1'-0''$



CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
STD. MANHOLES  
TYPE-III  
MARCH 2012

SA-1C



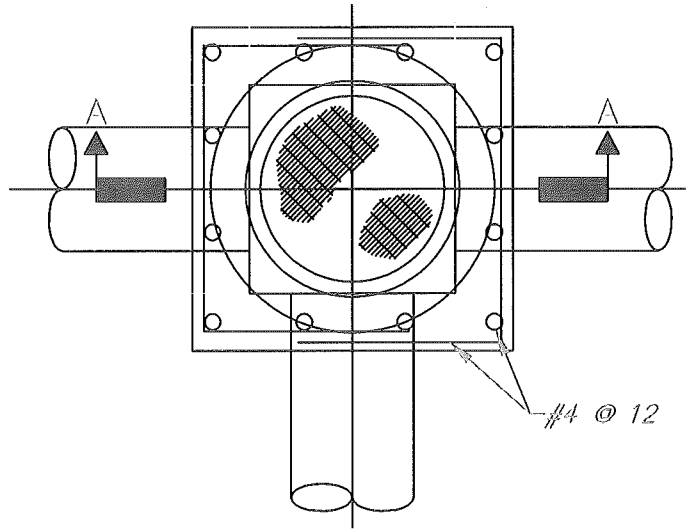
TYPE IV MANHOLE

$\frac{1}{2}'' = 1'-0''$

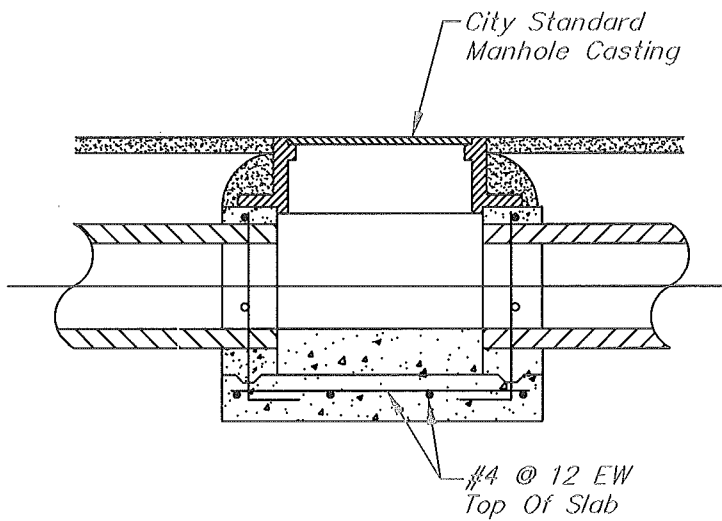


CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
STD. MANHOLES  
TYPE-IV  
MARCH 2012

SA-1D



PLAN



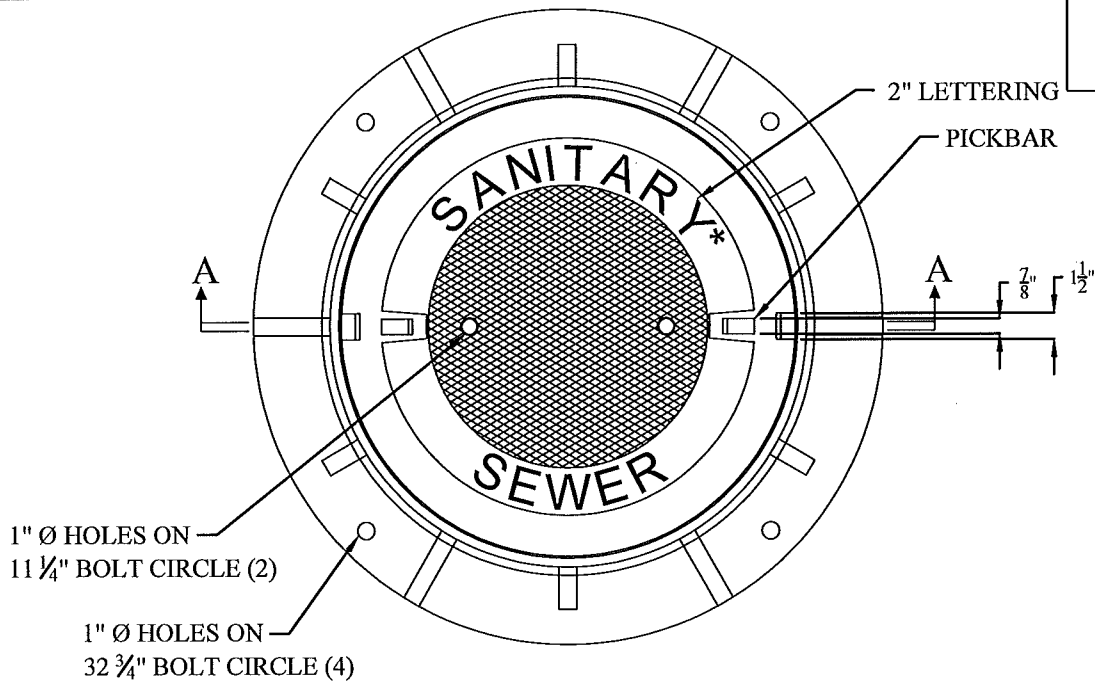
SECTION A-A

TYPE V MANHOLE  
 $\frac{1}{4}'' = 1'-0''$



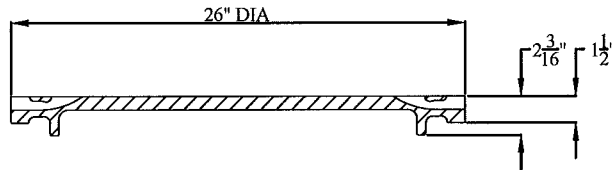
CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
STD. MANHOLES  
TYPE-V  
MARCH 2012

SA-2A

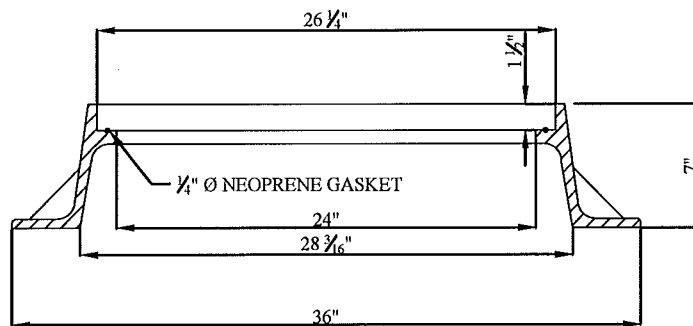


### FRAME AND COVER

\*WHEN USED ON STORM SEWER, THE COVER SHALL READ 'STORM SEWER'



### COVER SECTION



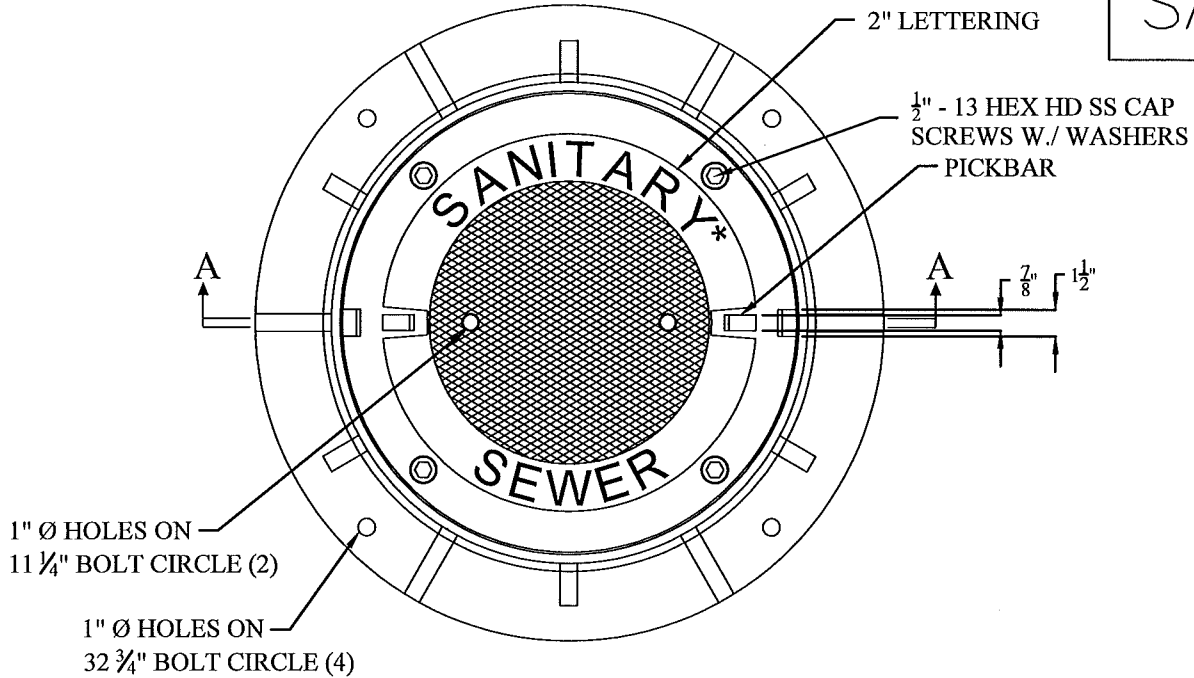
### SECTION A-A

NOMINAL WEIGHT - 320 LBS



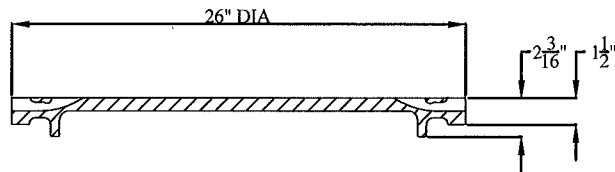
CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
SANITARY SEWER  
CASTING  
NOVEMBER 2012

SA-2B

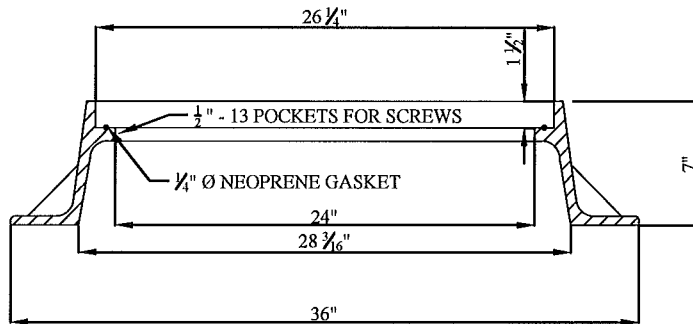


### FRAME AND COVER

\*WHEN USED ON STORM SEWER, THE COVER SHALL READ 'STORM SEWER'



### COVER SECTION



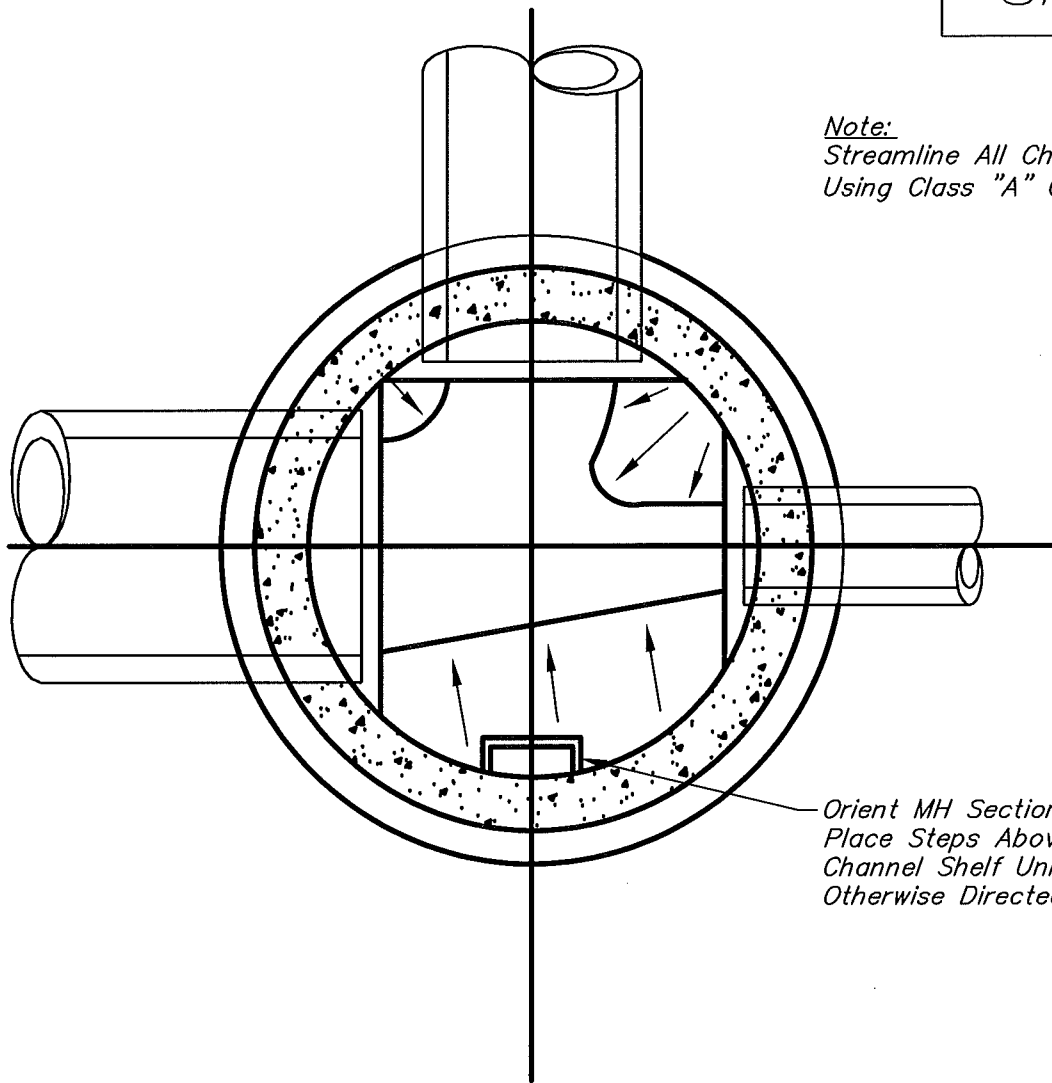
### SECTION A-A

NOMINAL WEIGHT - 200 LBS



CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
SANITARY SEWER  
CASTING (LOCKING)  
NOVEMBER 2012

SA-3



*Note:*  
Streamline All Channels  
Using Class "A" Conc.

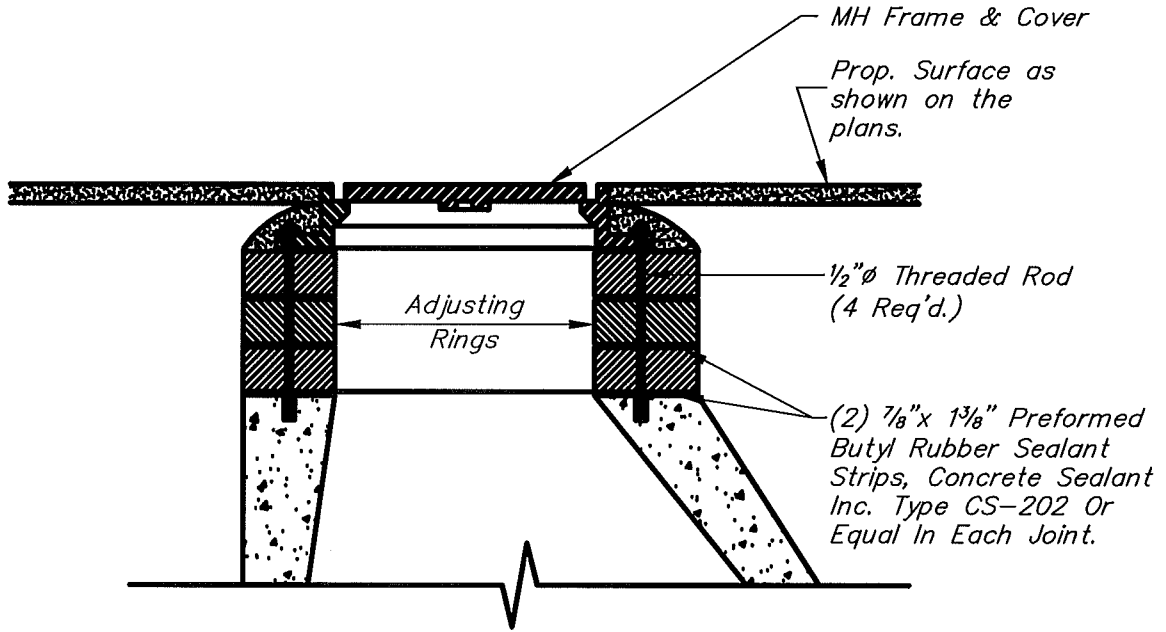
*Orient MH Sections To  
Place Steps Above  
Channel Shelf Unless  
Otherwise Directed*

SECTIONAL PLAN  
 $\frac{1}{2}''=1'-0''$



CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
FLOW CHANNEL  
SECTIONAL PLAN  
MARCH 2012

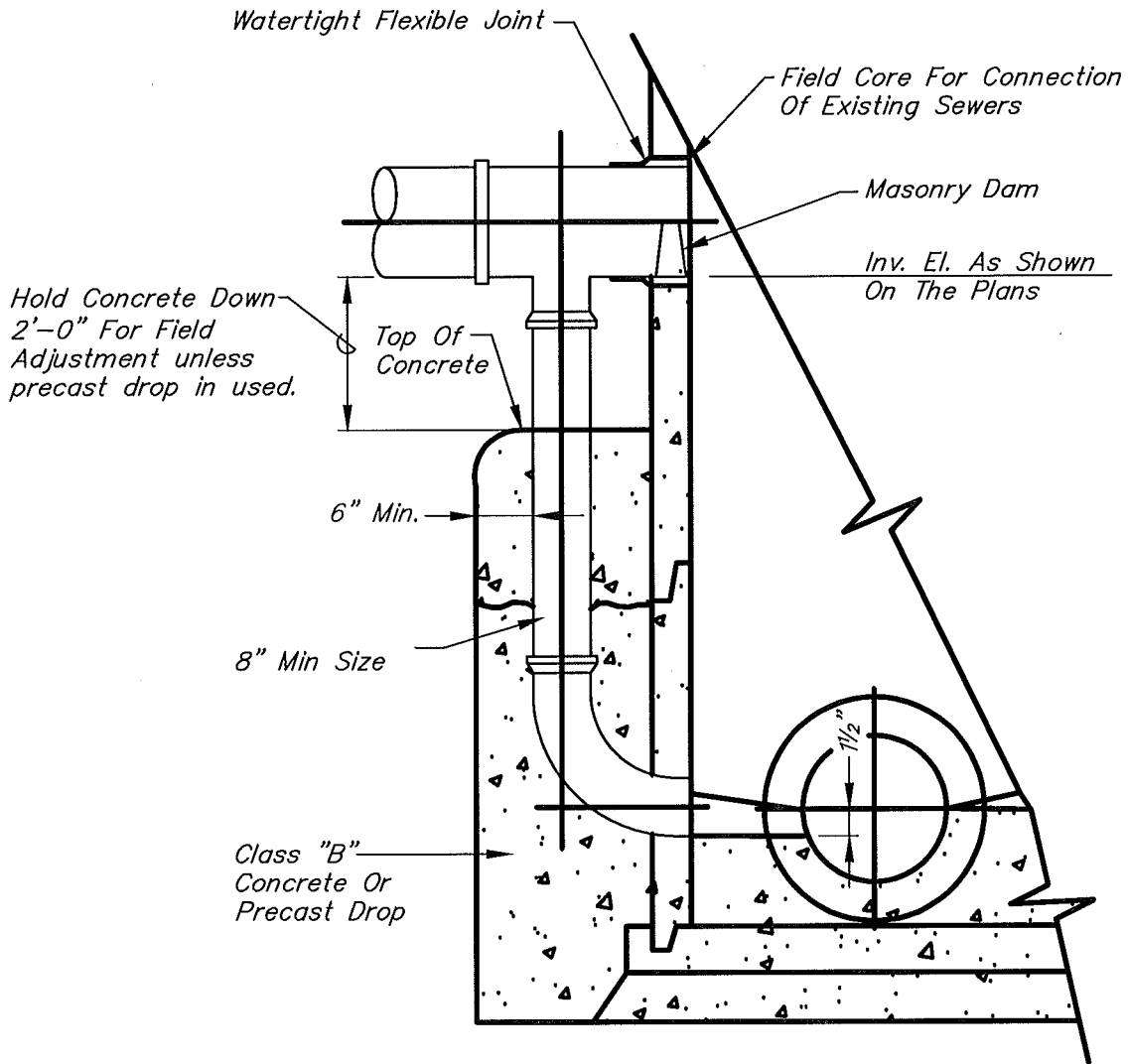
SA-4



BUTYL RUBBER SEALANT DETAIL  
NTS



CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
BUTYL RUBBER  
SEALANT DETAIL  
MARCH 2012

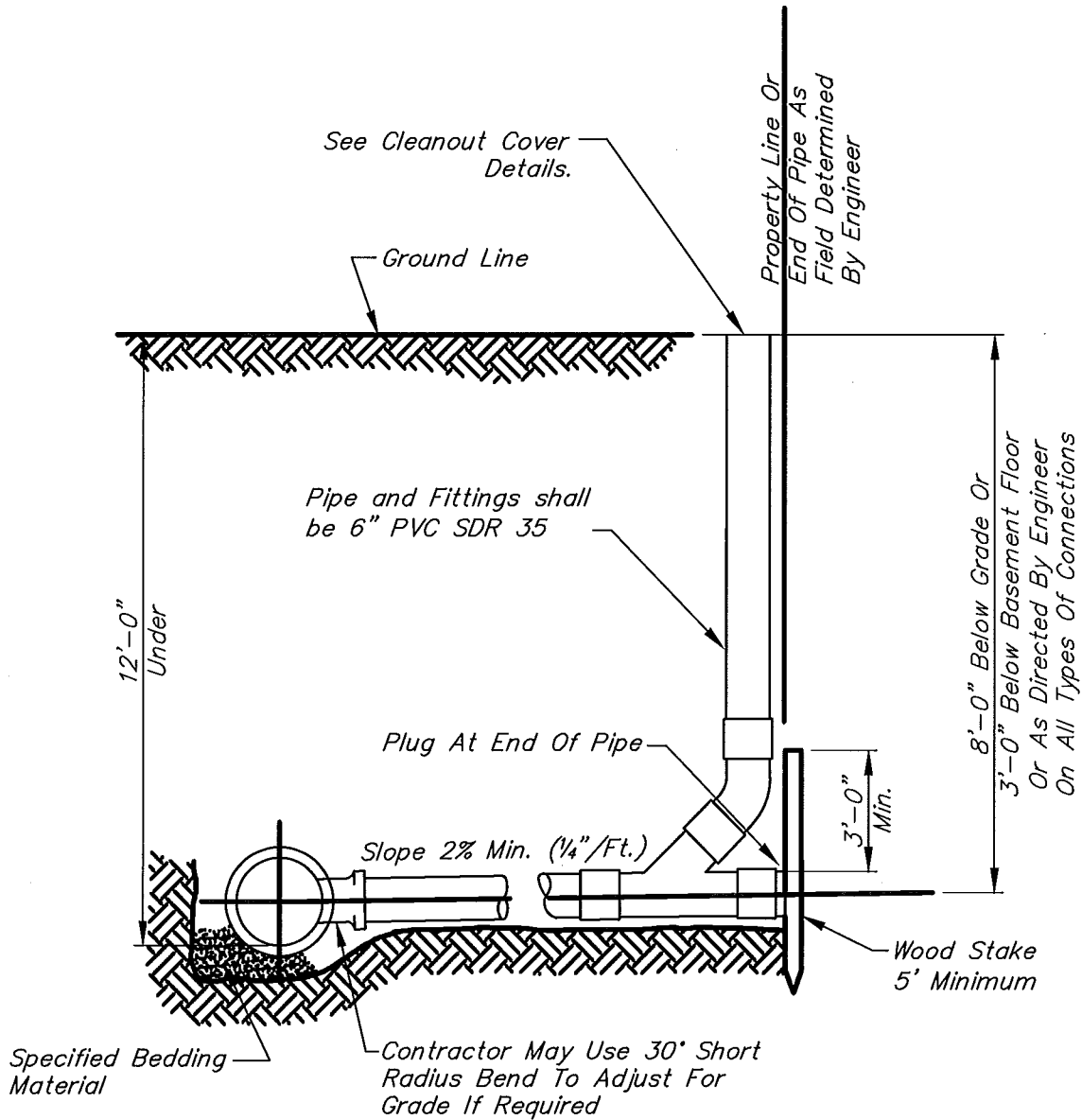


MANHOLE WITH DROP  
NTS





SA-6A



SECTION

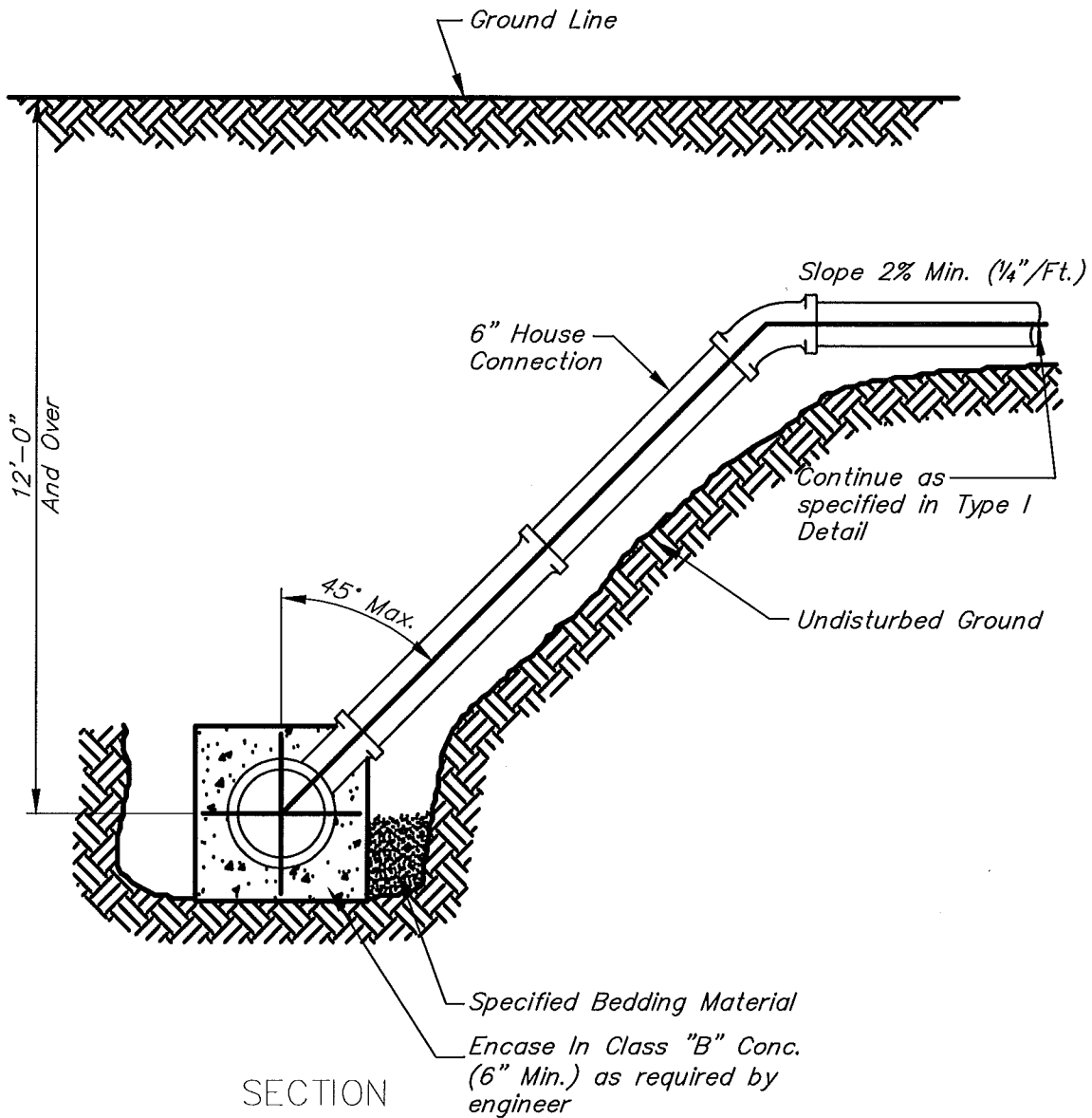
TYPE - 1

(To Be Used Where Main Sewer Is Less Than 12' In Depth)



CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
SANITARY SERVICE  
TYPE - 1  
MARCH 2012

SA-6B



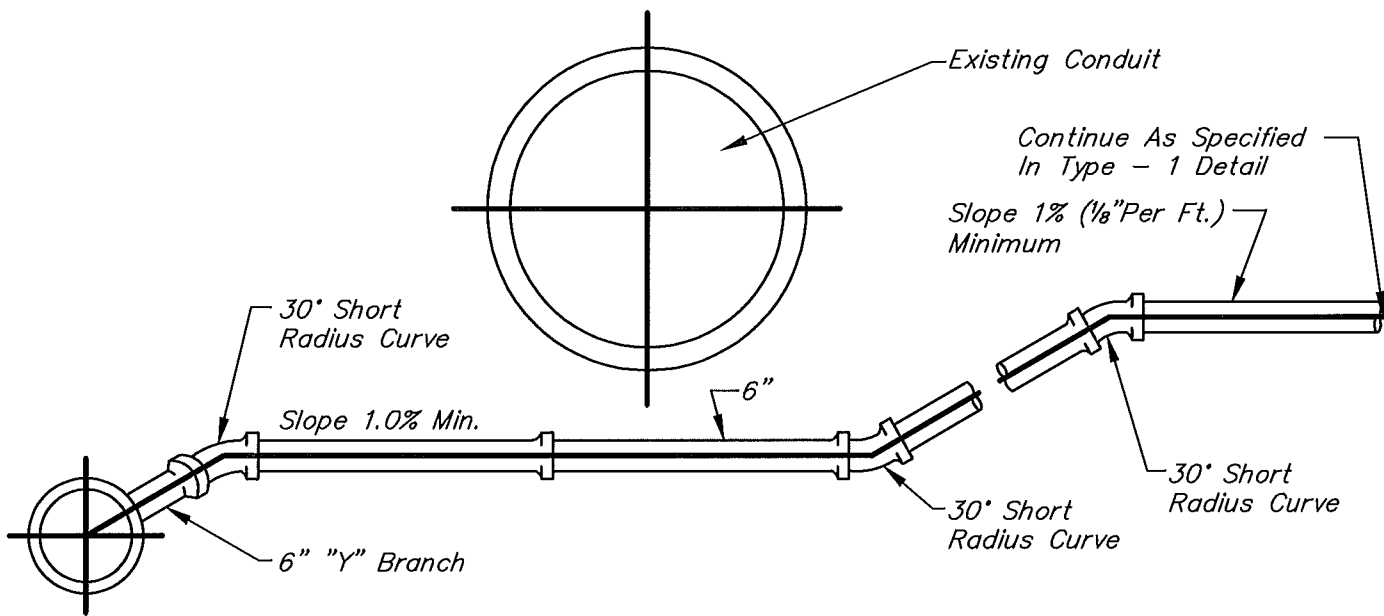
TYPE - 2

(To Be Used Where Main Sewer Is More Than 12' In Depth)



CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
SANITARY SERVICE  
TYPE - 2  
MARCH 2012

SA-6C



UNDER EXISTING CONDUITS

SERVICE CONNECTION DETAILS

NTS

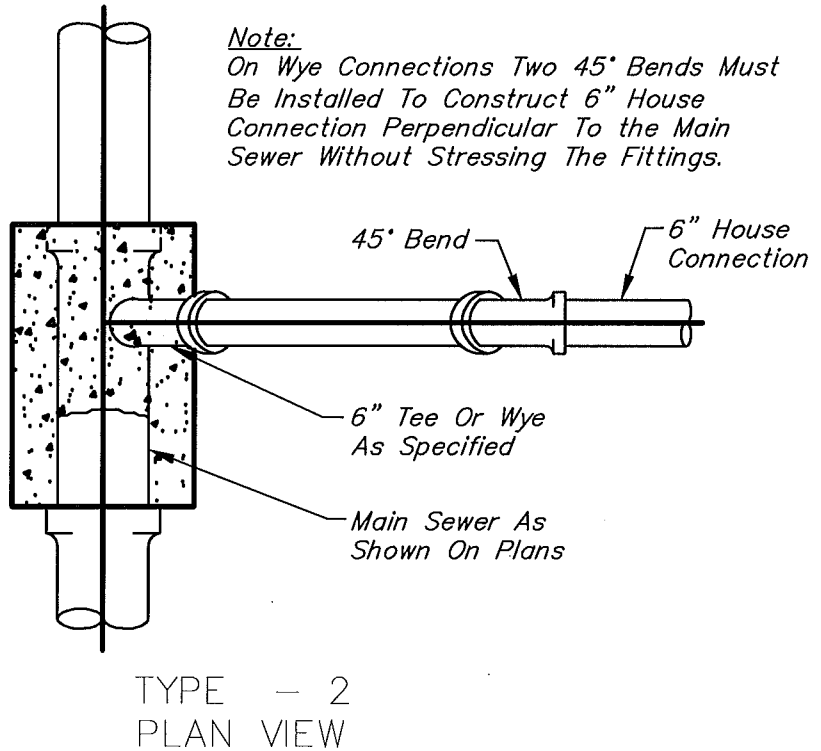
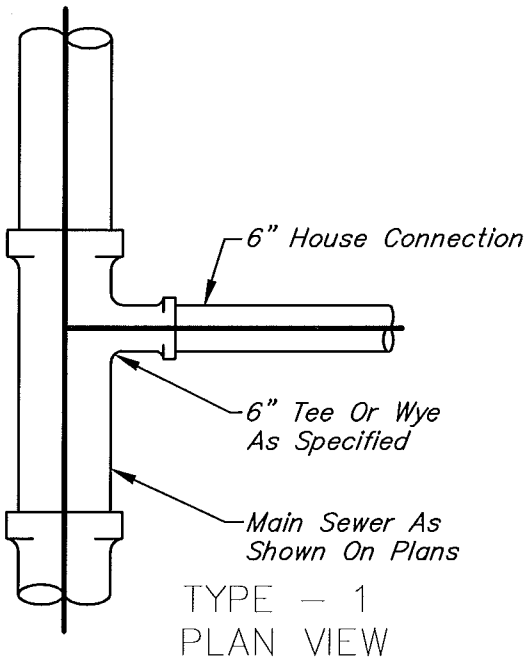


CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
SANITARY SERVICE  
UNDER EXISTING  
CONDUIT  
MARCH 2012

SA-6D

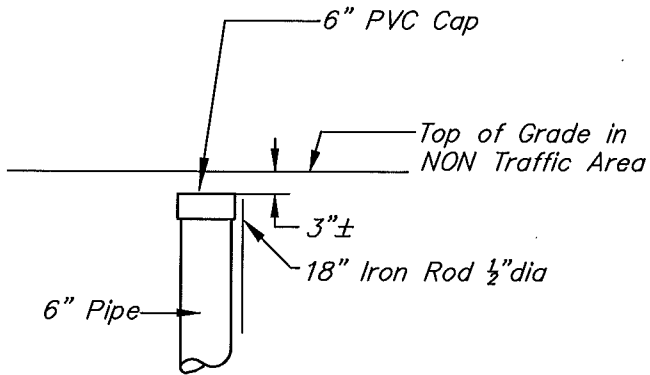
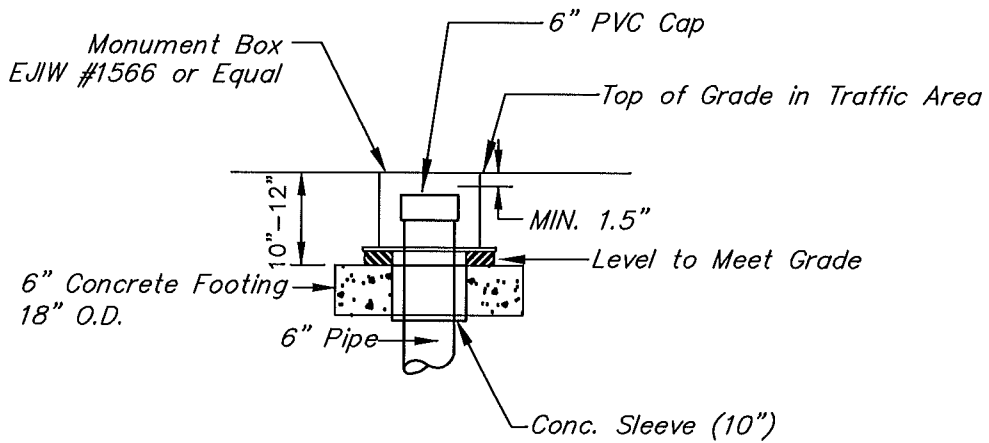
Service Connection Notes

- A. Contractor Shall Not Backfill Service Connection Until The Engineer Has Inspected And Taken Measurements, Elevations & Other Information Required For Purpose Of Record.
- B. All Tee And Wye Branches In The Main Sewer Line, Rotated More Than, 30° From Horiz. Shall Be Encased In 6" Min. Of Class "B" Concrete.
- C. Wye Branches Shall Be Used In all Connections For Sewers 18" and Smaller. Tee Branches May Be Used In Lieu Of Wye Branches For Connections To Main Sewers 18" And Larger.



CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
SANITARY SERVICE  
PLAN VIEW & NOTES  
MARCH 2012

SA-6E



CITY OF KALAMAZOO  
DEPT. OF PUBLIC SERVICES  
SANITARY CLEANOUT  
COVER DETAILS  
MARCH 2012

**APPENDIX D  
PLANS**



**THE CITY OF KALAMAZOO  
DEPARTMENT OF PUBLIC SERVICES**

**PROJECT PLANS**

**NEWTON CT. & FELLOWS AVE.  
IMPROVEMENTS**

**Bid Reference #: 91350-006.0**



CITY OF KALAMAZOO, MICHIGAN

# NEWTON CT. & FELLOWS AVE.

# IMPROVEMENTS



2023



### ADMINISTRATION

**JAMES RITSEMA - CITY MANAGER**  
**JAMES BAKER, PE - PUBLIC SERVICES DIRECTOR**  
**STEPHEN SKALSKI, PE - ASSISTANT CITY ENGINEER - WATER RESOURCES**




MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

ACT-226060 | 02/16/2023

Permit Number | Issued Date

Examined and Approved for Compliance with Act 399, P.A. 1976


Nathan Yutzy

2023.02.16 17:01:43 -05'00'

APPROVED BY:  
THE CITY OF KALAMAZOO

*John Condit* DATE: 1/25/2023

DEPARTMENT OF PUBLIC SERVICES  
ASSISTANT CITY ENGINEER



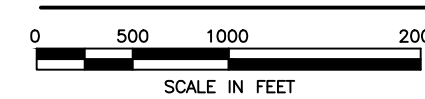
09/29/2022  
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LOCATION



LOCATION MAP





### TOPOGRAPHY LEGEND

TOPOGRAPHY LINES:	
	Center Line
	Fence Line
	Property Line
	Permanent Easement
	Construction Easement
	Silf Fence
UTILITY LINES:	
	Cable (Underground)*
	Combined Sewer
	Electrical (Underground)*
	Gas Line
	Sanitary Sewer
	Signal (Underground)*
	Storm Sewer
	Telephone (Underground)*
	Water Line
	Large Diameter Lines (Any Type)
	Utility Line To Be Removed
	Utility Line To Be Abandoned
	8" Sanitary Sewer
	New Utility Line
	Large Diameter New Utility Line

Alpha Designation Refers To Utility Type, Numerical Designation Refers To Pipe Nominal Diameter. Lines With No Numerical Designation Are Of Unknown Size.

\* Aerial Lines, If Shown, Are Designated With Lower Case Letters

#### SYMBOLS:

	Manhole (Alpha Designation Refers To Utility Type, "U" Is "Unknown" Type)
	Power Pole Or Telephone Pole
	Light Pole
	Fire Hydrant Or Yard Hydrant
	Valve
	Clean Out
	Iron Pin (Or Labeled Post, Marker Etc.)
	Catch Basins
	Sign
	Bollard
	Soil Boring

### STANDARD ABBREVIATIONS

Alum.	Aluminum	Max.	Maximum
Ave.	Avenue	MH	Manhole
BM	Bench Mark	MJ	Mechanical Joint
BF	Blind Flange	Min.	Minimum
Bldg.	Building	N	North
c/c	Center To Center	NTS	Not To Scale
Ck'd Pl.	Checkered Plate	OC	On Center
Conc.	Concrete	OD	Outside Diameter
Dia.	Diameter	PE	Plain End
Dwg.	Drawing	R	Radius
EW	Each Way	RR	Railroad
EF	Each Face	S	South
Ecc.	Eccentric	Sch.	Schedule
El.	Elevation	SS	Sheet
E	East	St	Stainless Steel
Exist.	Existing	St.	Street
F	Flange	Sta.	Station
' or Ft.	Feet or Foot	T&B	Top And Bottom
Gal.	Gallon	Typ.	Typical
Gr.	Grade	Vert.	Vertical
Hor.	Horizontal	W	West
" or in.	Inch	w/	With
ID	Inside Diameter		
Inv. El.	Invert Elevation		

### INDEX

Sheet List Table		
Page Number	Sheet Number	Sheet Title
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1	G-0.1	LEGEND, INDEX, & SURVEY CONTROL
2	W-0.1	WATER LINE DETAILS
3	SA-0.1	SANITARY AND STORM DETAILS
4	SR-0.1	SURFACE RESTORATION DETAILS
NEWTON CT.		
5	G-1.1	NEWTON CT. GENERAL REMOVAL PLAN & EXISTING STRUCTURE DATA
6	W-1.1	NEWTON CT. WATERMAIN PLAN & PROFILE
7	SA-1.1	NEWTON CT. SANITARY PLAN & PROFILE
8	ST-1.1	NEWTON CT. STORM PLAN & PROFILE
9	SR-1.1	NEWTON CT. SURFACE RESTORATION
FELLOWS AVE.		
10	G-2.1	FELLOWS AVE. GENERAL REMOVAL PLAN & EXISTING STRUCTURE DATA
11	W-2.1	FELLOWS AVE. WATERMAIN PLAN & PROFILE
12	SA-2.1	FELLOWS AVE. SANITARY PLAN & PROFILE
13	SR-2.1	FELLOWS AVE. SURFACE RESTORATION
14	CS2.1	FELLOWS AVE. CROSS SECTIONS
BROWNELL CT.		
15	G-3.1	BROWNELL CT. GENERAL REMOVAL PLAN & EXISTING STRUCTURE DATA
16	W-3.1	BROWNELL CT. WATERMAIN PLAN & PROFILE
17	SA-3.1	BROWNELL CT. SANITARY PLAN & PROFILE
18	ST-3.1	BROWNELL CT. STORM PLAN & PROFILE
19	SR-3.1	BROWNELL CT. SURFACE RESTORATION

NOTE: BROWNELL CT. NOT INCLUDED IN THIS PROJECT.

### SURVEY CONTROL

Alignment Name: NEWTON CT  
 Description:  
 Station Range: Start: 0+00.00, End: 3+00.00

PI Station	Northing	Easting	Distance	Direction
0+00.00	287,221.80'	12,791,163.79'		
			222.00'	S1°W
2+22.00	286,999.84'	12,791,159.54'		
			16.62'	S46°W
2+38.62	286,988.28'	12,791,147.59'		
			61.38'	S1°W
3+00.00	286,926.92'	12,791,146.56'		

Alignment Name: FELLOWS AVE  
 Description:  
 Station Range: Start: 0+00.00, End: 5+10.00

PI Station	Northing	Easting	Distance	Direction
0+00.00	287,542.97'	12,793,749.06'		
			51.87'	S89°E
0+51.87	287,541.91'	12,793,800.91'		
			118.98'	S89°E
1+70.84	287,539.97'	12,793,919.88'		
			39.01'	S65°E
2+09.72	287,523.22'	12,793,955.10'		
			248.45'	S89°E
4+58.03	287,520.01'	12,794,203.53'		
			51.97'	S89°E
5+10.00	287,519.15'	12,794,255.49'		

Alignment Name: BROWNELL CT  
 Description:  
 Station Range: Start: 0+00.00, End: 2+75.00

PI Station	Northing	Easting	Distance	Direction
0+00.00	286,947.49'	12,799,277.85'		
			275.00'	S2°W
2+75.00	286,672.72'	12,799,266.63'		

### DETOUR ROUTE AND LANE/ROADWAY CLOSURES

- Access For Emergency Vehicles Must Be Provided At All Times.
- Access For Local Traffic And School Traffic Must Be Provided At All Times.
- The Kalamazoo County Consolidated Dispatch Authority Shall Be Notified, Via Their Non-Emergency Number, Of All Lane Closures And Closure Duration. Contact Central Dispatch At (269)-488-8911.
- If Complete Roadway Closure Is Required, Contractor Shall Contact The Kalamazoo County Consolidated Dispatch Authority At Least 24 Business Hours Prior To The Closure. Contractor Shall Receive Approval Of The Closure From The Kalamazoo County Consolidated Dispatch Authority Prior To Moving Forward With The Closure.

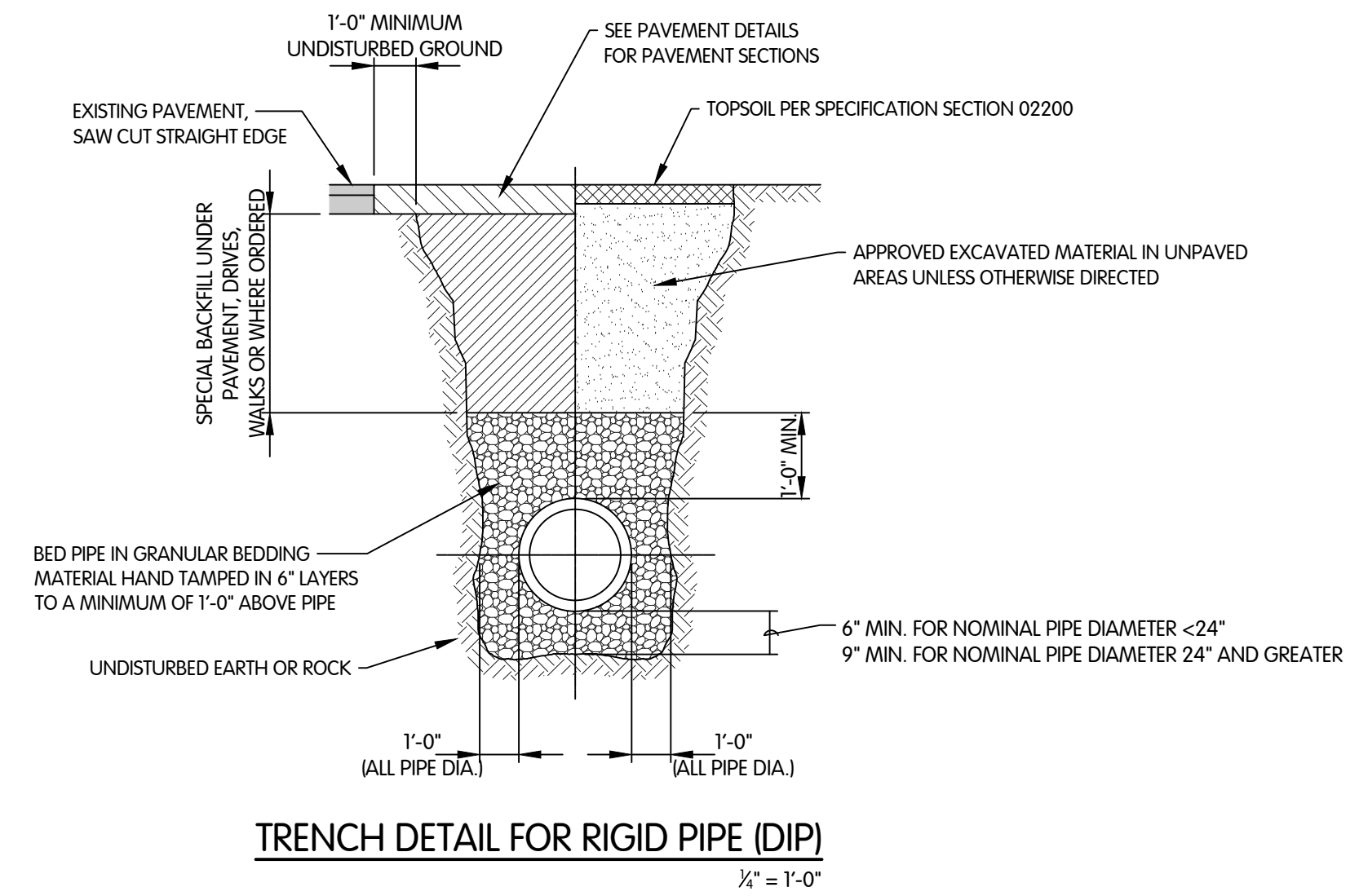
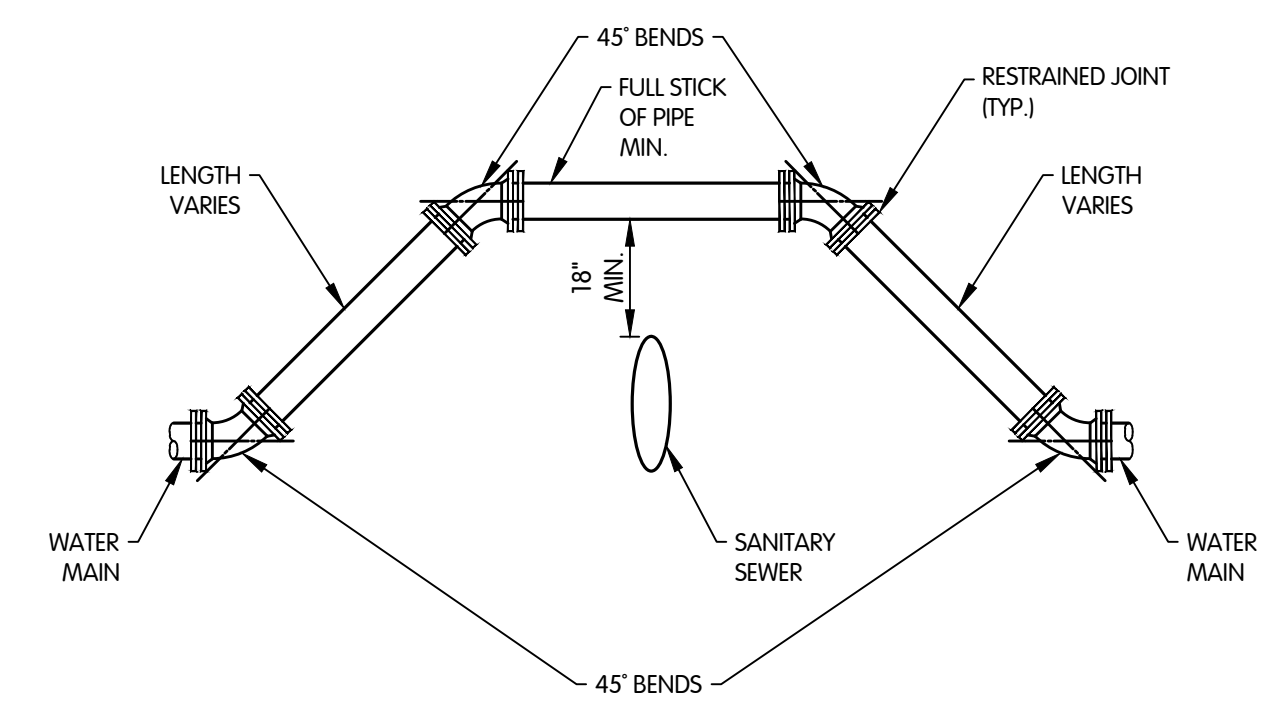
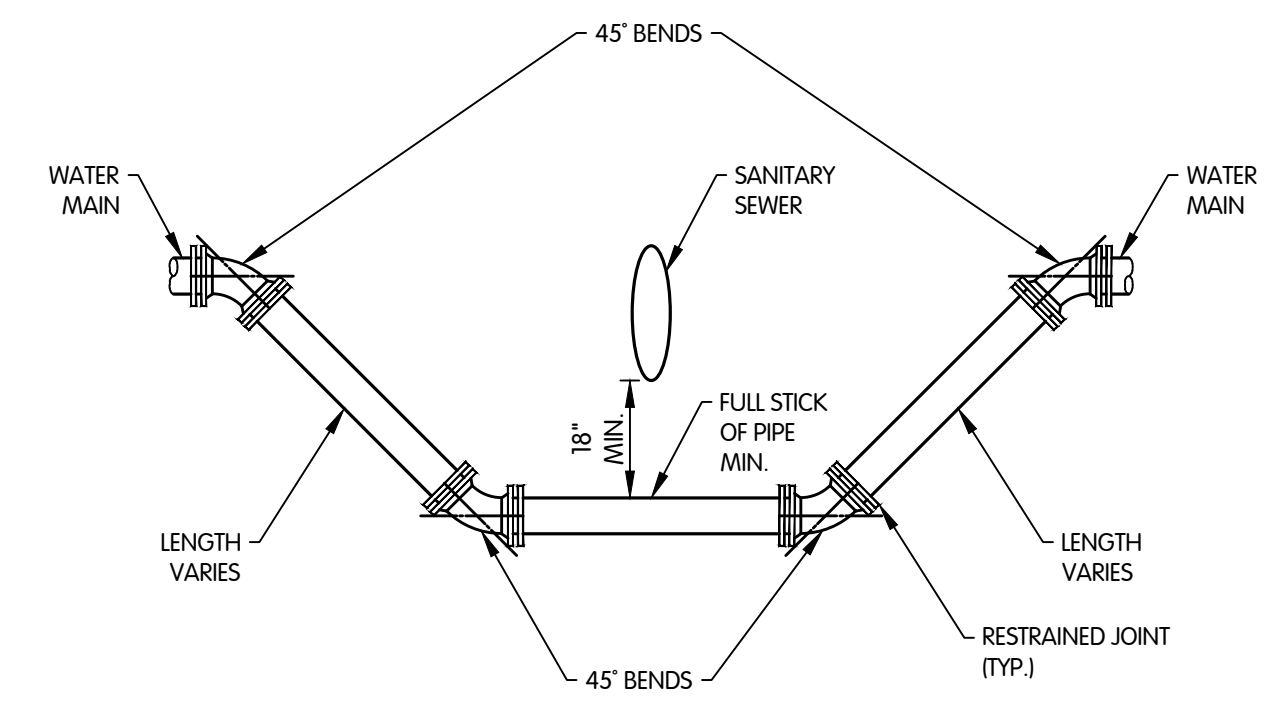
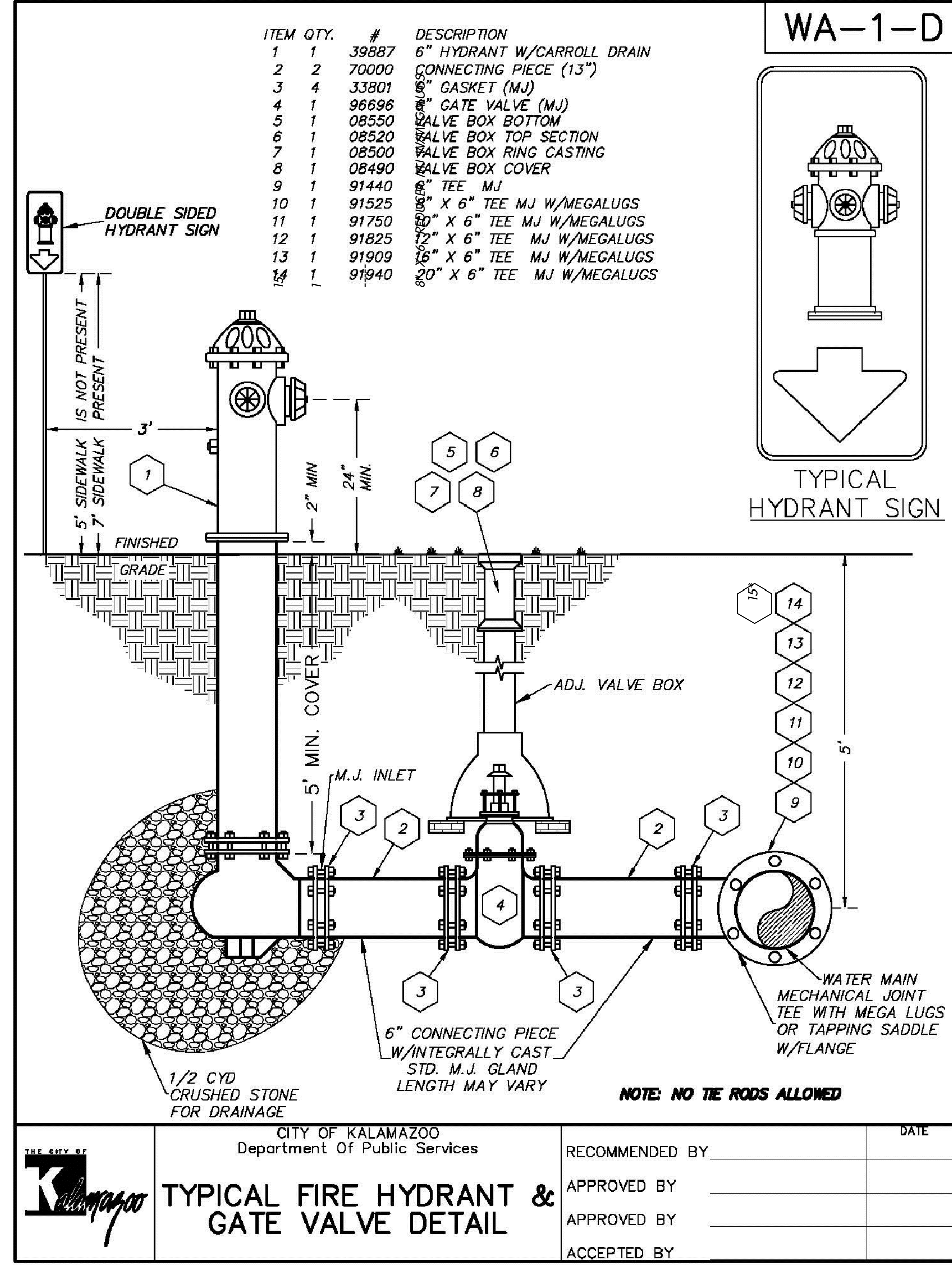
#### NOTE:

- ALL NOTES ON THE DRAWINGS BEAR THE SAME IMPORTANCE. SOME NOTES AND DIMENSIONS ARE BOLD TO AID IN READING THE DRAWING IN AREAS OF HIGH GRAPHIC DENSITY.
- ACCURACY OF EXISTING ELEVATIONS AND DIMENSIONS IS NOT GUARANTEED. FIELD VERIFY BEFORE CONSTRUCTION.

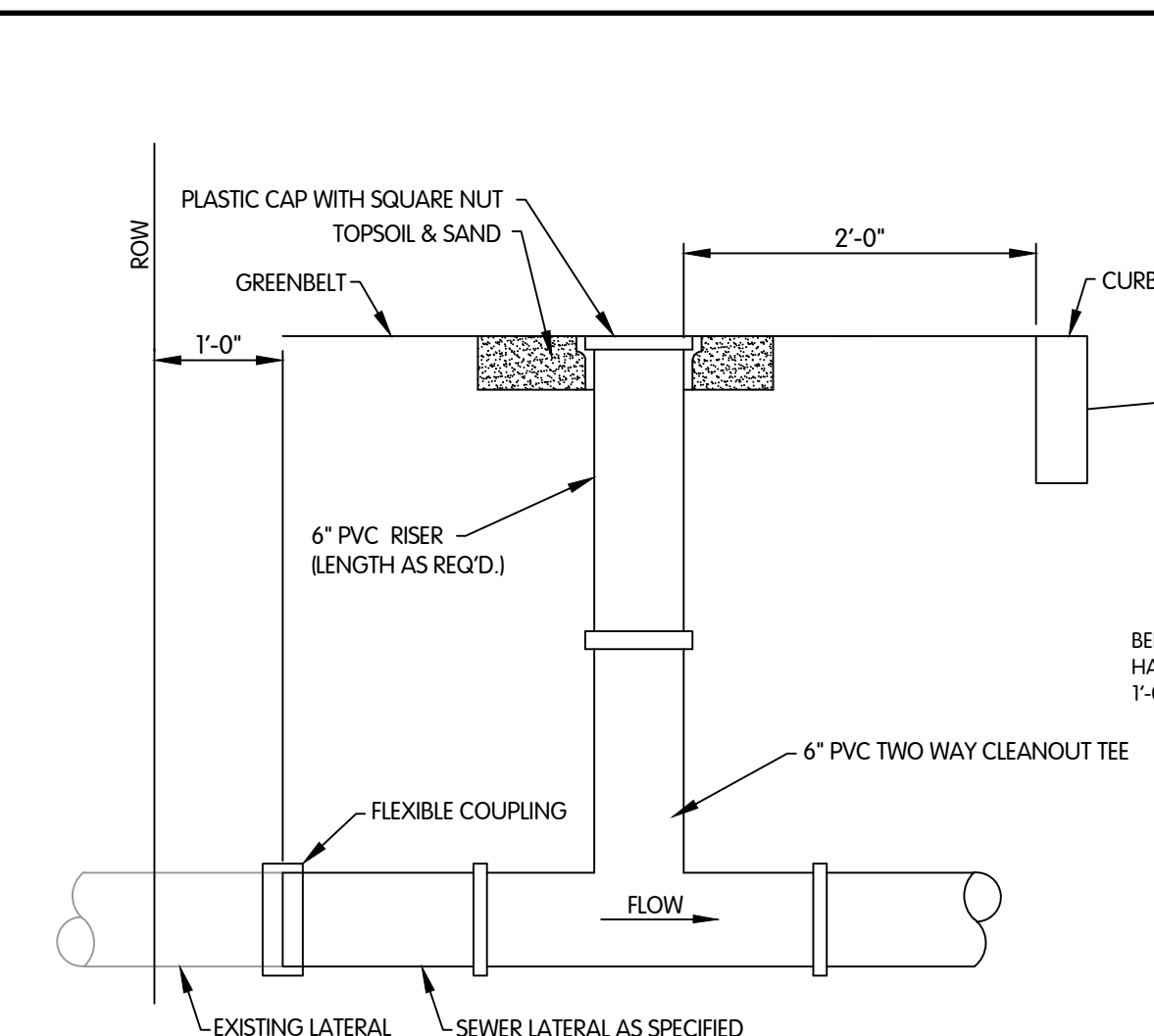
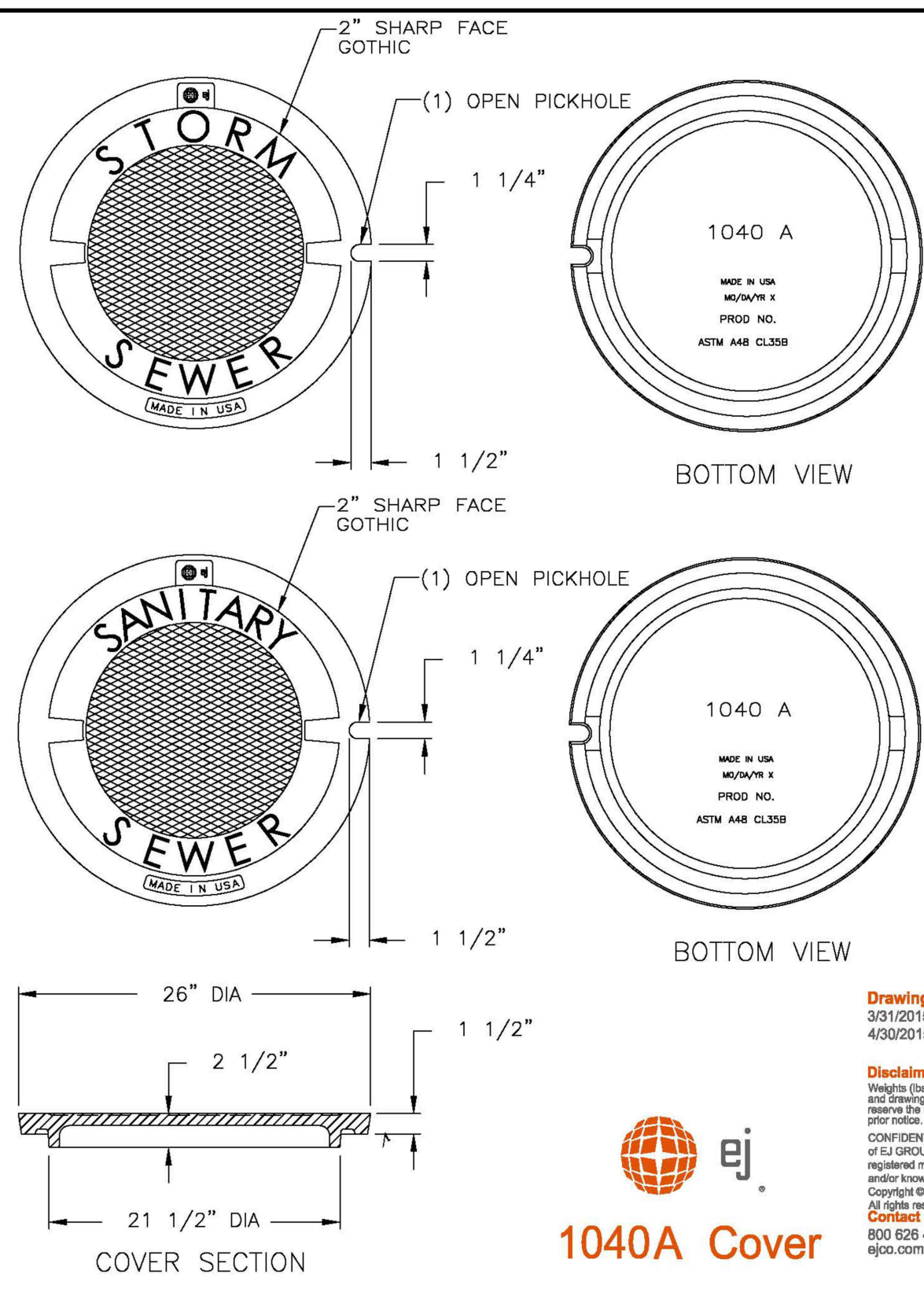
LEGEND, INDEX, & SURVEY CONTROL

CITY OF KALAMAZOO, MICHIGAN - NEWTON CT, FELLOWS AVE, & BROWNELL CT IMPROVEMENTS





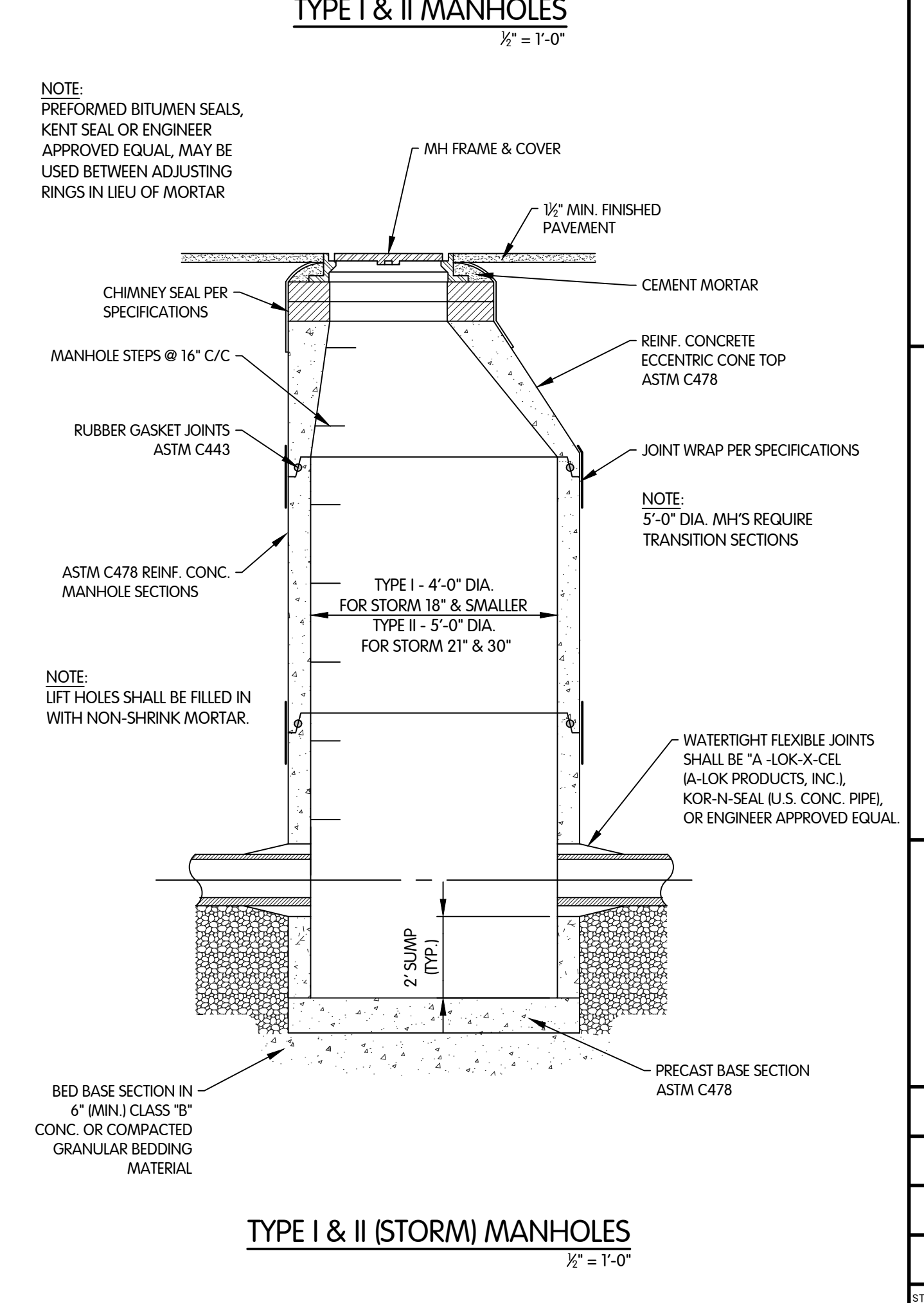
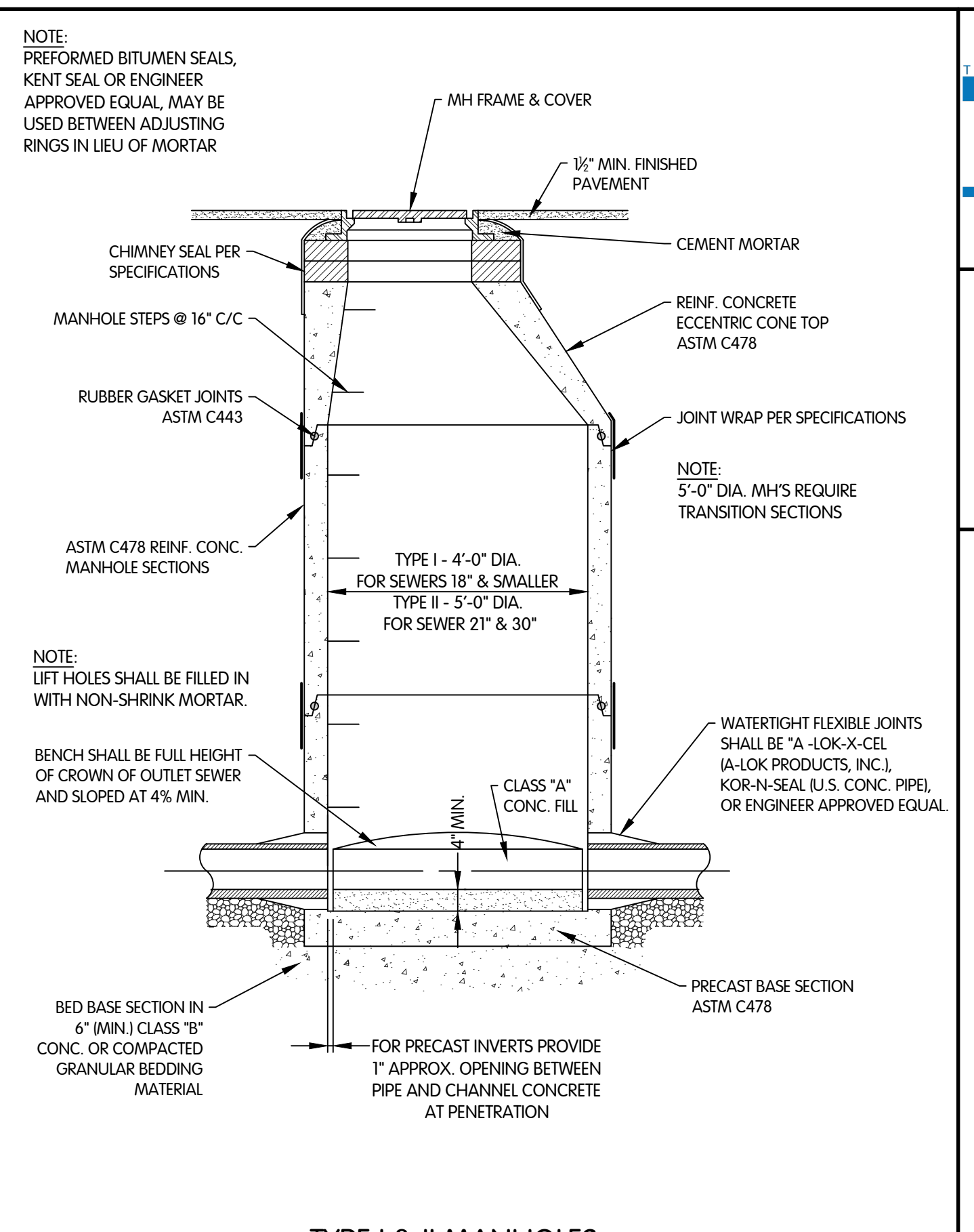
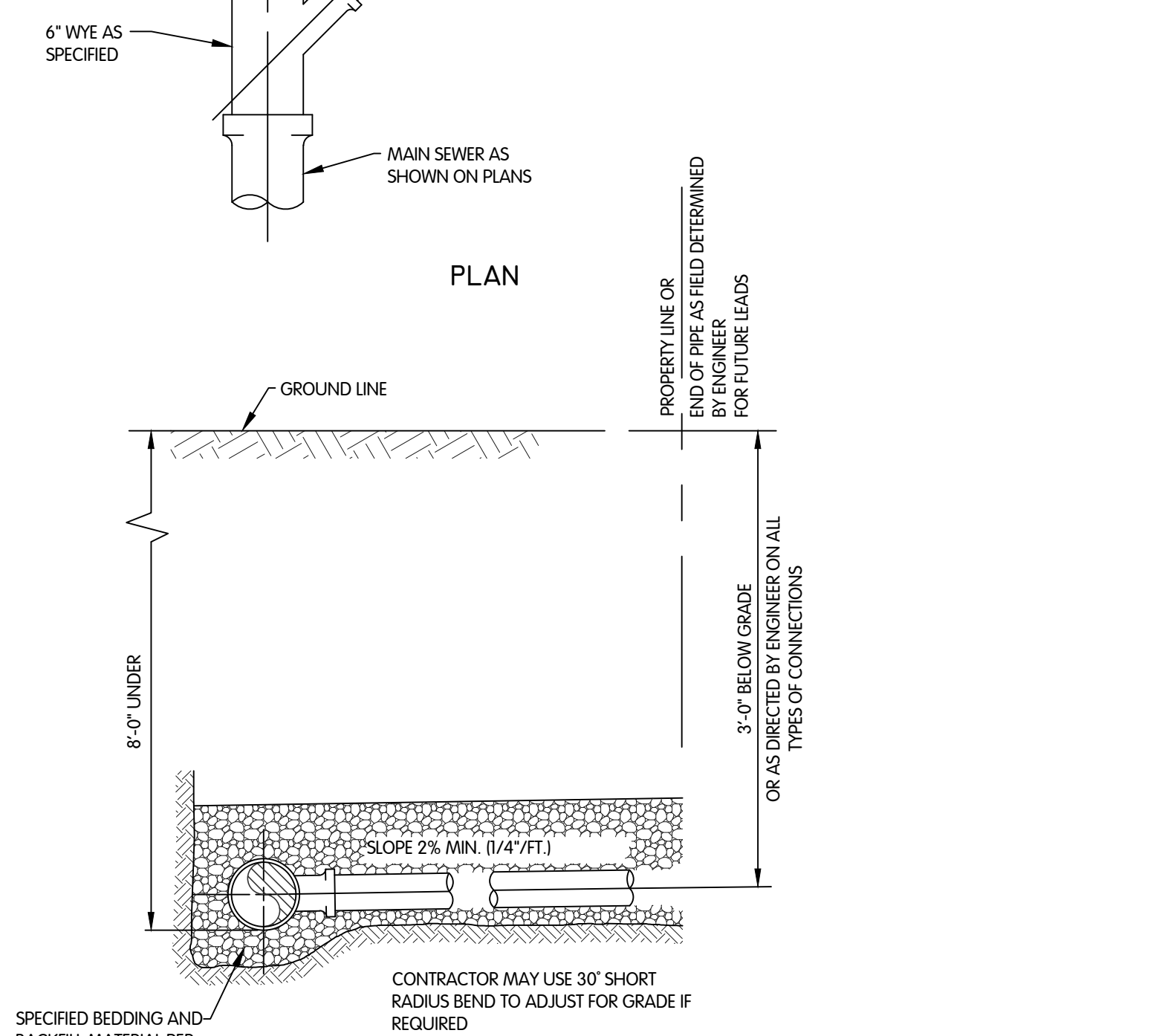
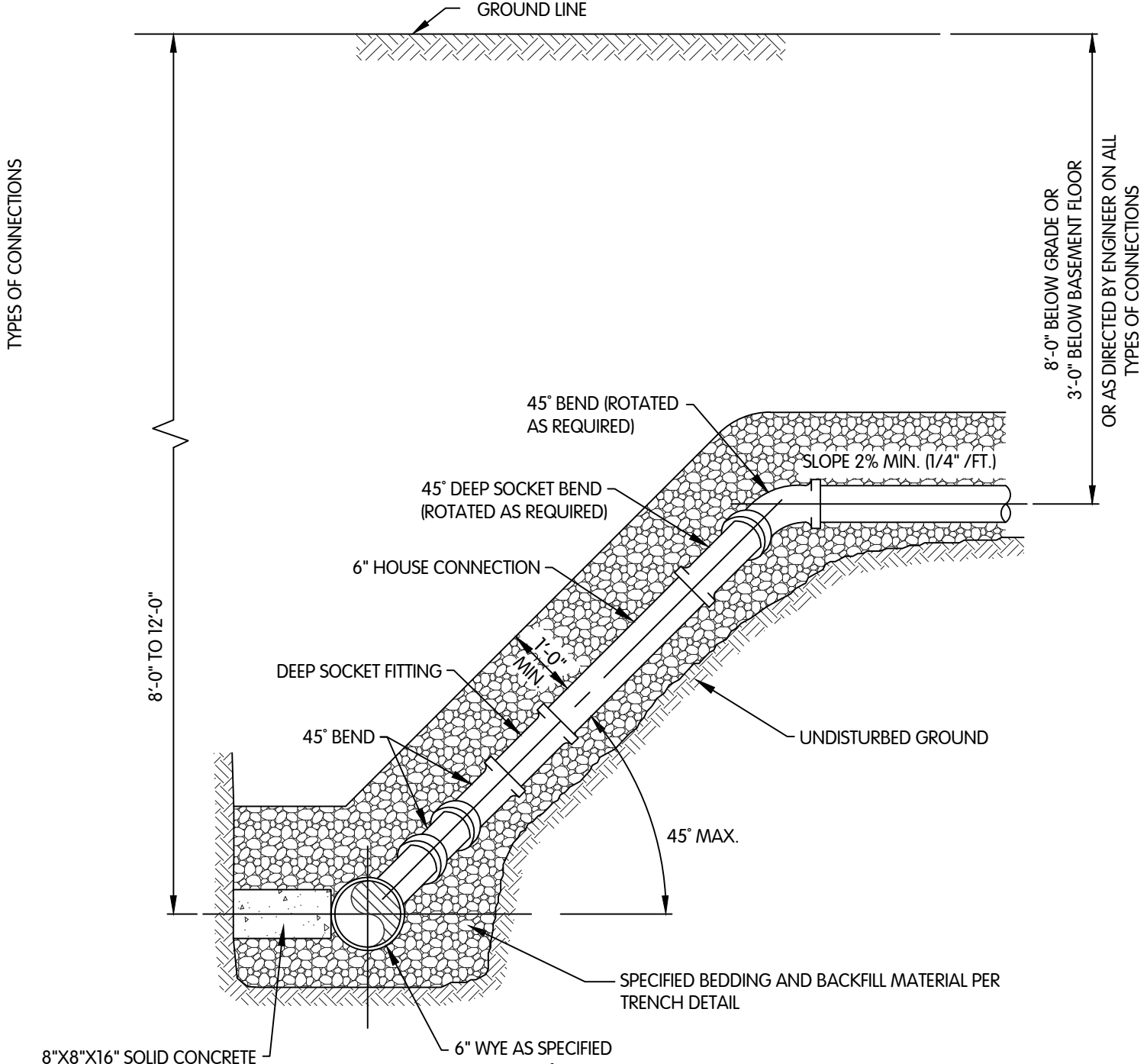
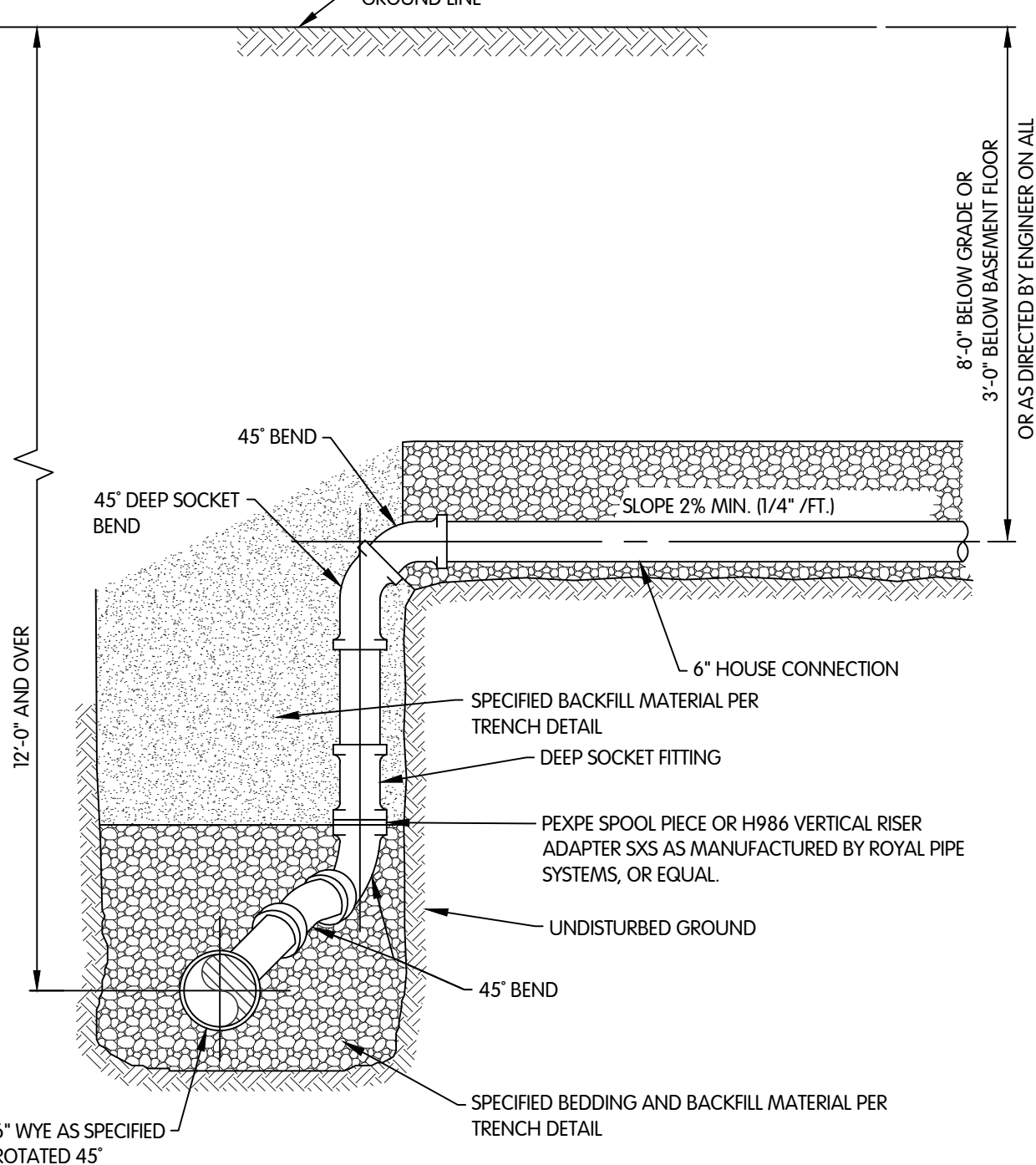
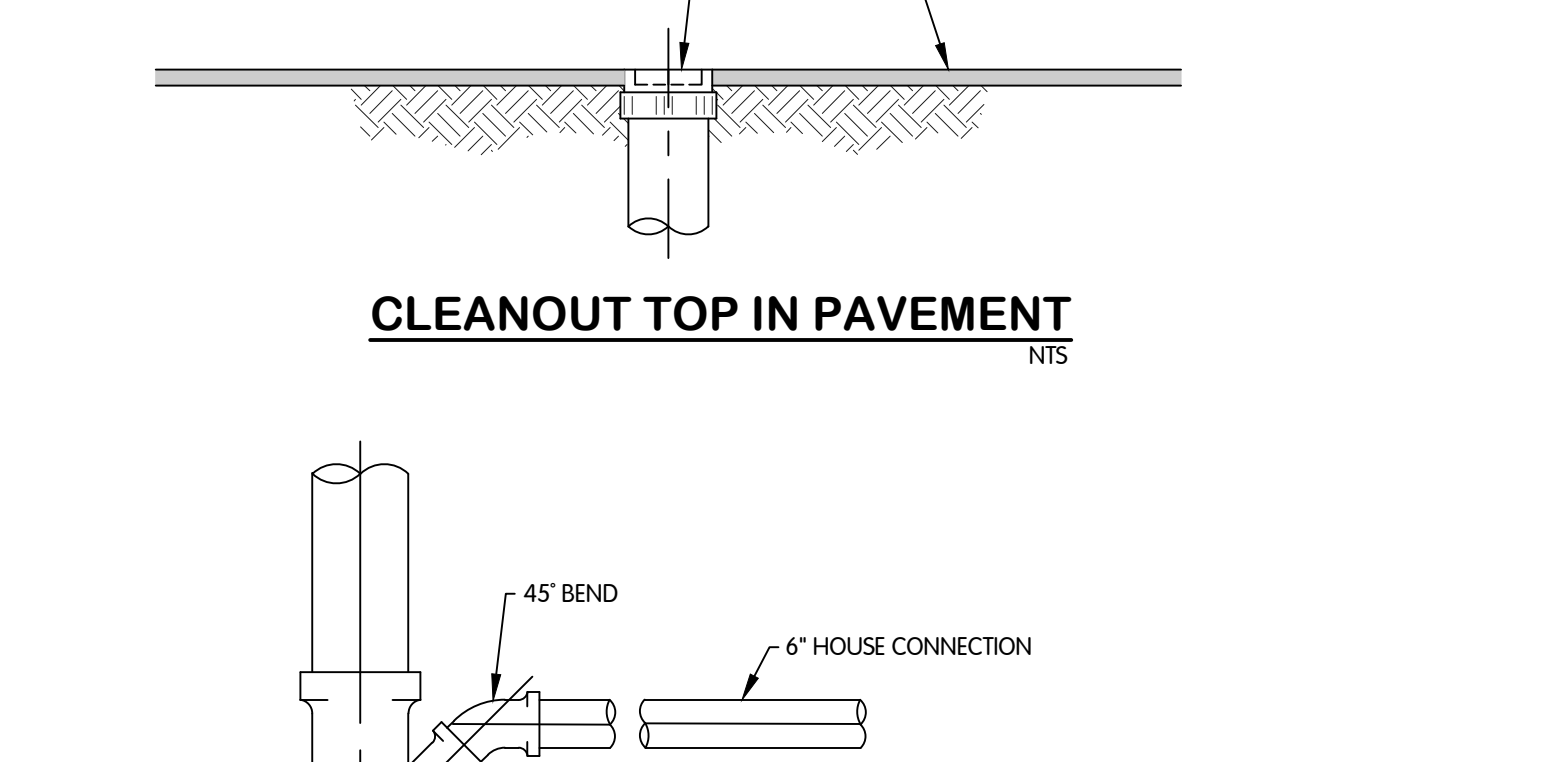
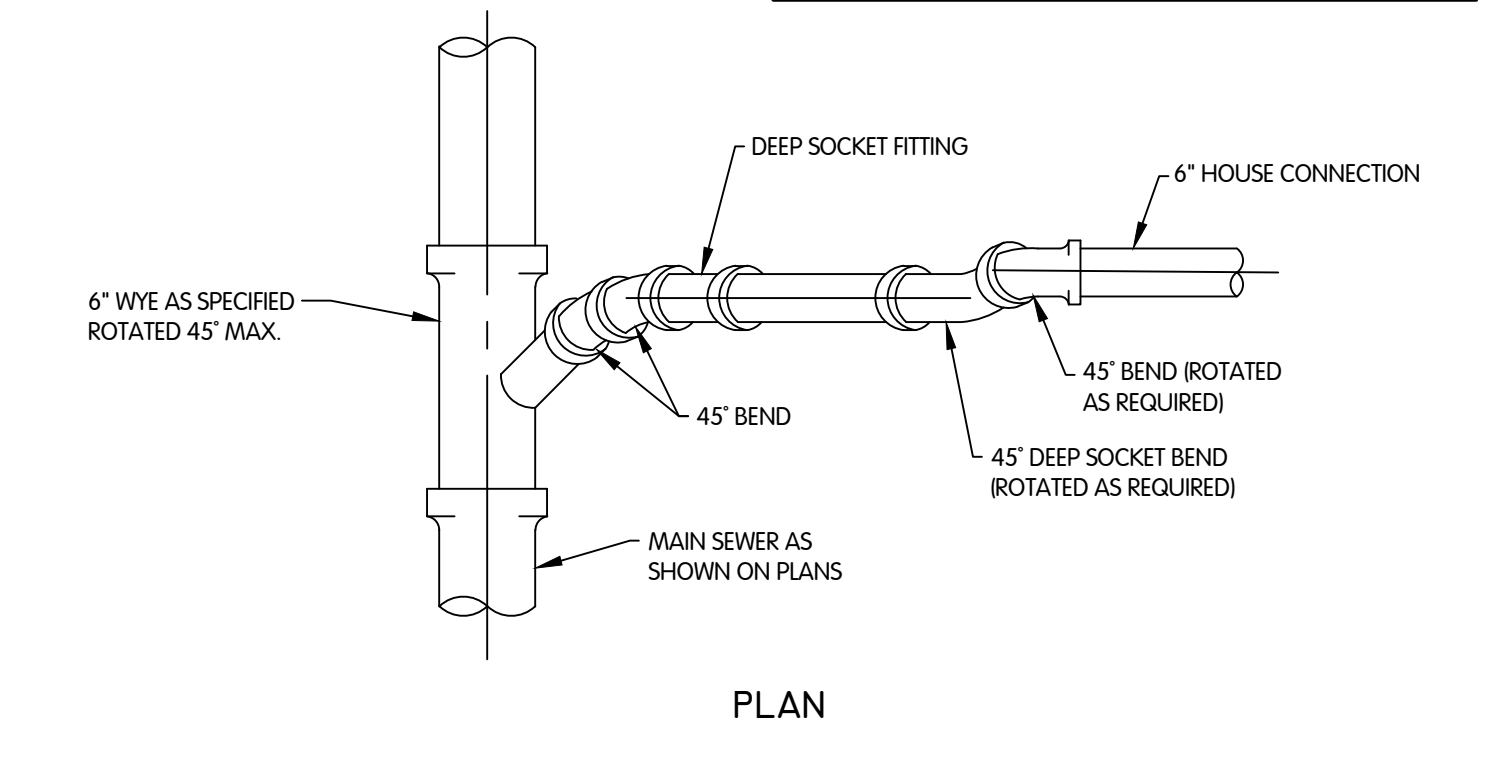
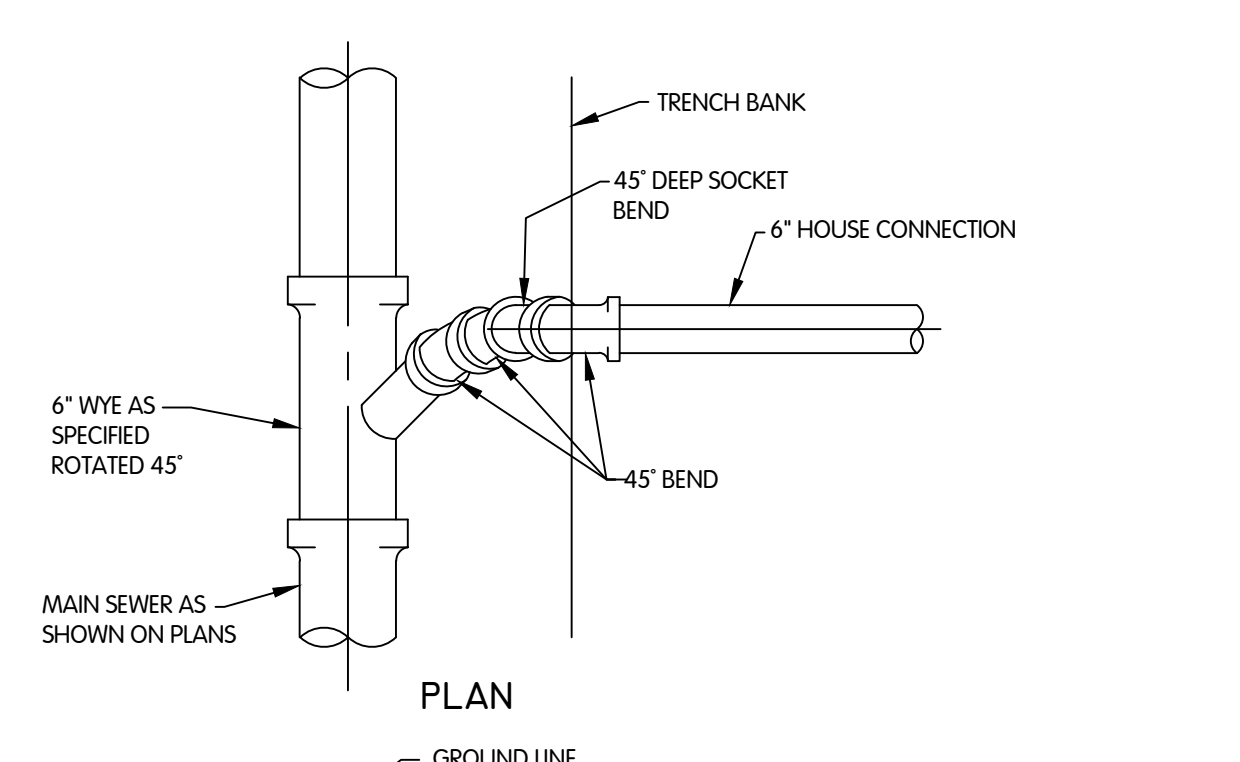
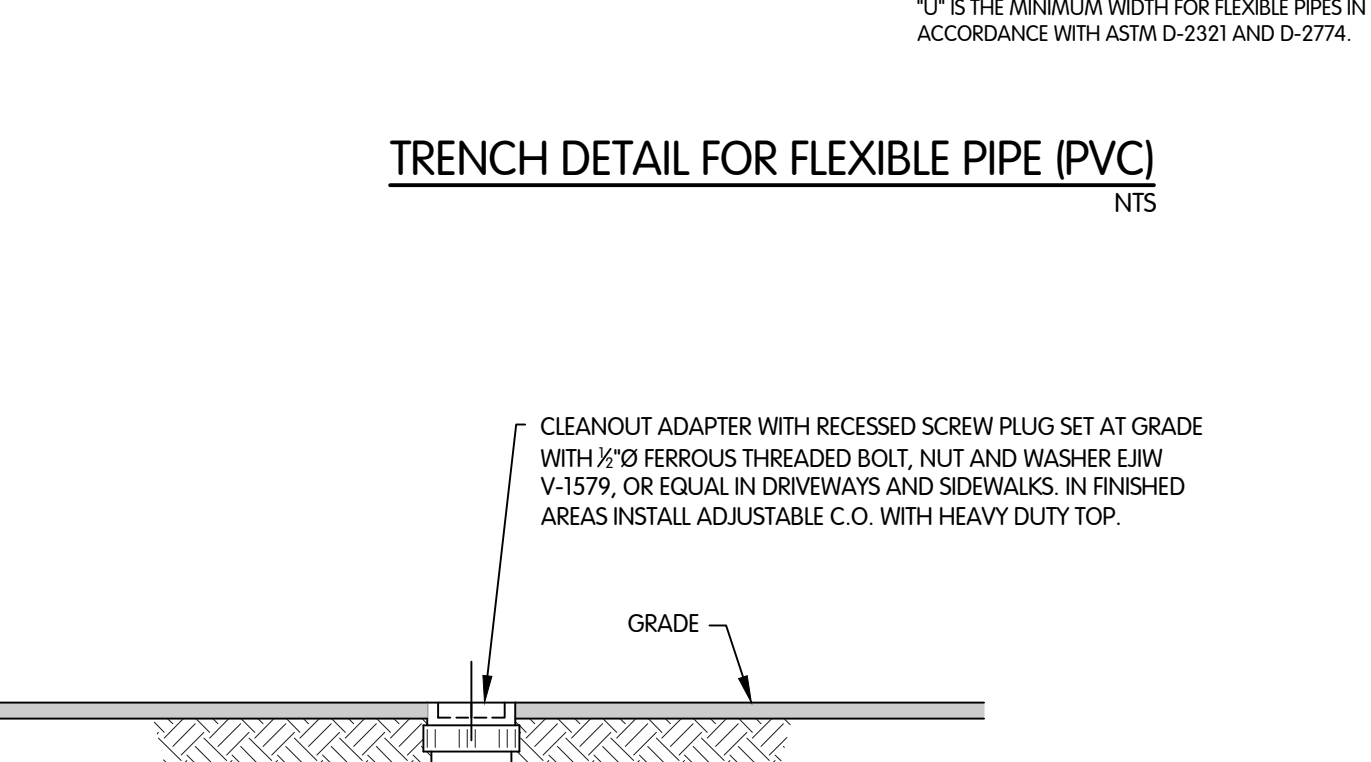
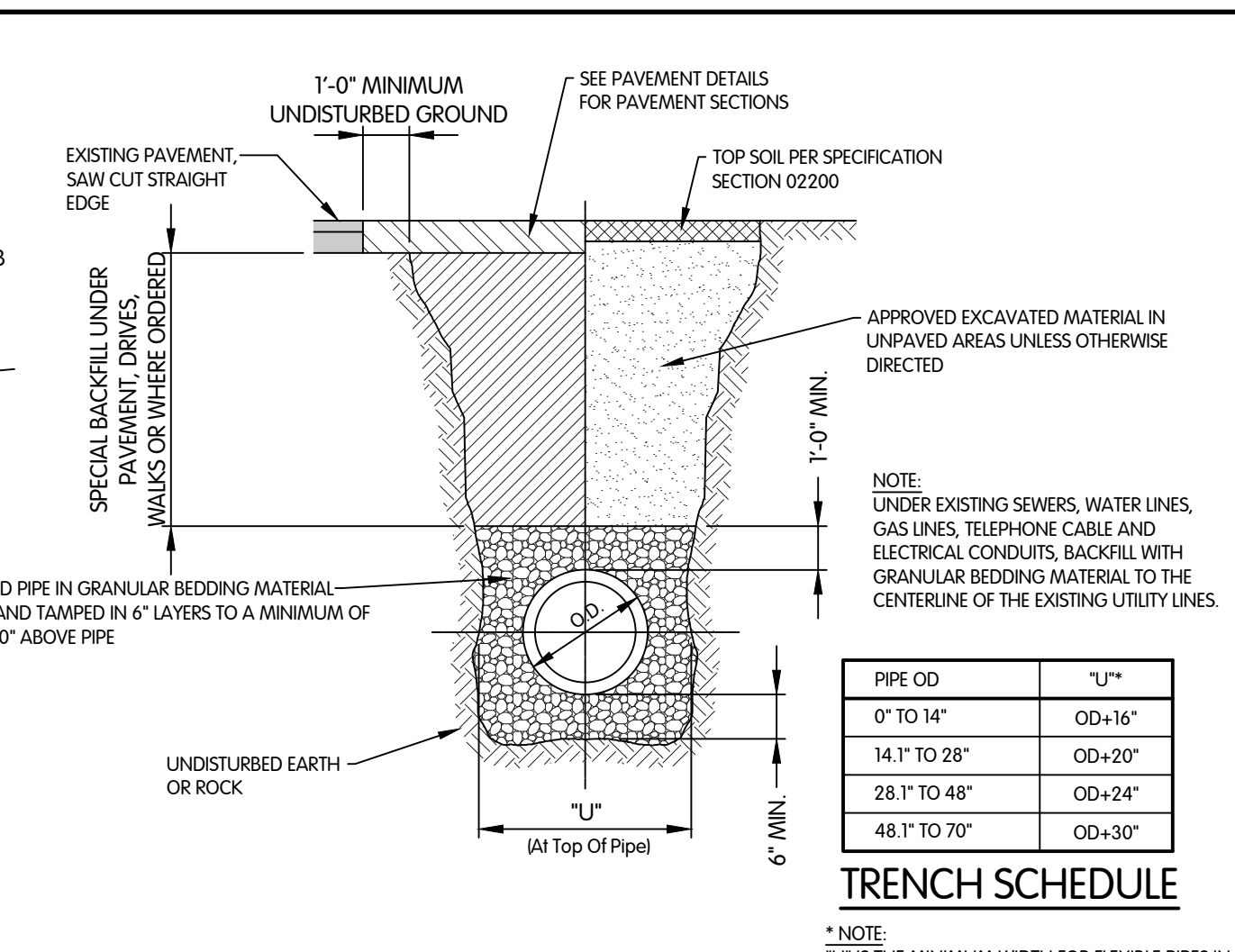




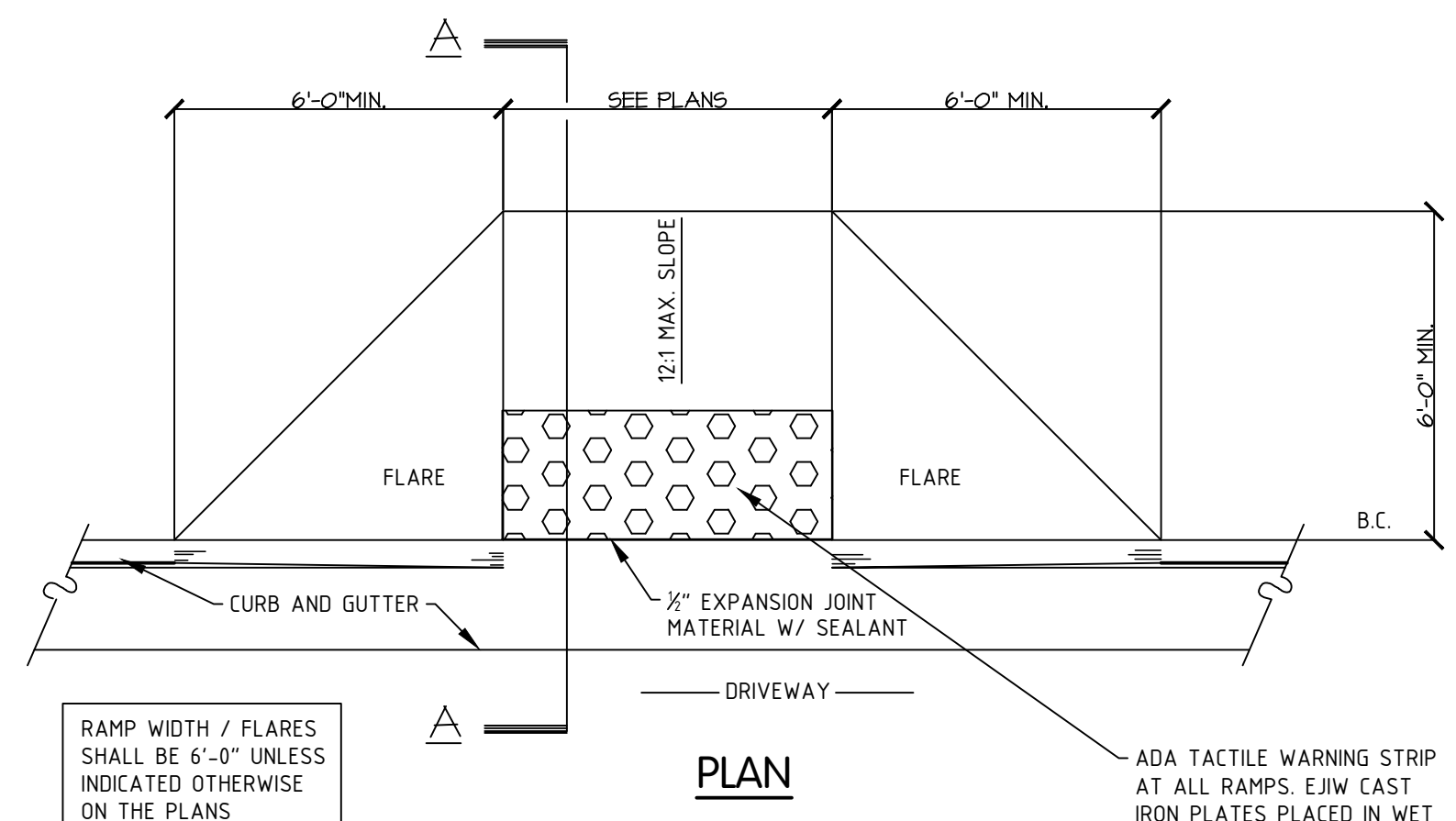
**SERVICE CONNECTION NOTES**

A. CONTRACTOR SHALL NOT BACKFILL SERVICE CONNECTION UNTIL THE ENGINEER HAS INSPECTED AND TAKEN MEASUREMENTS, ELEVATIONS & OTHER INFORMATION REQUIRED FOR PURPOSE OF RECORD.

B. ALL TEE AND WYE BRANCHES IN THE MAIN SEWER LINE, ROTATED MORE THAN 30° FROM HORIZ. SHALL HAVE A THRUST BLOCK A MIN. OF 6" THICK OF CLASS "B" CONCRETE OR BLOCK TO UNDISTURBED EARTH.



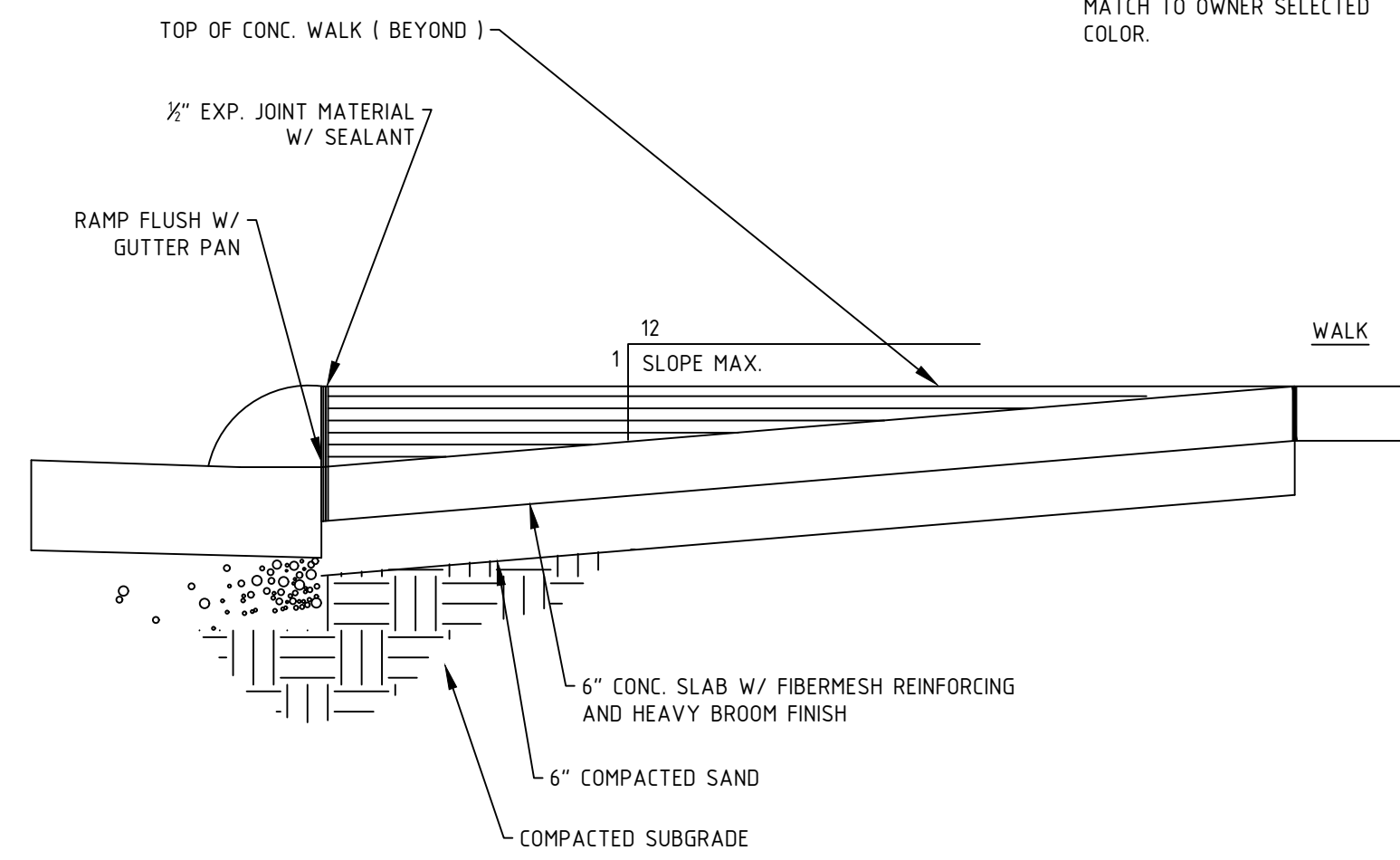




RAMP WIDTH / FLARES SHALL BE 6'-0" UNLESS INDICATED OTHERWISE ON THE PLANS

PLAN

ADA TACTILE WARNING STRIP AT ALL RAMPS. EJW CAST IRON PLATES PLACED IN WET CONCRETE PER MAUNF. DIRECTIONS ( OR EQUAL ). UNITS TO BE CUSTOM COLOR MATCH TO OWNER SELECTED COLOR.

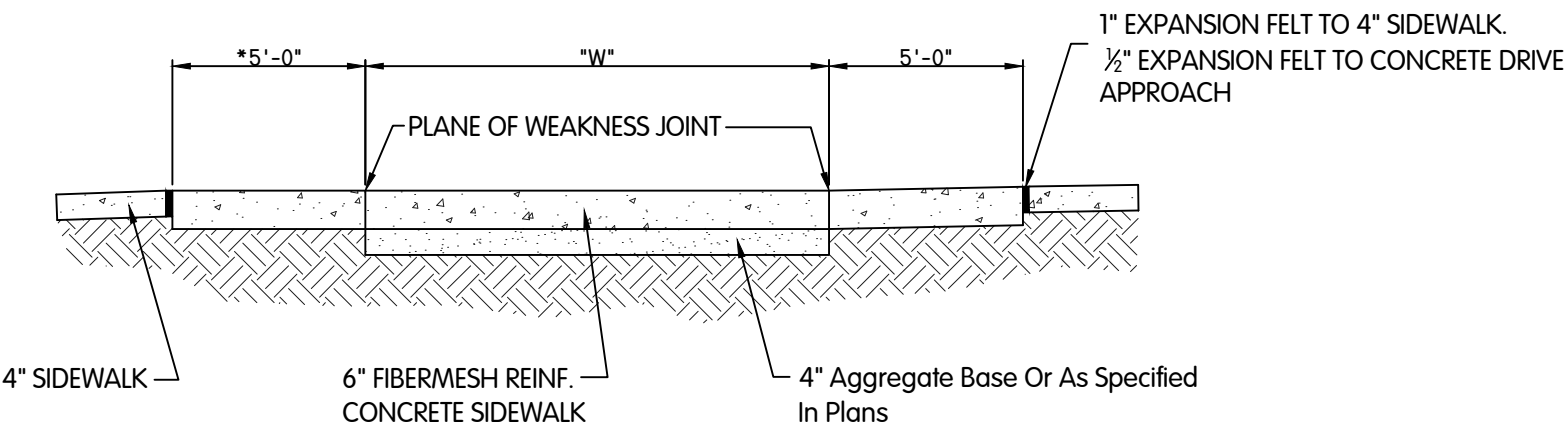


SECTION A-A

SIDEWALK RAMP DETAIL  
NTS

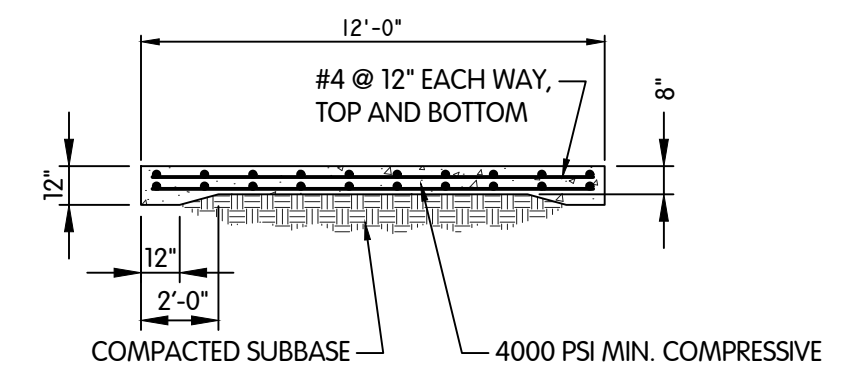
NOTE: PROVIDE TACTILE STRIP AT ALL RAMPS

\* NOTE: EXTRA WIDTH ADDED AT COMMERCIAL DRIVEWAYS AND ALLEYS (TYP.)

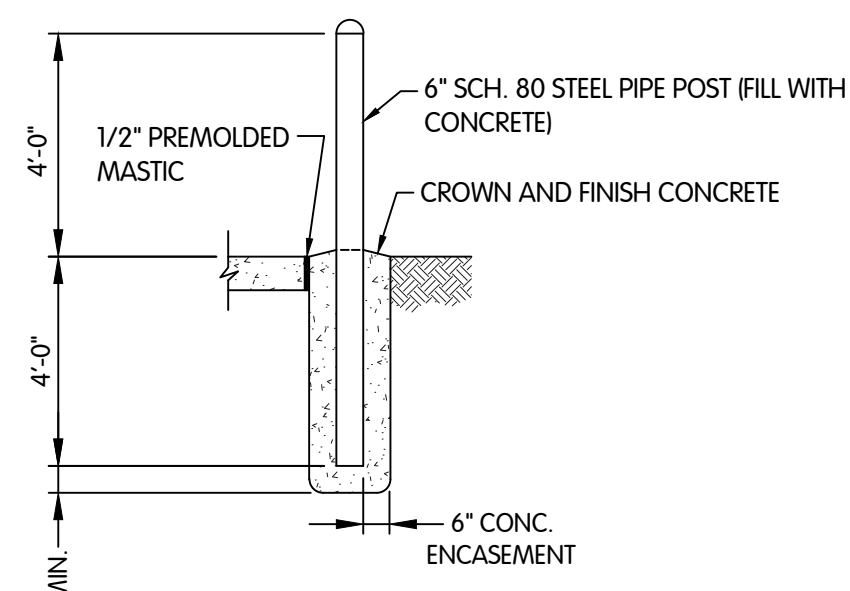


6" CONCRETE SIDEWALK THROUGH DRIVEWAY  
NTS

NOTE:  
1. ALL EXPOSED CORNERS SHALL HAVE A 1" CHAMFER.  
2. TOE FOOTING FOR ENTIRE PERIMETER.



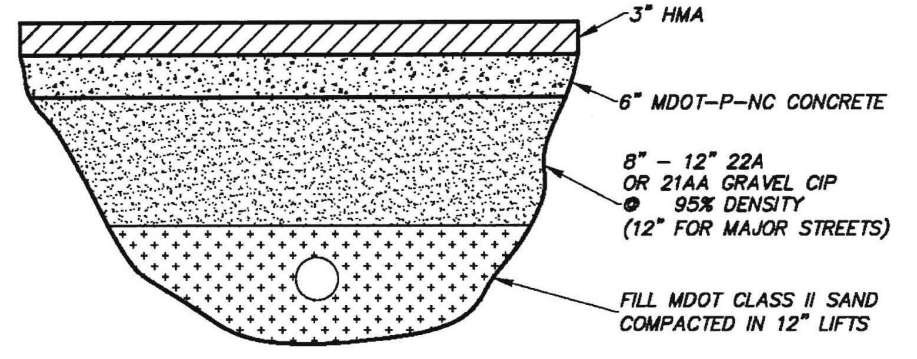
TYPICAL DUMPSTER PAD DETAIL  
NTS



GUARDPOST DETAIL  
NTS

NOTE: GUARDPOST COVERS SHALL BE A CLOSED TOP, 1/8-INCH THICK HDPE WITH UV INHIBITORS AND RATED FOR OUTDOOR ENVIRONMENT. THE BOLLARD COVER SHALL BE INTEGRALLY COLORED; OWNER SHALL SELECT COLOR. HDPE COVERS SHALL PROVIDE FOR A UNIFORM HEIGHT OF BOLLARDS. CONTRACTOR SHALL COORDINATE BOLLARD COVER SIZE WITH THE METAL PIPE BOLLARD AS SHOWN ON THE DRAWING.

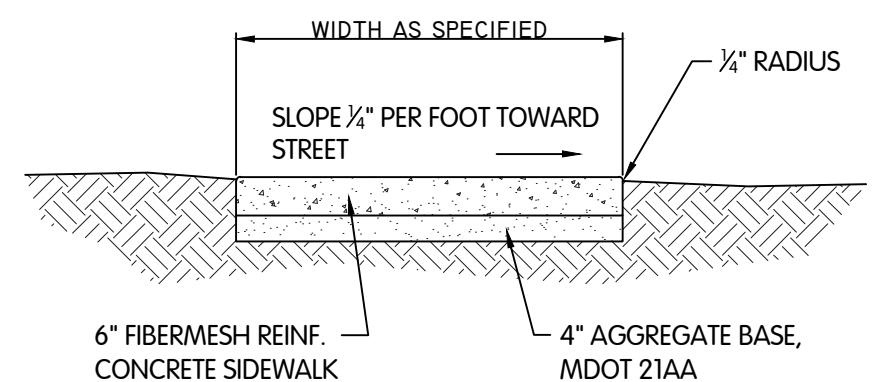
STANDARD STREET CUT PROCEDURE



NOTE:  
FOR POTHOLES 12" DIA & SMALLER -ALL CONCRETE  
FOR 1' x 1' & LARGER HAND COMPACT LAYERS AS SHOWN & FINISH WITH CONCRETE.  
FOR USE BETWEEN APRIL 15 AND NOVEMBER 15

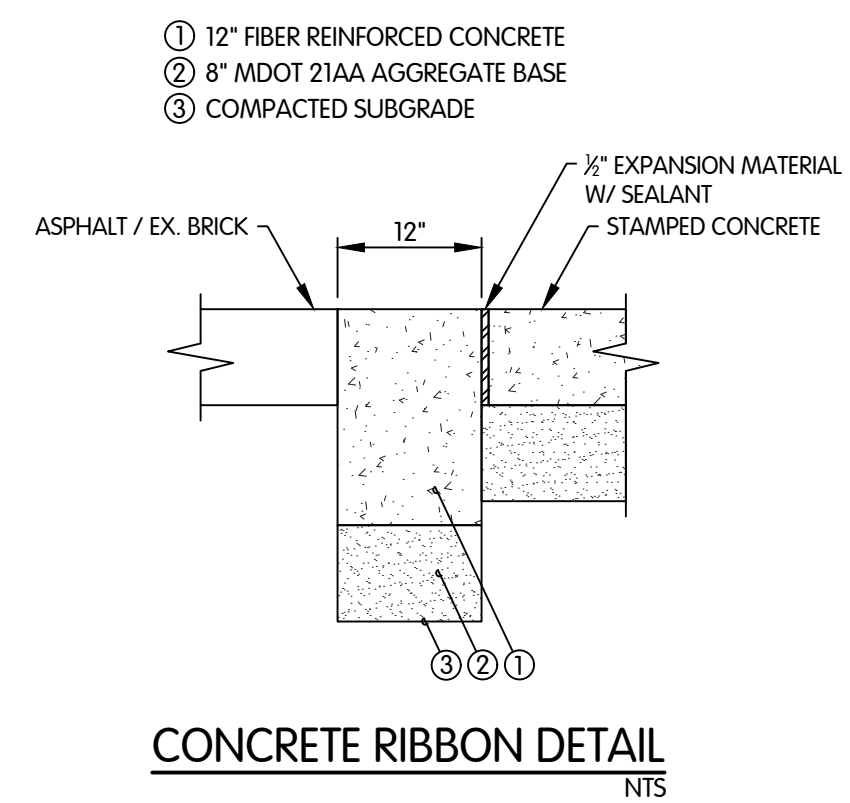
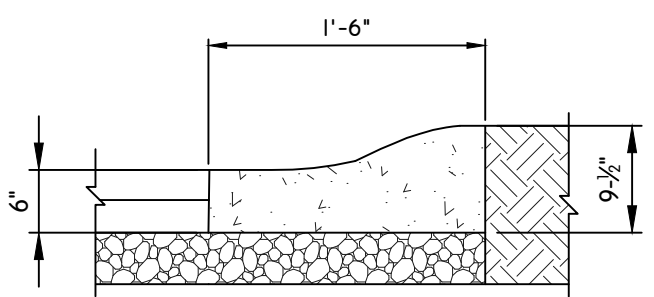
 CITY OF KALAMAZOO Department of Public Services <b>STANDARD STREET CUT PROCEDURE</b> 10/30/18	RECOMMENDED BY _____ DATE _____
	APPROVED BY _____
	APPROVED BY _____
	ACCEPTED BY _____

TRENCH REPAIR DETAIL  
NTS



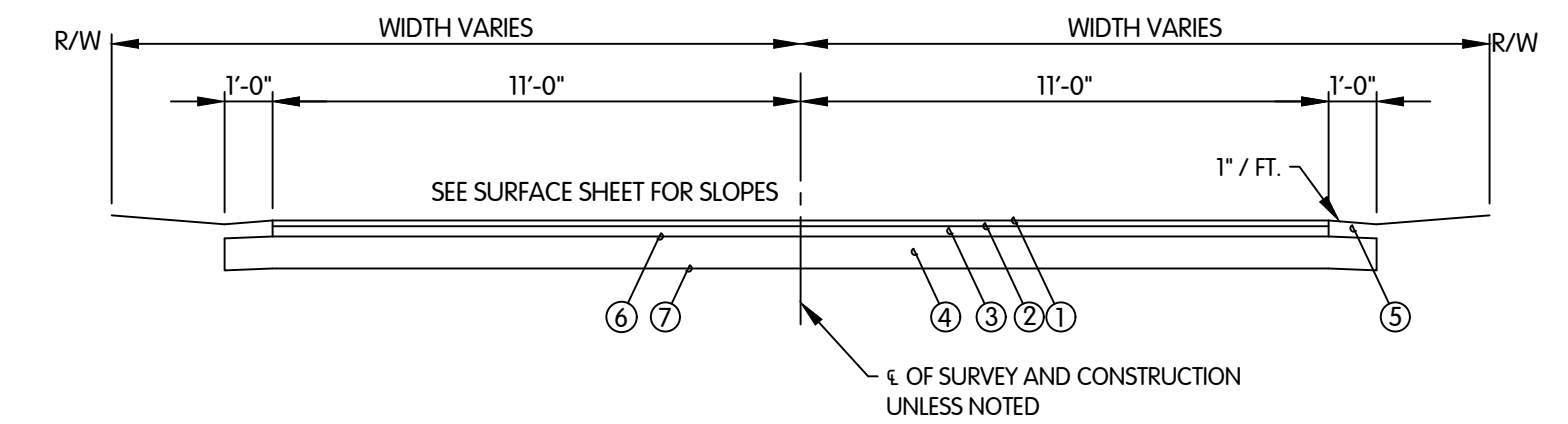
6" CONCRETE SIDEWALK  
NTS

MOUNTABLE CURB DETAIL  
NTS



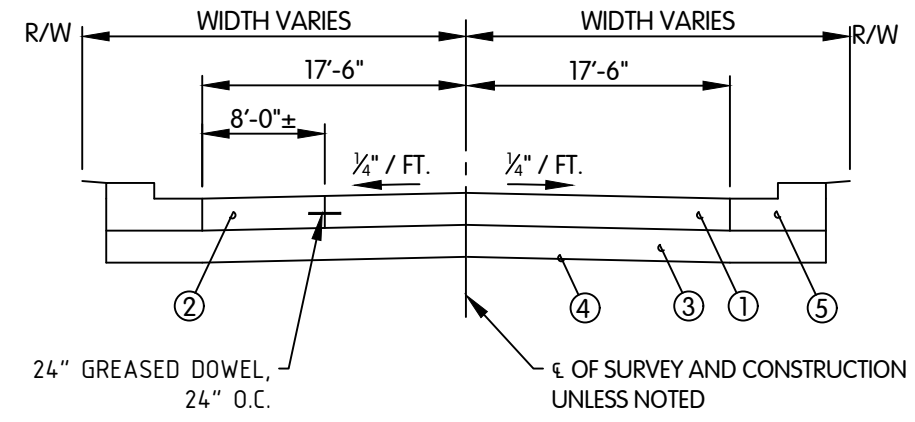
CONCRETE RIBBON DETAIL  
NTS

- ① 12" FIBER REINFORCED CONCRETE
- ② 8" MDOT 21AA AGGREGATE BASE
- ③ COMPACTED SUBGRADE



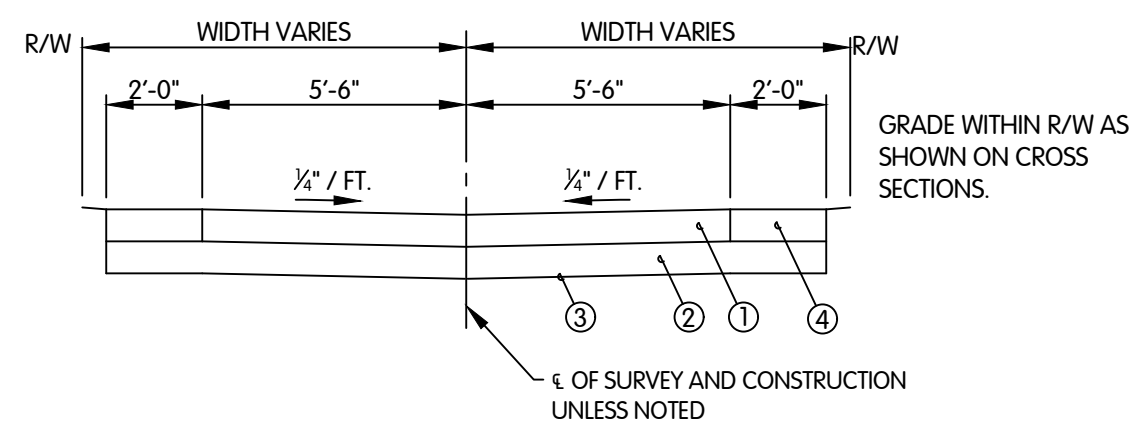
TYPICAL RECONSTRUCTION PAVEMENT SECTION  
NTS

- ① 8" STAMPED CONCRETE COURSE
- ② 8" CONCRETE COURSE
- ③ 8" MDOT 21AA AGGREGATE BASE
- ④ COMPACTED SUBGRADE
- ⑤ REPAIR CURB TO MATCH EXISTING



TYPICAL PAVEMENT SECTION  
(WHEATON AVE.)  
NTS

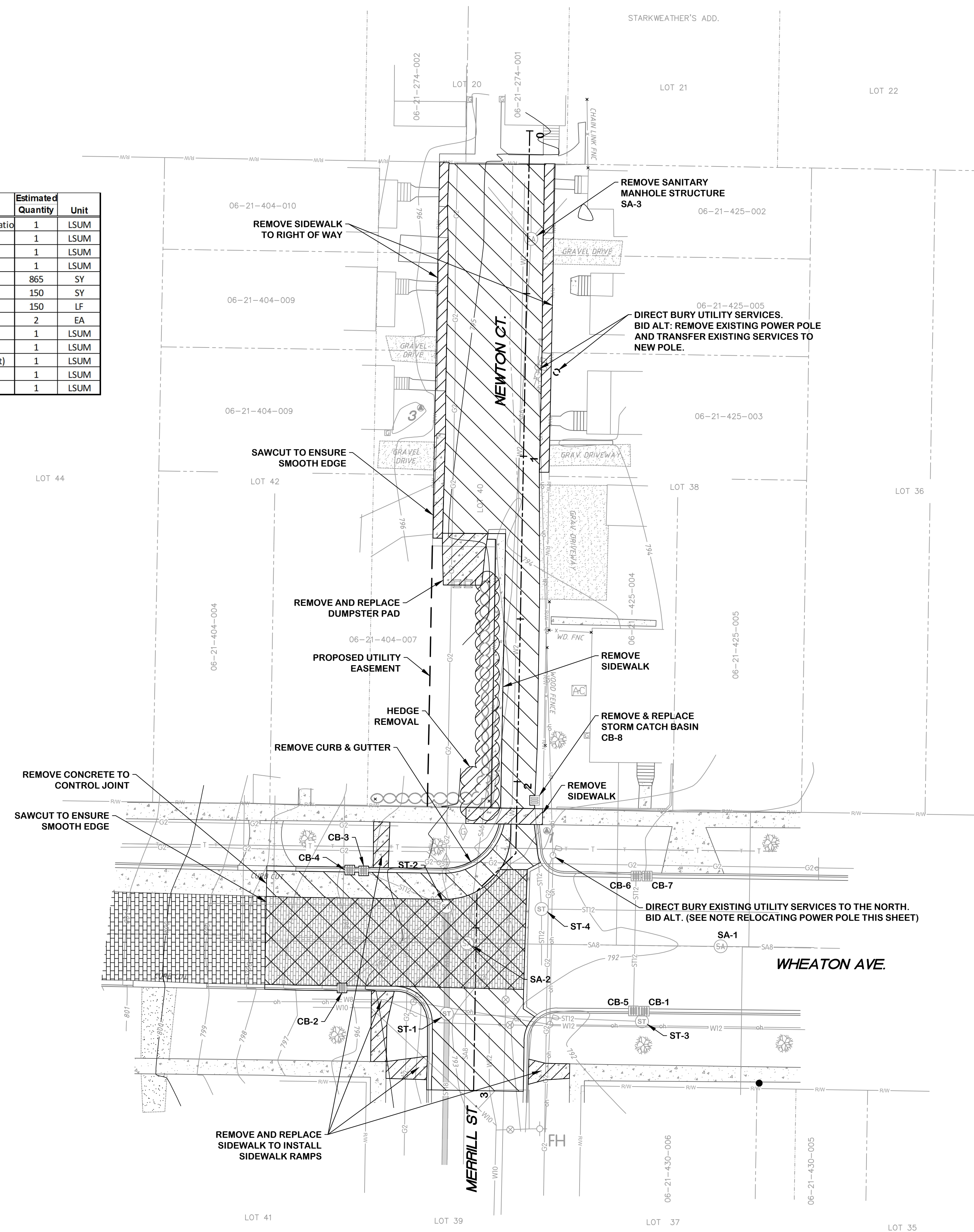
- ① 8" CONCRETE COURSE
- ② 8" AGGREGATE BASE
- ③ COMPACTED SUBGRADE
- ④ 8" CONCRETE SHOULDER



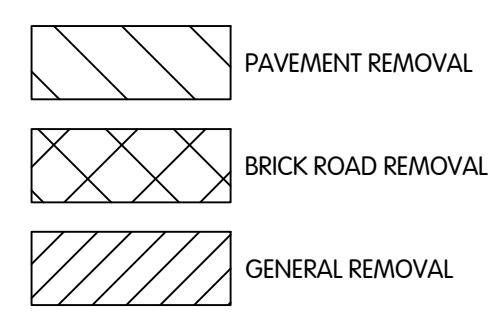
TYPICAL PAVEMENT SECTION  
(FELLOWS AVE. STA. 0+52 TO 4+58 )  
NTS



Item No.	Description	Estimated Quantity	Unit
1	General Conditions/Mobilization	1	LSUM
2	Traffic Control	1	LSUM
3	Audio/Video Recording	1	LSUM
4	Clearing & Grubbing	1	LSUM
5	Pvt, Rem, Mod	865	SY
6	Sidewalk, Rem	150	SY
7	Curb & Gutter, Rem	150	LF
10	Structure, Rem	2	EA
11	Sawcutting	1	LSUM
12	Direct Bury Power Lines	1	LSUM
12a	Relocate Power Pole (Bid Alt)	1	LSUM
52	Materials Testing	1	LSUM
53	Construction Staking	1	LSUM



**REMOVAL LEGEND**



NOTES:  
 1. SEE W-1 & SA-1 SHEETS FOR REMOVAL OF WATER AND SANITARY PIPE.

EXISTING STRUCTURE DATA		
NAME	TYPE	DATA
SA-1	SANITARY MANHOLE	CASTING EL. 791.83 8" W INV. EL. 785.83 8" E INV. EL. 785.73
SA-2	SANITARY MANHOLE	CASTING EL. 793.81 8" W INV. EL. 786.61 8" E INV. EL. 786.03 8" S INV. EL. 786.61 6" N INV. EL. 786.61
SA-3	SANITARY MANHOLE	CASTING EL. 794.41 6" S INV. EL. 788.51

EXISTING STRUCTURE DATA		
NAME	TYPE	DATA
ST-1	STORM MANHOLE	CASTING EL. 793.61 12" E INV. EL. 789.24 18" S INV. EL. 789.14 18" N INV. EL. 789.24
ST-2	STORM MANHOLE	CASTING EL. 794.15 18" S INV. EL. 788.90 15" W INV. EL. 788.90 12" SW INV. EL. 788.90 12" NW INV. EL. 788.90
ST-3	STORM MANHOLE	CASTING EL. 792.57 12" W INV. EL. 788.71 12" N INV. EL. 788.71
ST-4	STORM MANHOLE	CASTING EL. 792.63 12" S INV. EL. 784.88 12" N INV. EL. 784.88 12" E INV. EL. 784.28

EXISTING STRUCTURE DATA		
NAME	TYPE	DATA
CB-1	CATCH BASIN	CASTING EL. 791.39 12" S INV. EL. 788.70
CB-2	CATCH BASIN	CASTING EL. 795.42 12" NE INV. EL. 789.00
CB-3	CATCH BASIN	CASTING EL. 795.43 12" W INV. EL. 793.70 12" SE INV. EL. 791.40
CB-4	CATCH BASIN	CASTING EL. 795.72 12" E INV. EL. 793.70
CB-5	CATCH BASIN	CASTING EL. 791.99 12" N INV. EL. 789.30
CB-6	CATCH BASIN	CASTING EL. 791.49 12" E INV. EL. 788.80 12" S INV. EL. 784.28
CB-7	CATCH BASIN	CASTING EL. 791.49 12" W INV. EL. 788.80
CB-8	CATCH BASIN	CASTING EL. 793.28 12" S INV. EL. 788.30

KAL-762801010-NEWTON CT. GENERAL REMOVAL PLAN & EXISTING STRUCTURE DATA  
 2/25/2021 12:30 PM - CFERRELL  
 8/31/2022 9:38 AM

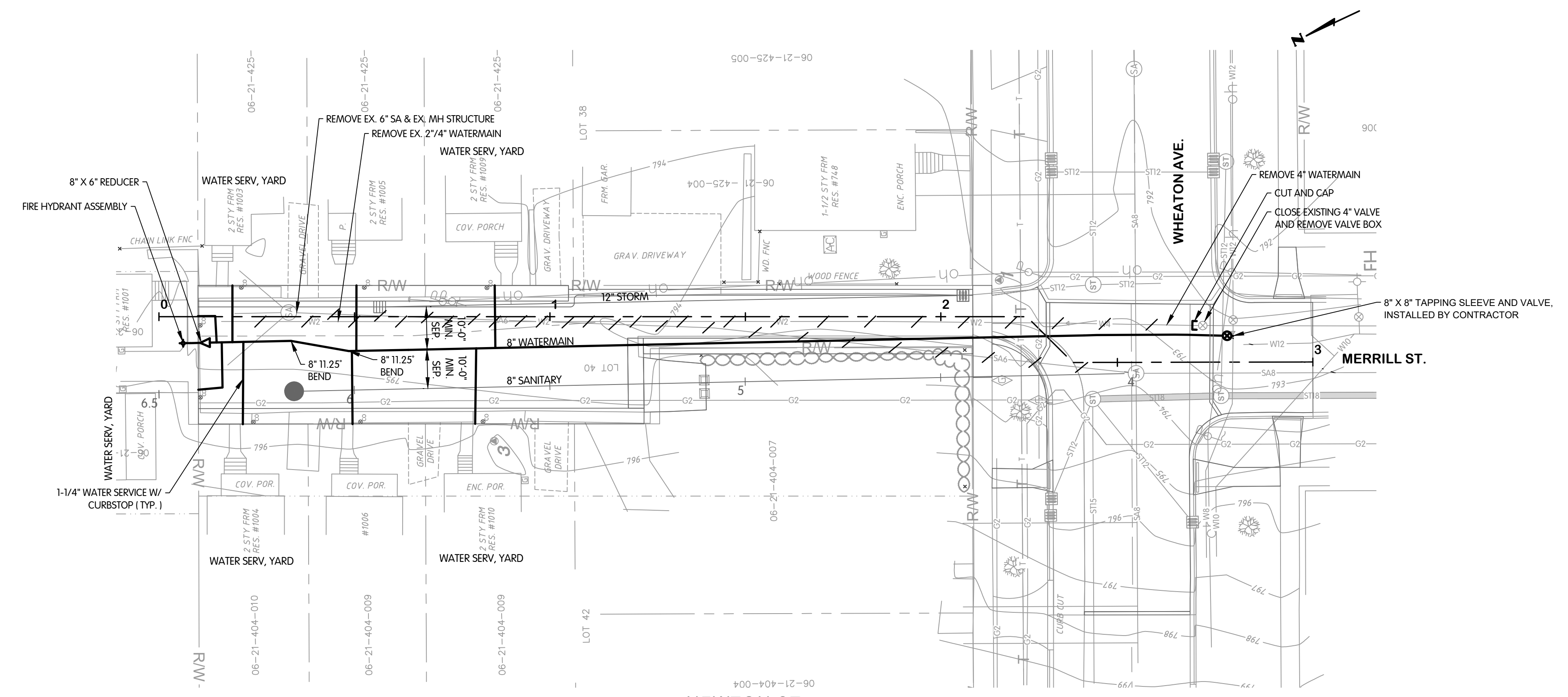
REVISIONS AFTER ISSUED FOR BID  
 NO. DATE BY

Jones & Henry  
 Engineers, Ltd.  
  
 Fluid thinking.<sup>®</sup>  
 www.jheng.com

JOB NO. 017-7628.001  
 SCALE 1" = 20'  
 THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE  
 DESIGNED TLK DRAWN CJAF CHECKED TAB  
 STATUS: SUBMITTED TO STATE  
 DATE: SEPTEMBER 2022  
 SHEET NO.  
**G-1.1**  
 5 OF 19

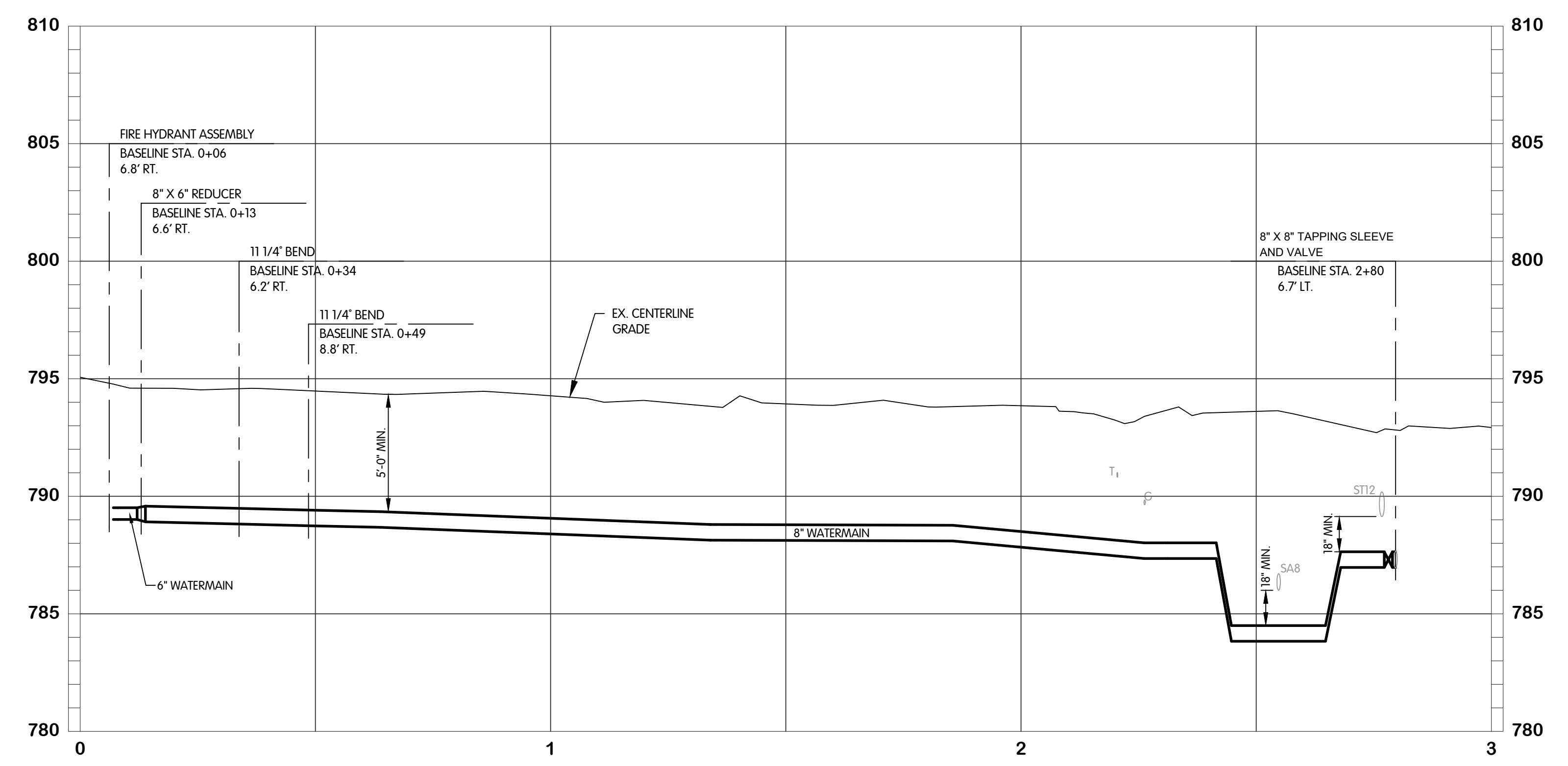


Item No.	Description	Estimated Quantity	Unit
8	Valve Box, Rem	1	EA
28	WM - 2", Rem	216	FT
29	WM - 4", Rem	32	FT
30	WM - 4" Cut & Cap	1	EA
31	WM - 8" D.I.	263	LF
34	Water Service	9	EA
35	Water Serv, Yard	8	EA
39	Fire Hydrant Assembly	1	EA
38	8" x 8" Tapping Sleeve and Valve	1	EA



**NEWTON CT.  
STA. 0+00 TO 3+00**

- NOTES:**
- EXISTING NON-COPPER WATER SERVICES TO BE REPLACED TO THE HOUSE WATER SERV. YARD.
  - FIELD VERIFY WATER SERVICE LOCATIONS.
  - WATER WORK SHALL CONFORM TO THE CITY OF KALAMAZOO STANDARD SPECIFICATIONS FOR WATER MAIN AND SERVICE INSTALLATION, 2021.



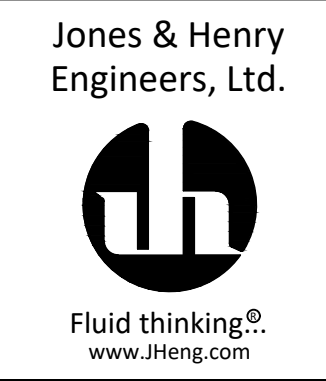
KAL-762800-001-NEWTON CT. WATERMAIN PLAN & PROFILE  
8/31/2022 9:17 AM - CFERRELL  
8/31/2022 9:38 AM

REVISIONS AFTER ISSUED FOR BID

DESIGNED	DRAWN	CHECKED
TLK	CJAF	TAB

STATUS: SUBMITTED TO STATE  
DATE: SEPTEMBER 2022

SHEET NO.  
**W-1.1**  
6 OF 19



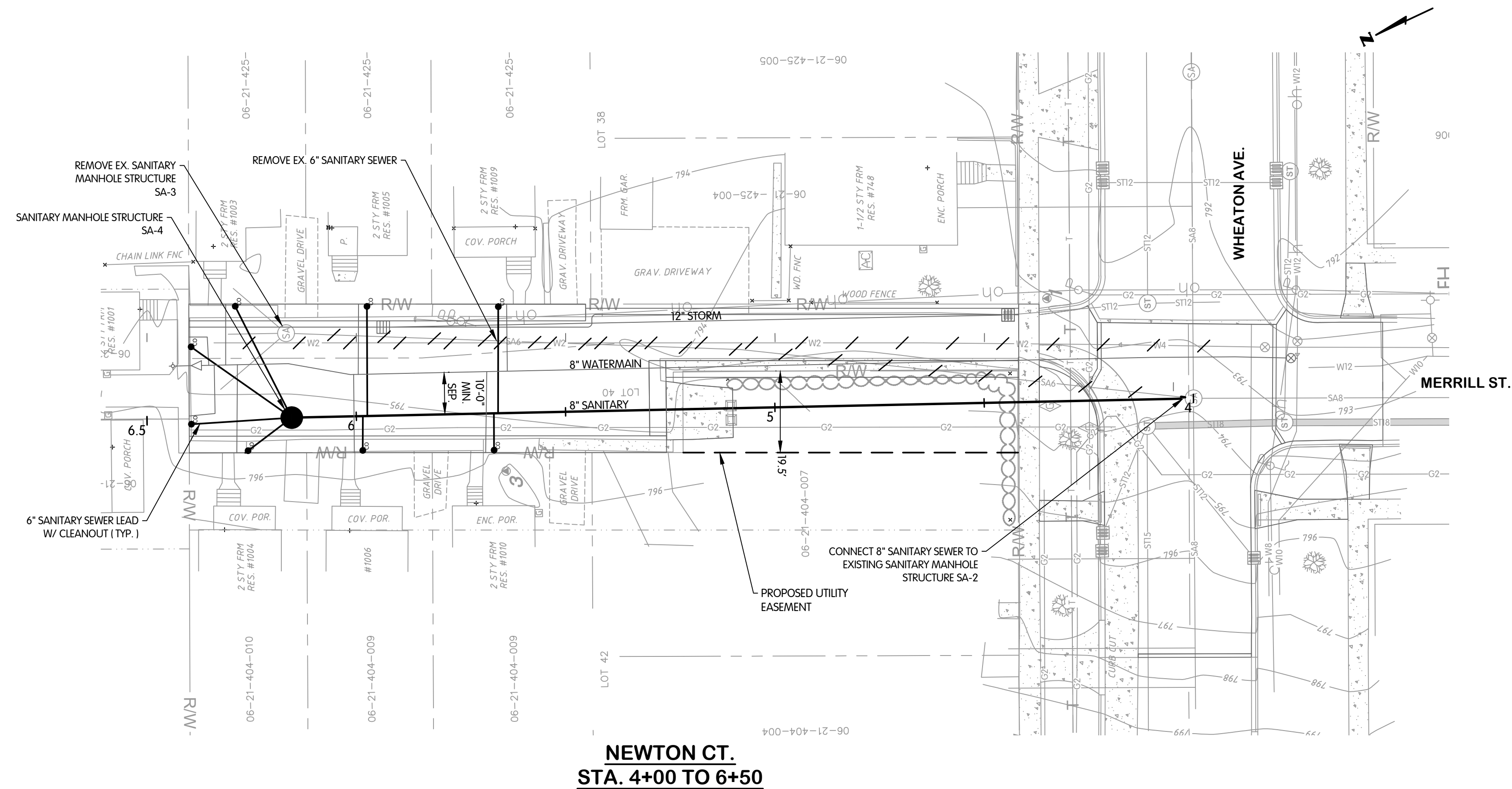
Jones & Henry  
Engineers, Ltd.

JOB NO. 017-7628.001

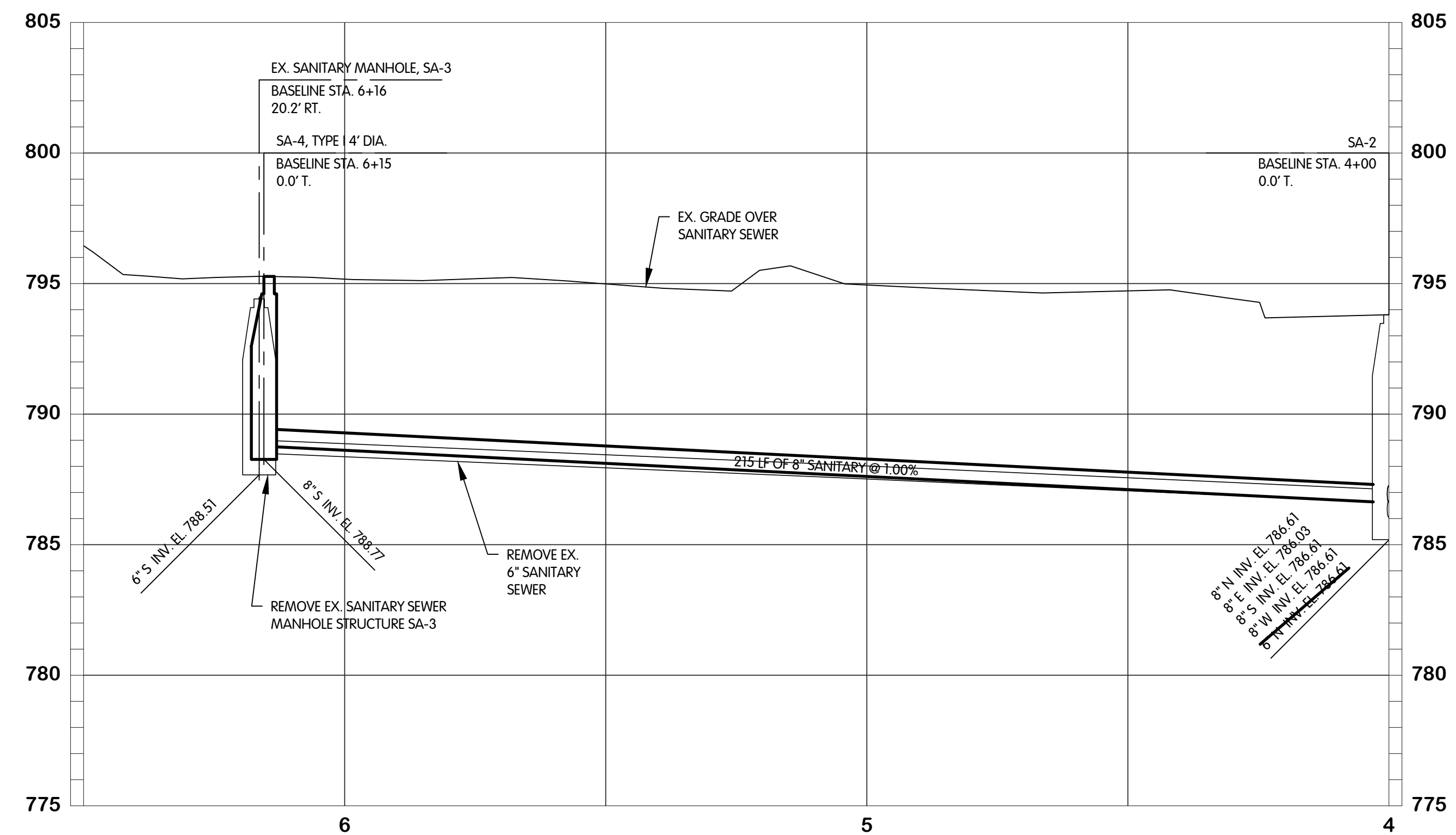
SCALE 1"=20'H, 1"=4'V

THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE

Item No.	Description	Estimated Quantity	Unit
41	SAN - 6" Sewer, Rem	217	FT
43	SAN - 8" SDR 26	215	FT
44	SAN - Service Connection	8	EA
45	SAN - Manhole, 4' Dia.	1	EA
46	SAN - Tie-In To Existing MH	1	EA

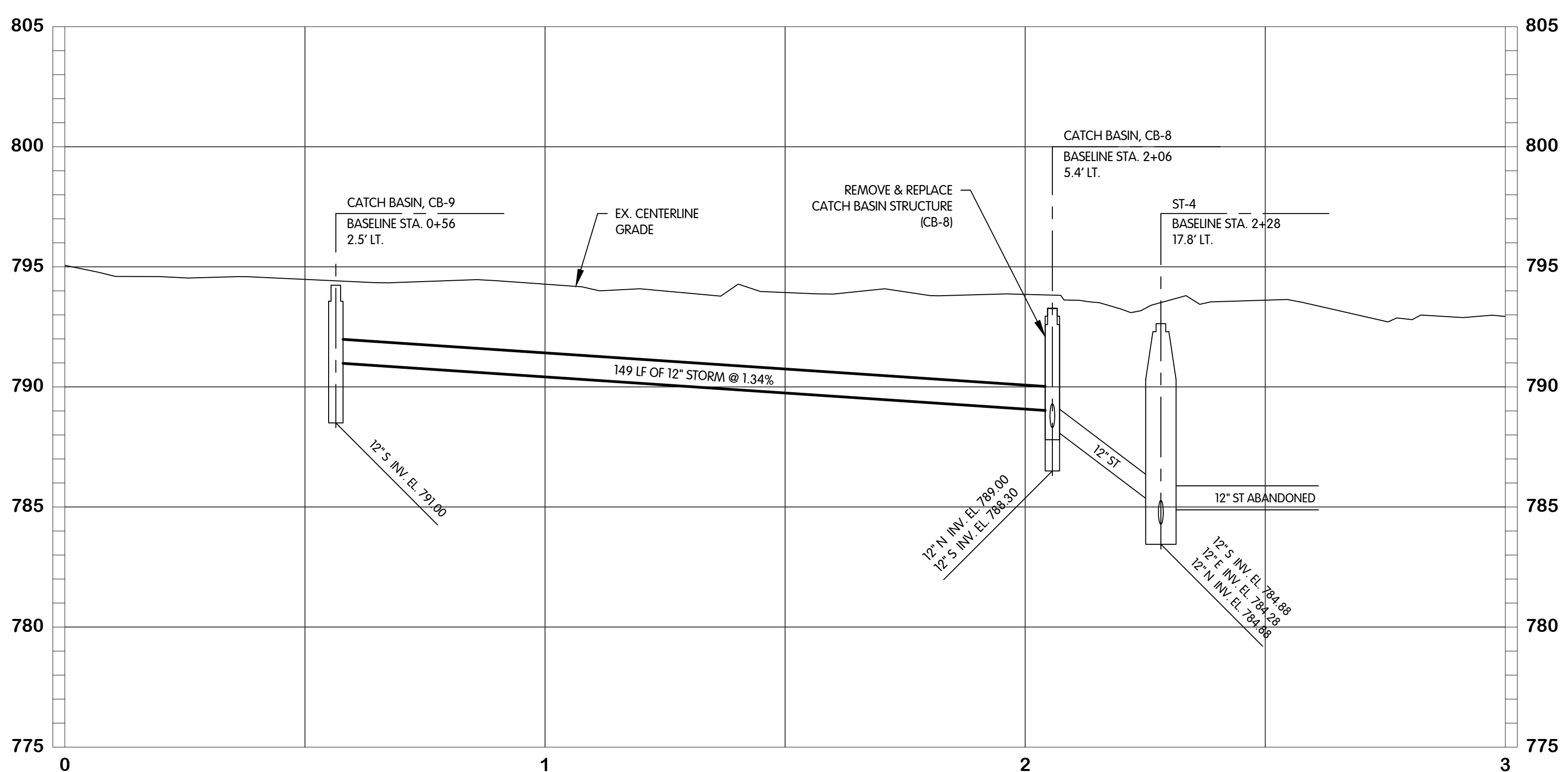
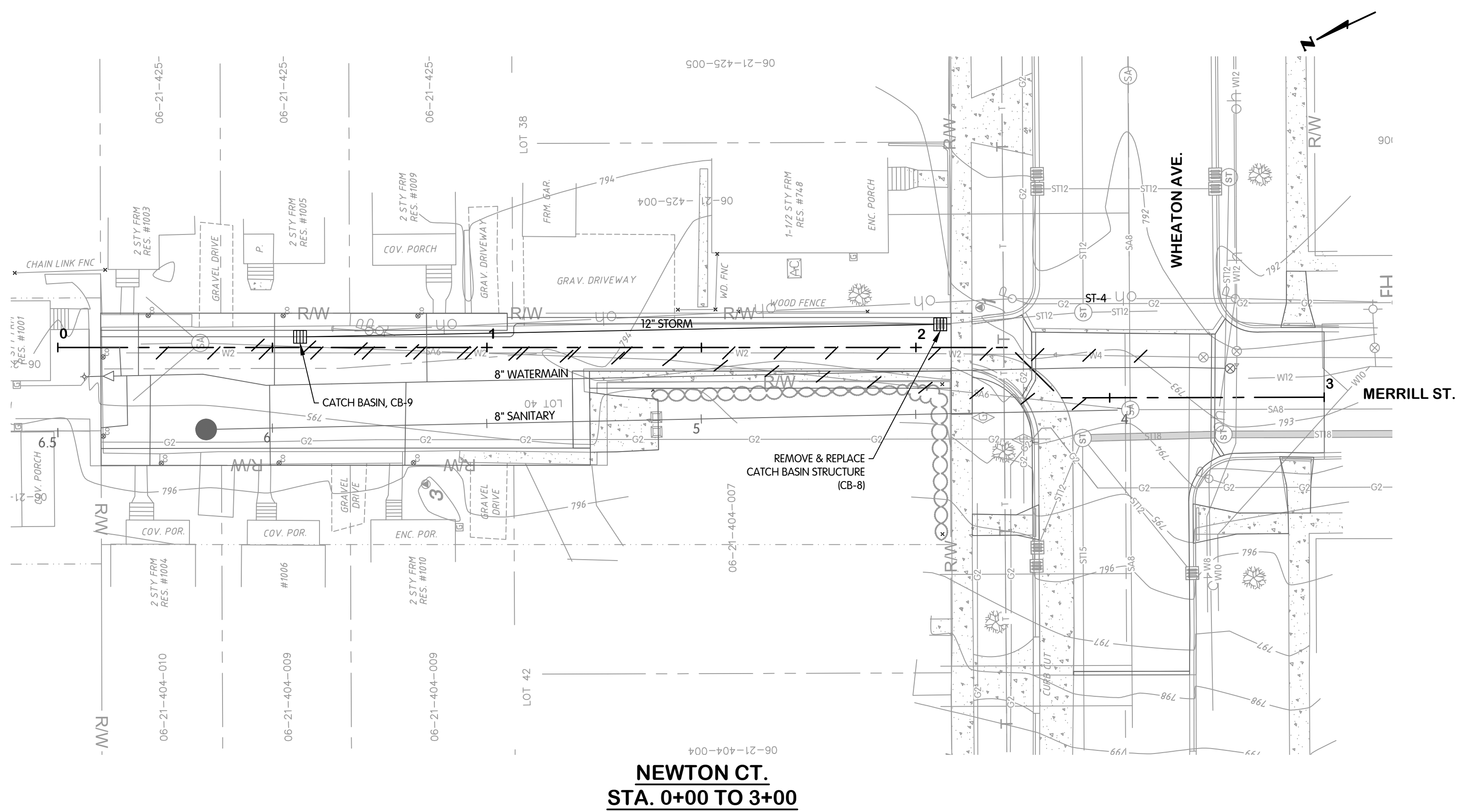


NOTE:  
1. FIELD VERIFY SANITARY SEWER CONNECTION LOCATIONS.





Item No.	Description	Estimated Quantity	Unit
48	Storm Sewer, 12"	147	FT
49	STORM - Catch Basin, 4' Dia.	2	EA



KAL-76280101-NEWTON CT. STORM PLAN & PROFILE  
 2/25/2021 12:32 PM - CFERRELL  
 8/31/2022 9:38 AM

REVISIONS AFTER ISSUED FOR BID  
 NO. DATE

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JOB NO. 017-7628.001  
 SCALE 1"=20'H, 1"=4'V  
 THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE  

DESIGNED	DRAWN	CHECKED
TLK	CJAF	TAB

 STATUS: SUBMITTED TO STATE  
 DATE: SEPTEMBER 2022

**NEWTON CT.  
SURFACE RESTORATION  
IMPROVEMENTS**

CITY OF KALAMAZOO, MICHIGAN - NEWTON CT, FELLOWS AVE, & BROWNELL CT

Jones & Henry  
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JOB NO. 017-7628.001

SCALE 1" = 10'

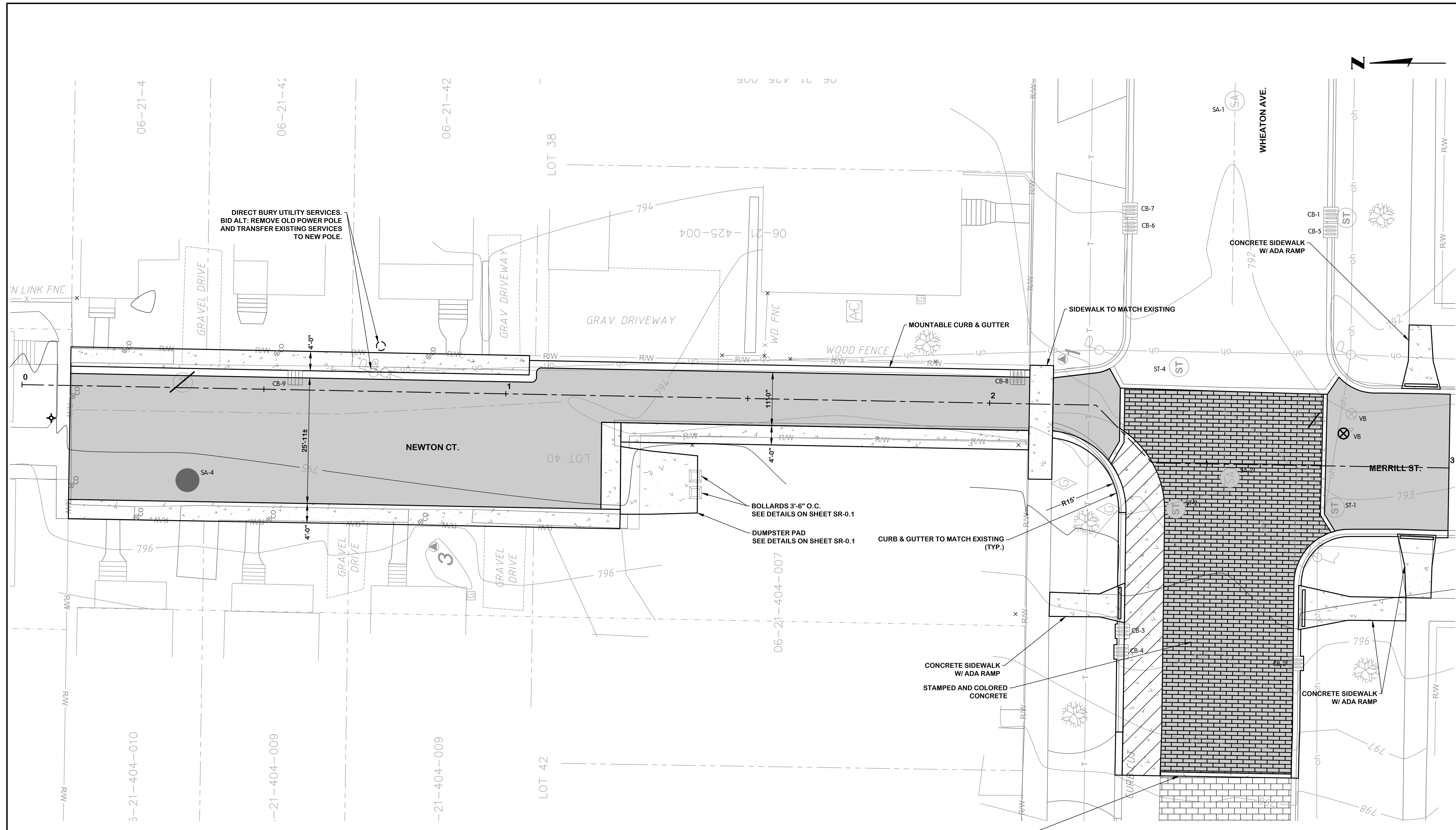
THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
TLK	CJAF	TAB

STATUS: SUBMITTED TO STATE  
DATE: SEPTEMBER 2022

SHEET NO.

SR-1.1  
9 OF 19



Item No.	Description	Estimated Quantity	Unit
13	Subbase, CIP	930	CY
14	Aggregate Base, 8", MDOT 21AA	831	SY
17	HMA MDOT 13A - 2" Leveling Course	56	TON
19	HMA MDOT 36A - 1.5" Top Course	43	TON
20	8" Brick Stamped Concrete Pavement	267	SY
21	8" Concrete Pavement	75	SY
22	Dumpster Pad	1	EA
23	Guardpost	2	EA
24	Sidewalk, Conc, 6"	926	SFT
25	Sidewalk Ramp, Conc, 6"	366	SFT
26	MDOT F4 Curb and Gutter	150	FT
27	Mountable Curb & Gutter	200	FT

**PAVEMENT LEGEND**

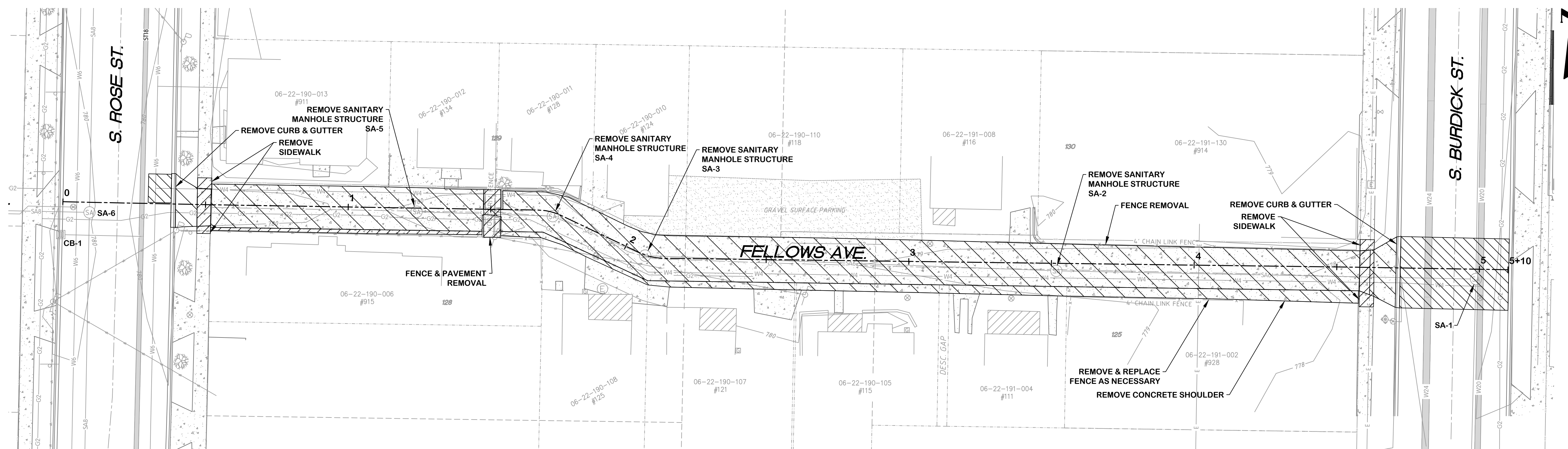
- PAVEMENT REPLACEMENT - SEE TYPICAL PAVEMENT SECTION ON SHEET SR-0.1
- CONCRETE PAVEMENT REPLACEMENT - SEE TYPICAL PAVEMENTS SECTION ON SHEET SR-0.1
- 6" CONCRETE SIDEWALK - SEE DETAILS ON SHEET SR-0.1
- STAMPED AND COLORED CONCRETE - SEE SPECIFICATION SECTION 02750

KAL-762800SR01-NEWTON CT. SURFACE RESTORATION  
2/25/2021 12:32 PM - CFERRELL  
9/31/2022 9:38 AM



FELLOWS AVE. GENERAL REMOVAL PLAN  
& EXISTING STRUCTURE DATA

CITY OF KALAMAZOO, MICHIGAN - NEWTON CT, FELLOWS AVE, & BROWNELL CT  
IMPROVEMENTS



Item No.	Description	Estimated Quantity	Unit
5	Pavt, Rem, Mod	822	SY
6	Sidewalk, Rem	24	SY
7	Curb & Gutter, Rem	35	LF
9	Fence Removal	200	FT
10	Structure, Rem	4	EA
11	Sawcutting	1	LSUM

EXISTING STRUCTURE DATA		
NAME	TYPE	DATA
SA-1	SANITARY MANHOLE	CASTING EL. 777.36 6" W INV. EL. 769.71 8" S INV. EL. 769.31 8" N INV. EL. 769.36
SA-2	SANITARY MANHOLE	CASTING EL. 778.65 6" W INV. EL. 771.90 6" E INV. EL. 771.90
SA-3	SANITARY MANHOLE	CASTING EL. 779.29 6" NW INV. EL. 773.34 6" E INV. EL. 773.34
SA-4	SANITARY MANHOLE	CASTING EL. 779.50 6" W INV. EL. 773.70 6" SE INV. EL. 773.70
SA-5	SANITARY MANHOLE	CASTING EL. 779.85 6" E INV. EL. 774.85
SA-6	SANITARY MANHOLE	CASTING EL. 780.00 8" N INV. EL. 771.45 8" S INV. EL. 771.45

EXISTING STRUCTURE DATA		
NAME	TYPE	DATA
CB-1	CATCH BASIN	CASTING EL. 779.56 12" E INV. EL. 775.55

**REMOVAL LEGEND**

- PAVEMENT REMOVAL
- TRENCH REPAIR - PAVEMENT REMOVAL
- SIDEWALK REMOVAL

NOTES:  
1. SEE W-2 & SA-2 SHEETS FOR REMOVAL OF WATER AND SANITARY PIPE.

REVISIONS AFTER ISSUED FOR BID  
BY  
DATE

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JOB NO. 017-7628.001

SCALE 1" = 20'

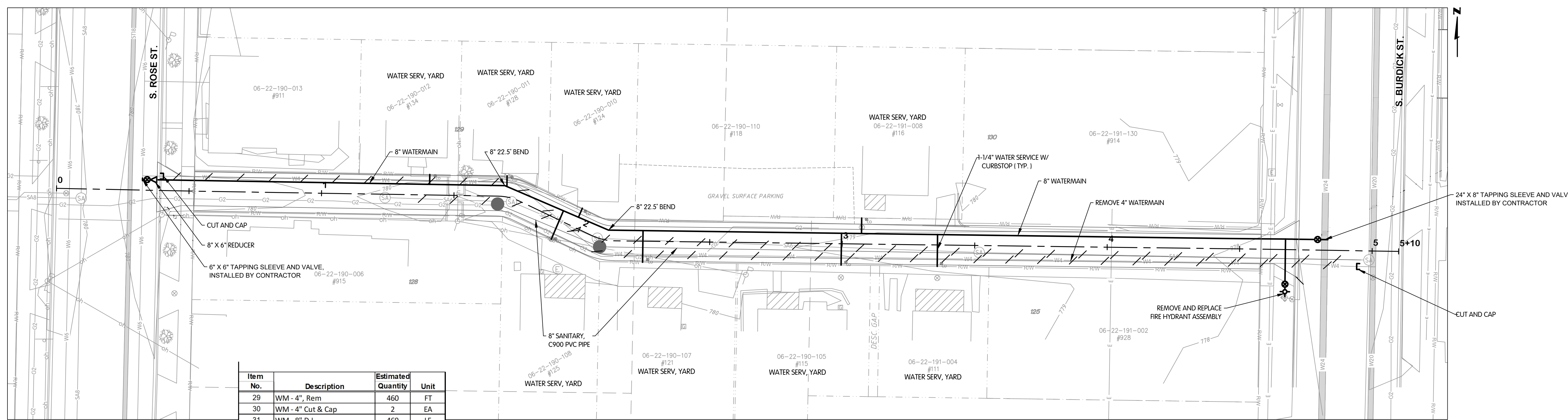
THIS LINE SCALES IF WHEN  
PLOTTED TO NOTED SCALE

DESIGNED TLK	DRAWN CJAF	CHECKED TAB
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STATUS: SUBMITTED TO STATE  
DATE: SEPTEMBER 2022

SHEET NO.  
**G-2.1**  
10 OF 19

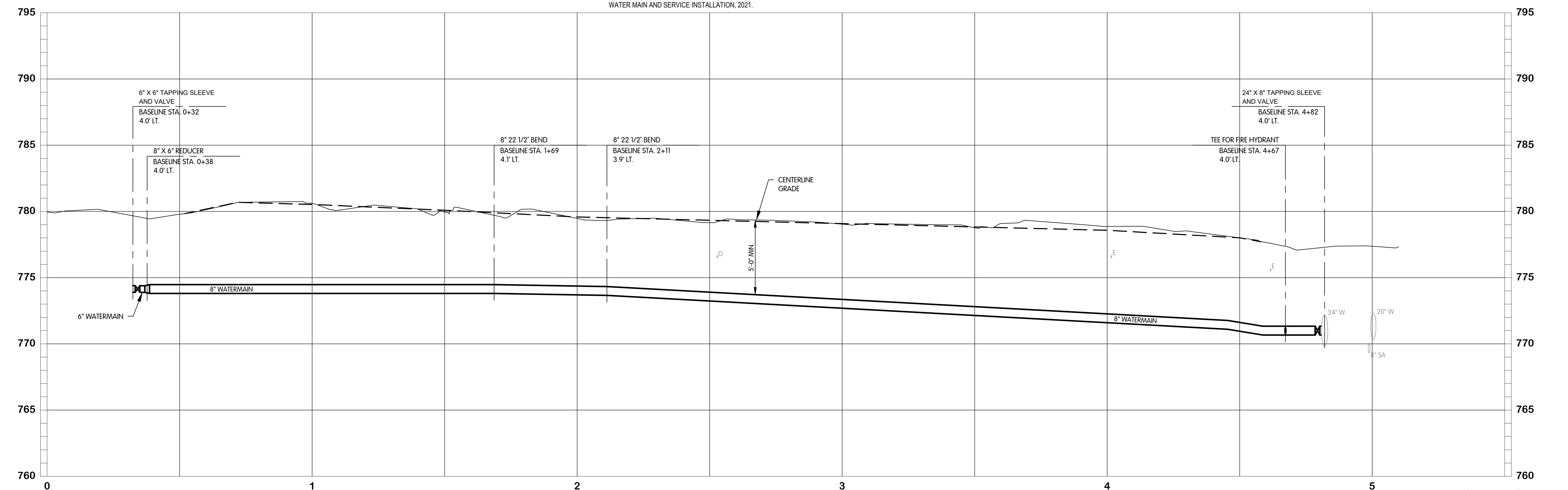




Item No.	Description	Estimated Quantity	Unit
29	WM - 4", Rem	460	FT
30	WM - 4" Cut & Cap	2	EA
31	WM - 8" D.I.	469	LF
34	Water Service	8	EA
35	Water Serv. Yard	8	EA
36	24" x 8" Tap	1	EA
39	Fire Hydrant Assembly	1	EA
37	6" x 6" Tapping Sleeve and Valve	1	EA
40	Fire Hydrant Removal	1	EA

**FELLOWS AVE.  
STA. 0+00 TO 5+10**


- NOTE:
- EXISTING NON-COPPER WATER SERVICES TO BE REPLACED TO THE HOUSE WATER SERV. YARD.
  - FIELD VERIFY WATER SERVICE LOCATIONS.
  - WATER WORK SHALL CONFORM TO THE CITY OF KALAMAZOO STANDARD SPECIFICATIONS FOR WATER MAIN AND SERVICE INSTALLATION, 2021.



KAL-762800-W2-FELLOWS AVE. WATERMAIN PLAN & PROFILE  
1/6/2023 1:56 PM - CFERRELL  
1/6/2023 1:57 PM

RESUBMITTED FOR PERMIT  
1/6/2023

BY \_\_\_\_\_  
REVISIONS AFTER ISSUED FOR BID  
NO. \_\_\_\_\_  
DATE \_\_\_\_\_

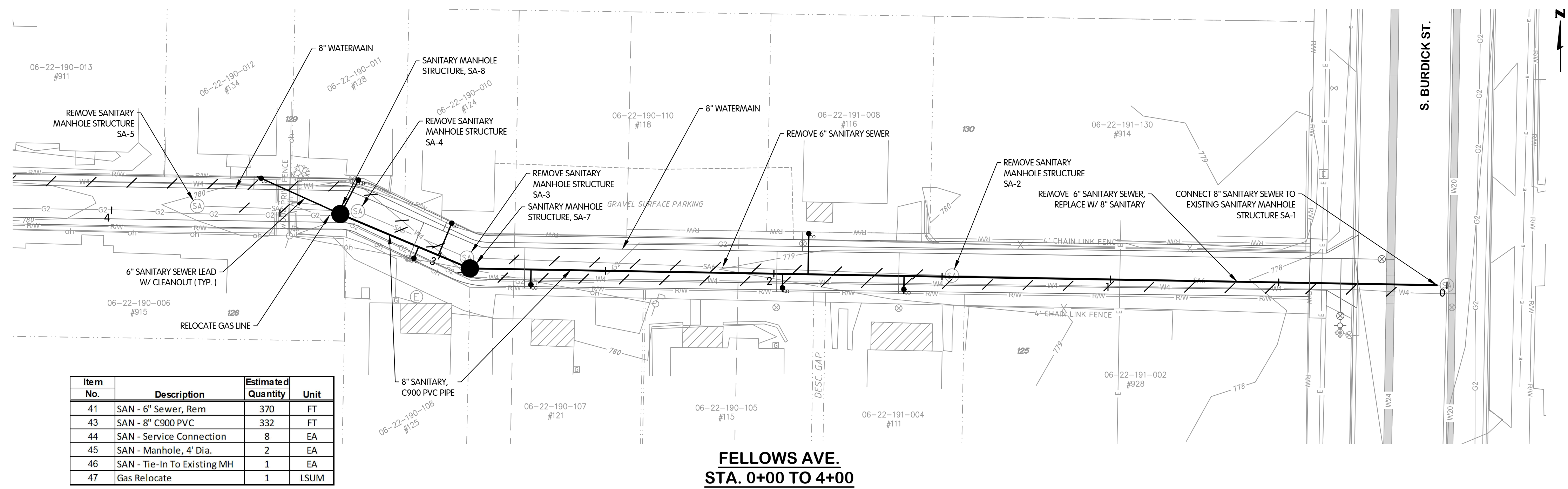
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Engineers, Ltd.  
  
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JOB NO. 017-7628.001  
SCALE 1"=20'H, 1"=4'V  
THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
TLK	CJAF	TAB

STATUS: SUBMITTED TO STATE  
DATE: SEPTEMBER 2022  
SHEET NO.

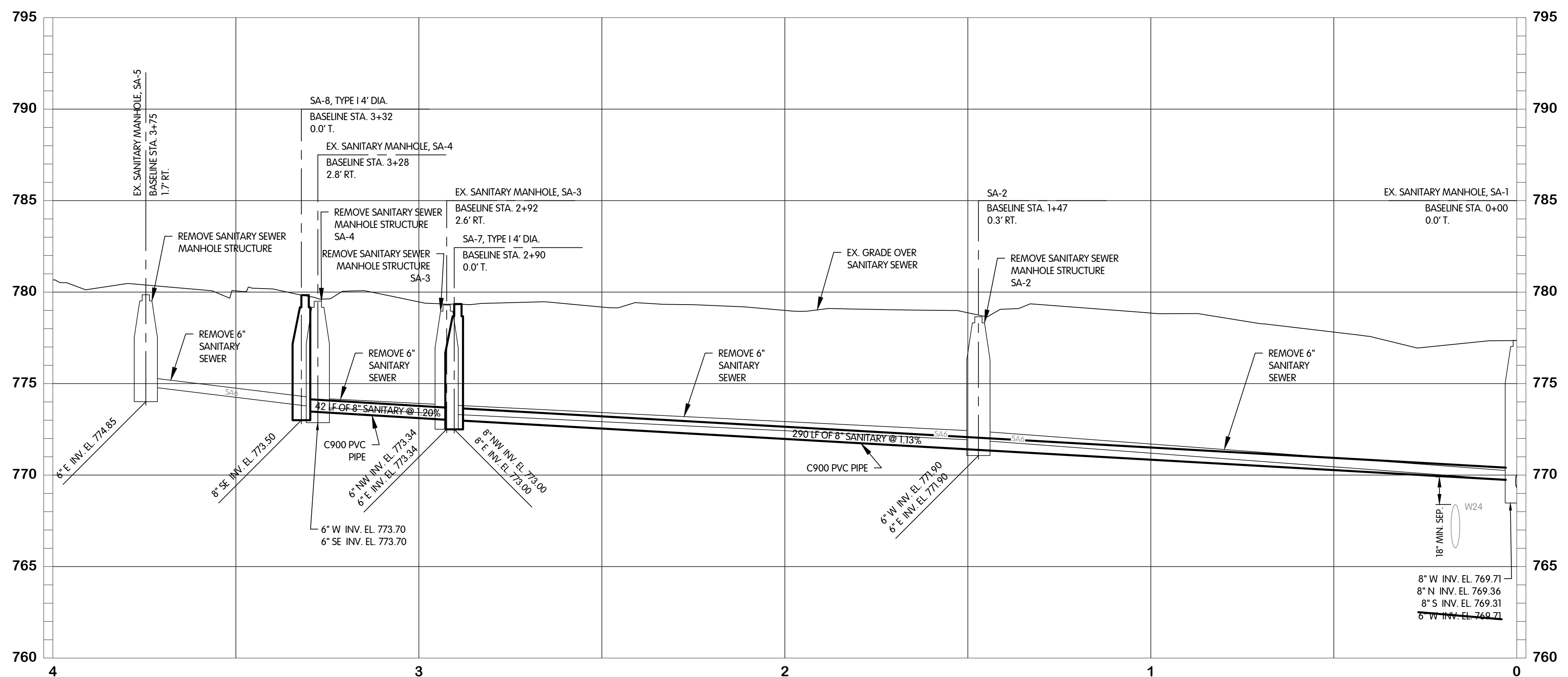




Item No.	Description	Estimated Quantity	Unit
41	SAN - 6" Sewer, Rem	370	FT
43	SAN - 8" C900 PVC	332	FT
44	SAN - Service Connection	8	EA
45	SAN - Manhole, 4' Dia.	2	EA
46	SAN - Tie-In To Existing MH	1	EA
47	Gas Relocate	1	LSUM


**FELLOWS AVE.  
STA. 0+00 TO 4+00**

NOTE:  
1. FIELD VERIFY SANITARY SEWER CONNECTION LOCATIONS.

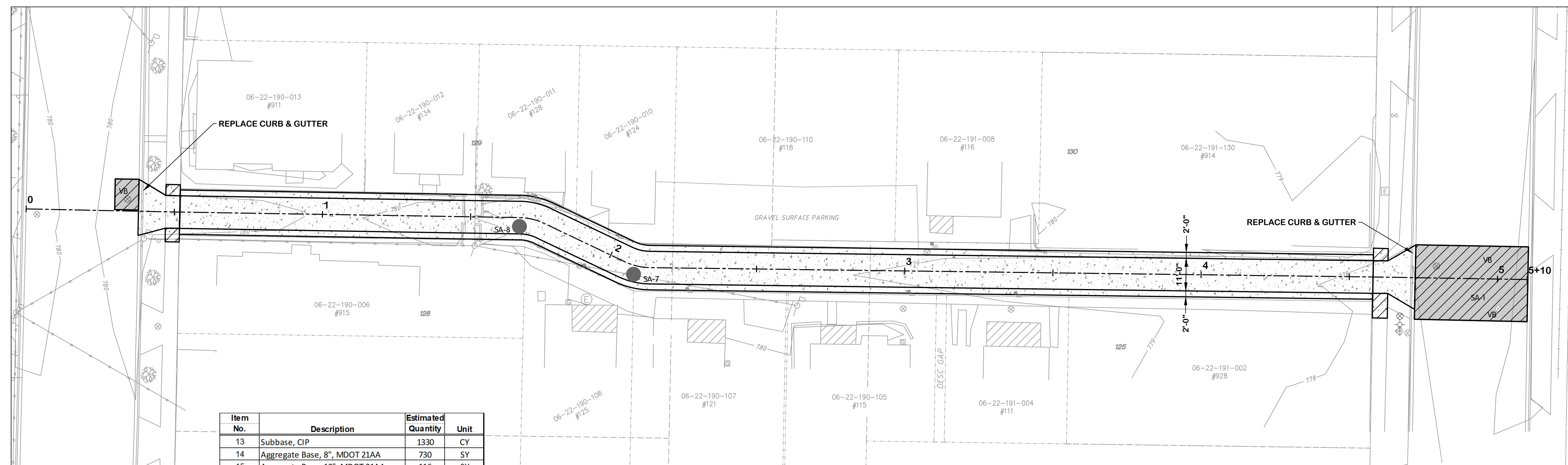


KAL-762600SA02-FELLOWS AVE. SANITARY PLAN & PROFILE  
1/6/2023 1:54 PM - CFERRELL  
1/6/2023 1:57 PM

RESUBMITTED FOR PERMIT  
1/6/2023

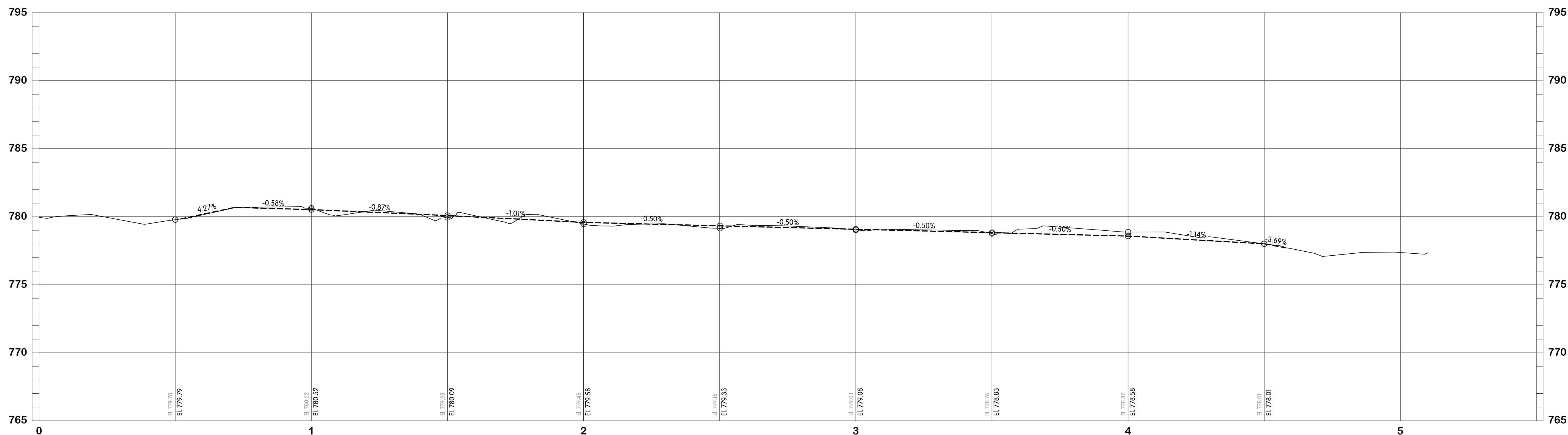
Jones & Henry  
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Fluid thinking.<sup>®</sup>  
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JOB NO. 017-7628.001  
SCALE 1"=20'H, 1"=4'V  
THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE  
DESIGNED TLK DRAWN CJAF CHECKED TAB  
STATUS: SUBMITTED TO STATE  
DATE: SEPTEMBER 2022  
SHEET NO.



Item No.	Description	Estimated Quantity	Unit
13	Subbase, CIP	1330	CY
14	Aggregate Base, 8", MDOT 21AA	730	SY
15	Aggregate Base, 12", MDOT 21AA	116	SY
16	MDOT P-NC Concrete, 6"	116	SY
18	HMA MDOT 13A - 1.5" Leveling Course	10	TON
19	HMA MDOT 36A - 1.5" Top Course	10	TON
21	8" Concrete Pavement	709	SY
24	Sidewalk, Conc, 6"	100	SFT
26	MDOT F4 Curb and Gutter	35	FT

**FELLOWS AVE.  
STA. 0+00 TO 5+10**



**PAVEMENT LEGEND**

- CONCRETE PAVEMENT REPLACEMENT - SEE TYPICAL PAVEMENTS SECTION ON SHEET SR-0.1
- CONCRETE SIDEWALK - SEE DETAILS ON SHEET SR-0.1
- TRENCH REPAIR - SEE DETAILS ON SHEET SR-0.1

DESIGNED: TLK  
DRAWN: CJAF  
CHECKED: TAB

STATUS: SUBMITTED TO STATE  
DATE: SEPTEMBER 2022

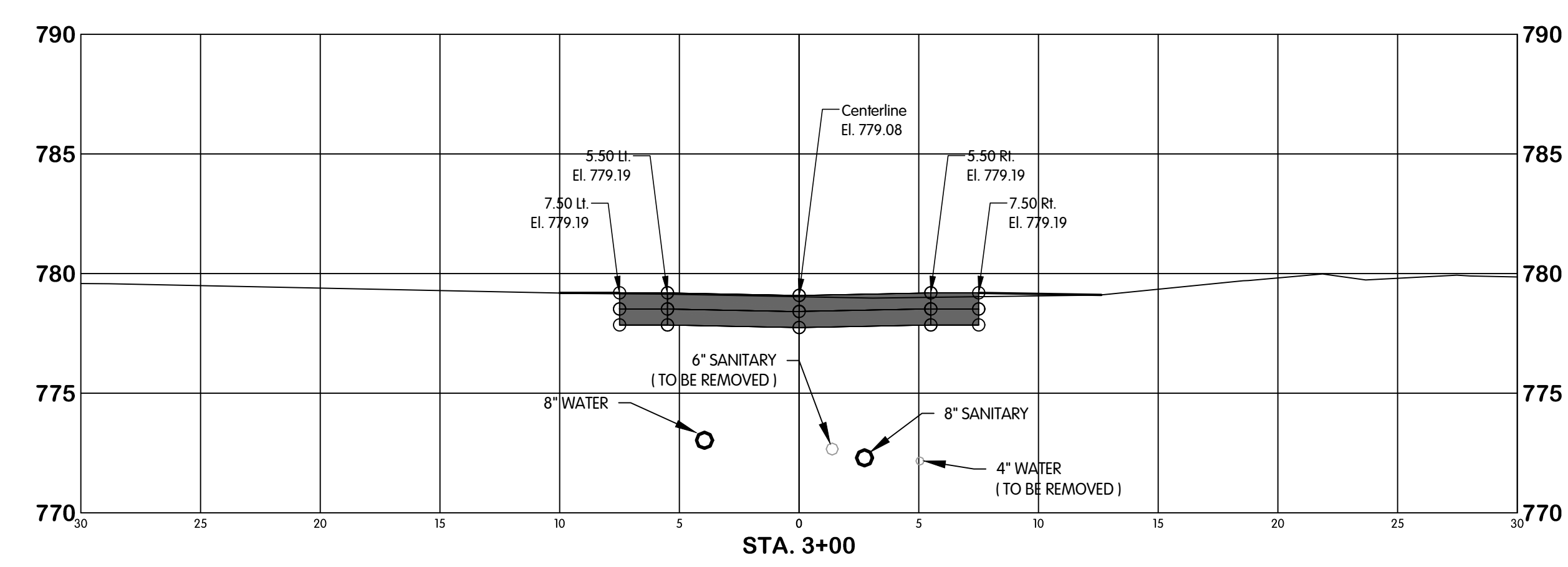
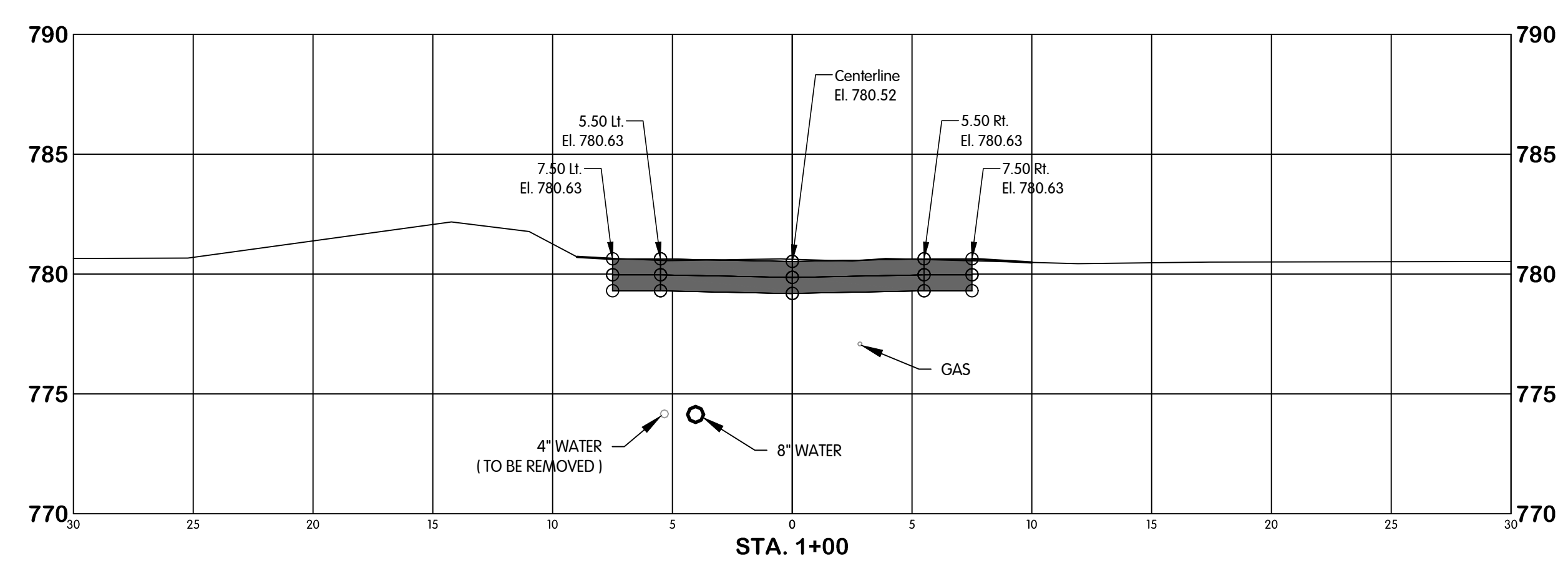
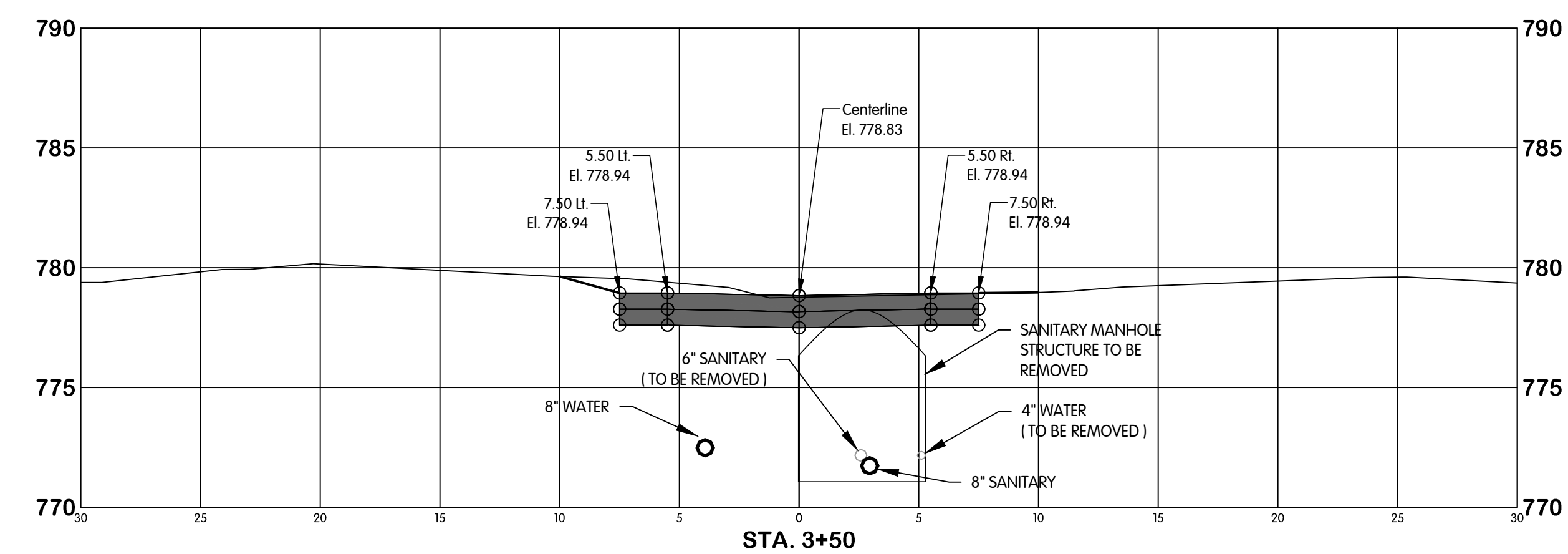
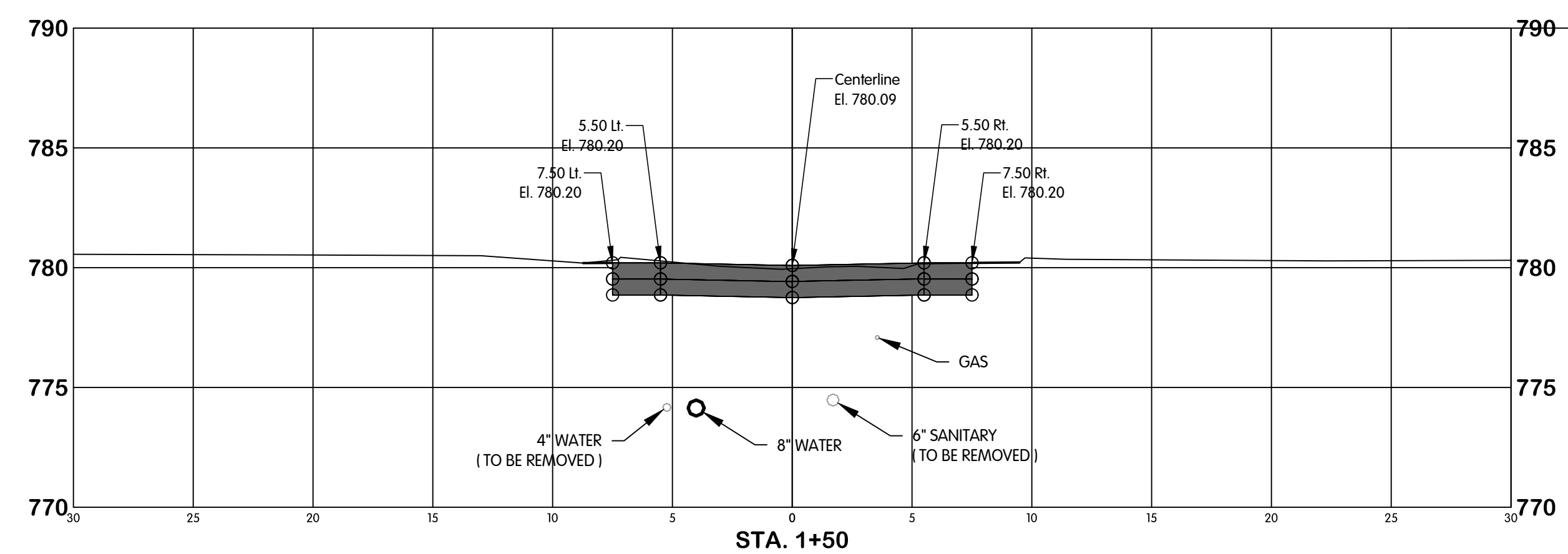
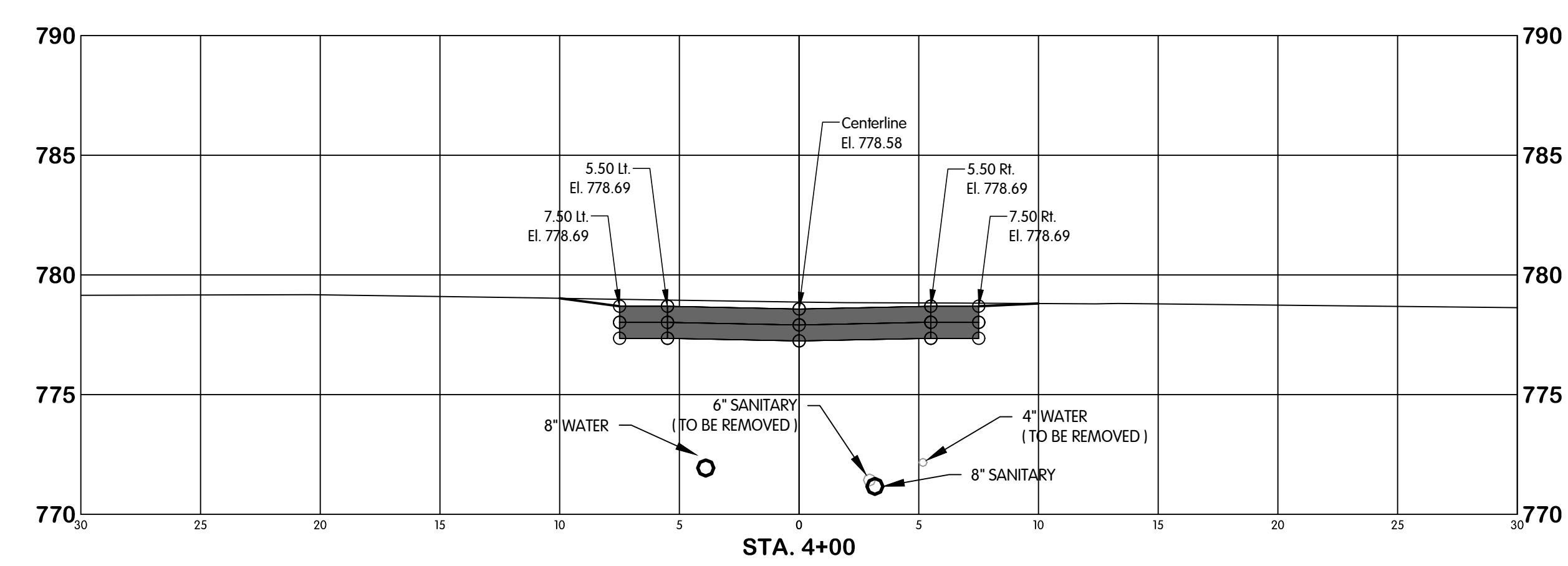
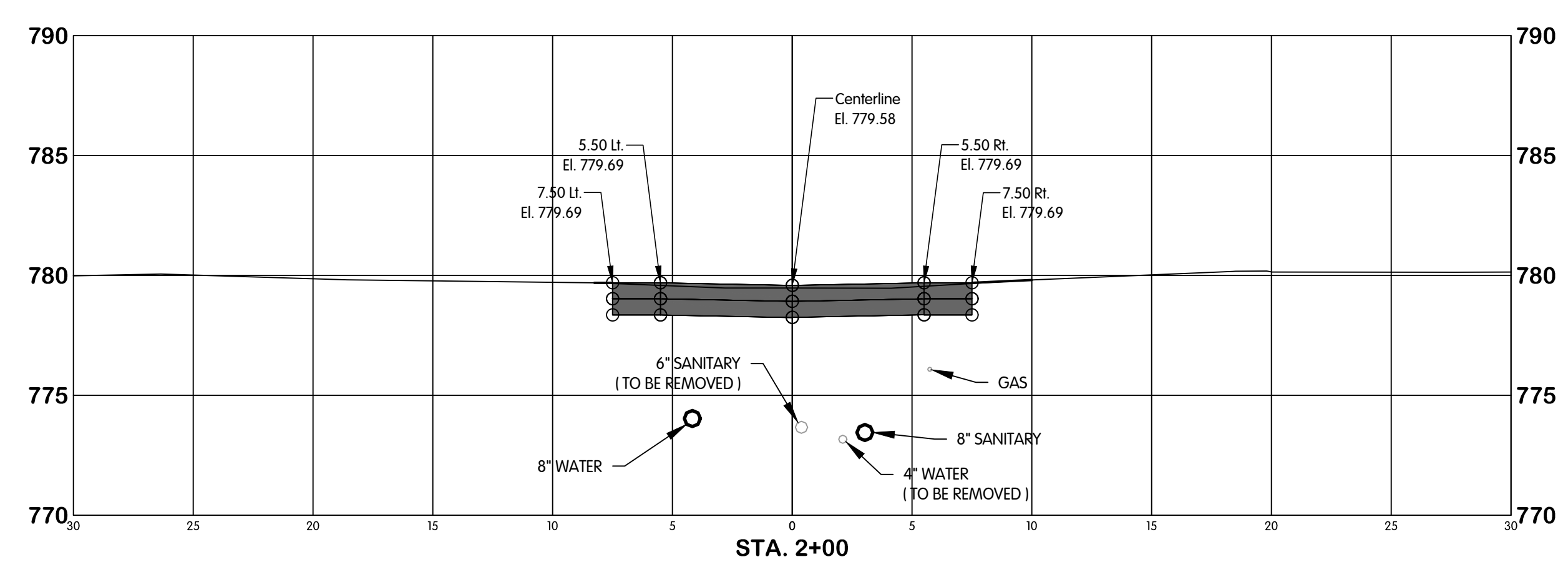
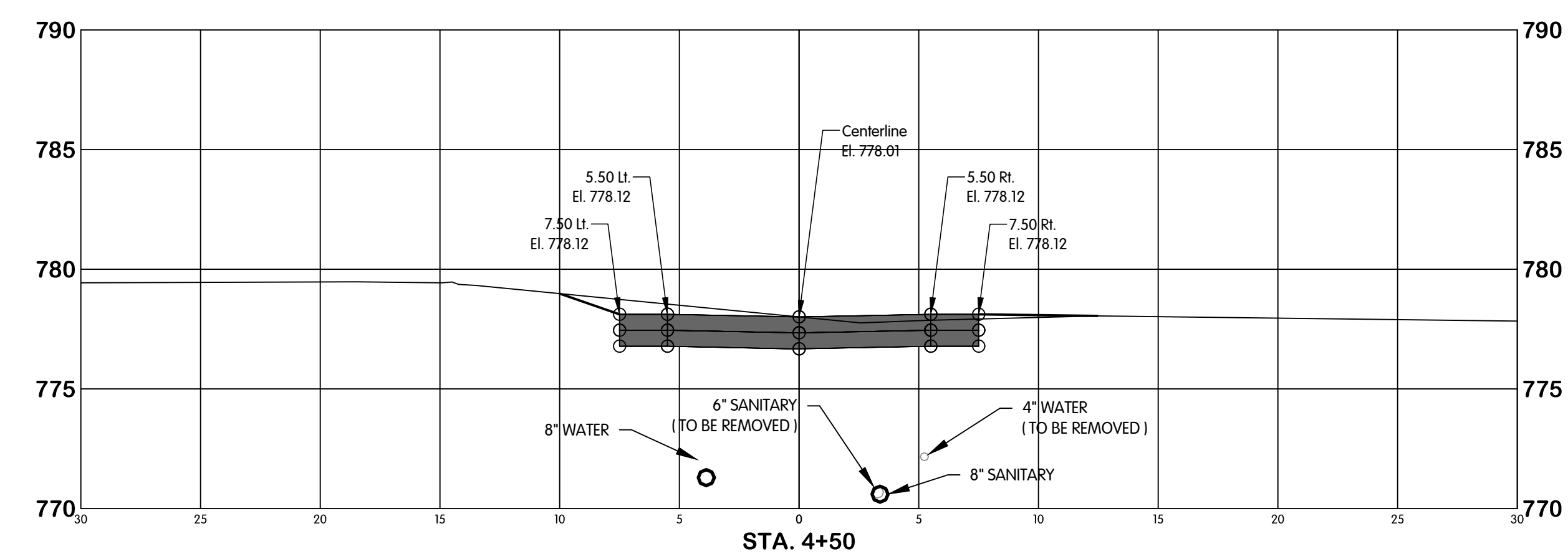
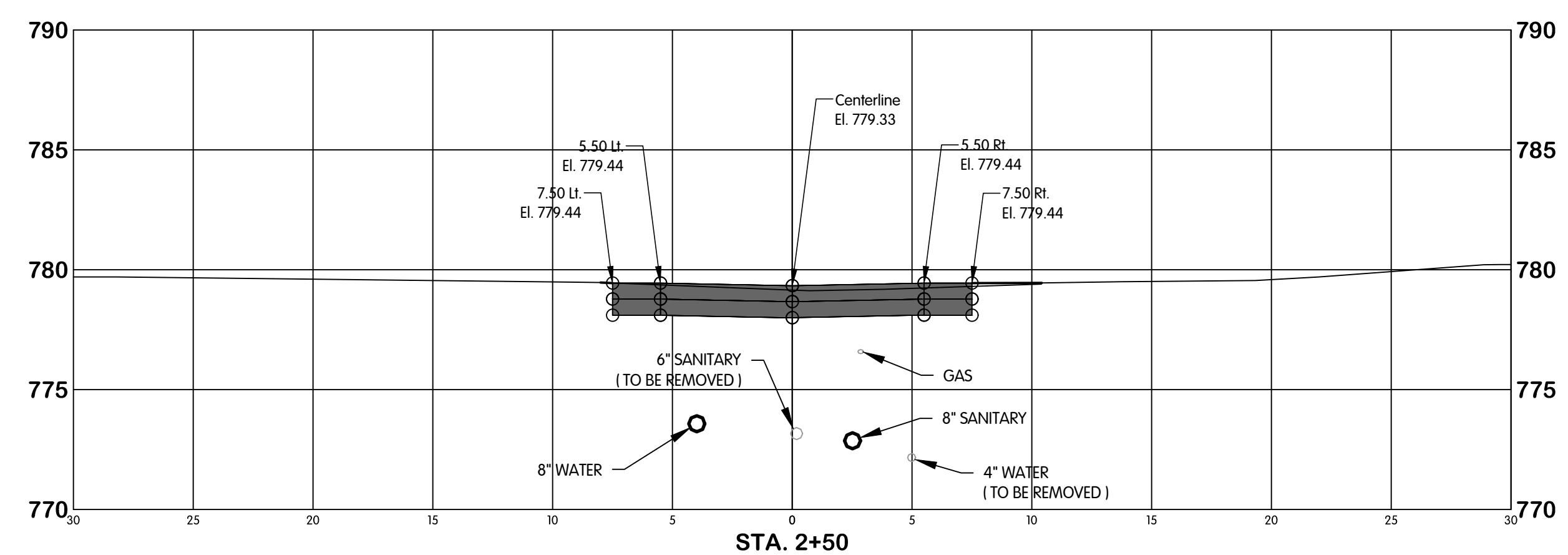
SHEET NO.  
**SR-2.1**  
13 OF 19

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JOB NO. 017-7628.001  
SCALE 1"=20'H, 1"=4'V  
THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE

NO. 1 2 3 4 5 6 7 8 9 10  
DATE  
BY  
REVISIONS AFTER ISSUED FOR BID





KAL-762800CS02-FELLOWS AVE. CROSS SECTIONS  
1/11/2021 3:20 PM - CFERRELL  
8/31/2022 9:39 AM

**APPENDIX E  
EGLE PERMIT**



**THE CITY OF KALAMAZOO  
DEPARTMENT OF PUBLIC SERVICES**

**EGLE PERMIT**

**NEWTON CT. & FELLOWS AVE.  
IMPROVEMENTS**

**Bid Reference #: 91350-006.0**

## PERMIT FOR WATER SUPPLY SYSTEMS

(Construction – Alteration – Addition or Improvement) as Described Herein  
*Required under the Authority of 1976 PA 399, as amended (Act 399)\**

### Water System Project:

Water Supply Name: KALAMAZOO  
Public Water Supply ID: MI0003520  
Project Name: Newton Ct & Fellows Ave Improvements  
Project Purpose: Replacement  
Project Location: Kalamazoo  
Project County: Kalamazoo



*This permit only authorizes the construction and/or alteration of the waterworks system as described below and detailed in the approved drawings and specifications in accordance with Part 13 of the Administrative Rules of Act 399.*

**ISSUED UNDER THE AUTHORITY OF THE DIRECTOR OF  
THE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY**

Reviewed by: Nathan Yutzky

Issued by: Nathan Yutzky

This permit expires if construction or alteration has not commenced by the expiration date, 2/16/2025, in accordance with R 325.11306.

Requests for extension of this permit may be made in [MiEHDWIS](#) Construction Permit Activity ACT-226060 or by contacting your EGLE representative.

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### Facilities Description:

Replacement of 4" water main on Newton ct. with approximately 263' of 8" ductile iron water main and installation of one hydrant

Replacement of 4" water main on Fellows Ave. with approximately 469' of 8" water main and the replacement of one hydrant

### Conditions:

It is a condition of this permit that the sanitary sewer being installed be pressure/leakage tested to demonstrate water tightness.

## Newton Ct & Fellows Ave Improvements Facilities

### Mains

Length (ft)	Size (in)	Material	Construction Type	Comments
263	8	DI	Replacement or Rehabilitation	Newton Court
469	8	DI	Replacement or Rehabilitation	Fellows Avenue

### Tanks

Volume (GL)	Tank Type	Construction Type	Comments
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### Wells

Diameter (in)	Depth (ft)	Capacity (GPM)	Pump Type	Construction Type	Comments
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### Pumps

Total Dynamic Head (TDH)	Capacity at TDH (GPM)	Pump Type	Number of Pumps	Construction Type	Comments
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### Treatment Processes

Construction Type	Treatment	Comments
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### Other Facilities

Type of Facility	Description
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\* This Act 399 Permit is issued under the authority of the Director of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and allows the construction and/or alteration of the water system as described herein in accordance with Part 13 of the Administrative Rules of Act 399.

The issuance of this permit does not authorize violation of any federal, state, or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other EGLE permits, or approvals from other units of government as may be required by law.

This permit expires if construction or alteration has not commenced by the expiration date indicated above in accordance with R 325.11306. Requests for extension of this permit can be made through MiEHDWIS or by contacting your EGLE representative.

Revisions of the approved plans and specifications must be done in accordance R325.11309.

Noncompliance with the conditions of this permit and the requirements of Act 399 constitutes a violation of the Act. Intentionally providing false information in this application constitutes fraud which is punishable by fine and/or imprisonment.

Where applicable for water withdrawals, the issuance of this permit indicates compliance with the requirements of Part 327 of Act 451, Great Lakes Preservation Act.



**APPENDIX F  
SPECIAL PROVISIONS**



**THE CITY OF KALAMAZOO  
DEPARTMENT OF PUBLIC SERVICES**

**SPECIAL PROVISIONS**

**NEWTON CT. & FELLOWS AVE.  
IMPROVEMENTS**

**Bid Reference #: 91350-006.0**

**CITY OF KALAMAZOO**

**SPECIAL PROVISION**

**FOR**

**Water Main Material Advance Purchase**

City of Kalamazoo

1 of 6

1/25/2023

**a. Description**

**General**

For the unit price per linear foot bid for the various water main, the Contractor shall do all work necessary to construct complete ready for service water main system and test the water main as shown on the plans and as specified, except for work which is specifically included under other contract items. All work shall be done in accordance with section 823 of the 2020 MDOT Standard Specifications for Construction and City of Kalamazoo Standard Specifications for Water Main and Service Installation 2021 available at kalamazoocity.org, unless otherwise specified herein.

**b. Materials**

Ductile Iron pipe, restrained joints, fittings, polyethylene encasement and associated appurtenances listed below shall be supplied new by the City of Kalamazoo from their selected supplier at no cost to the Contractor. The Contractor shall be responsible for coordinating delivery of materials by contacting the City's specified supplier a minimum of 10 working days prior to desired delivery. In advance of material delivery, a centralized delivery yard shall be established by the Contractor and agreed upon with the City and City's material supplier on or adjacent to the project site. The contractor shall supply any materials not explicitly listed below that are necessary to construct the project. These materials shall be incidental to construction. No second hand or salvaged materials shall be allowed or supplied. All supplied products shall be **"Buy American"** unless otherwise specified and shall comply with the conditions of this section.

Contractor shall review the plans and list of City supplied materials during bidding and throughout construction. If Contractor believes additional quantities will be required, Contractor shall immediately notify the City in writing, and the City shall provide the materials at no cost to the Contractor. City shall not be responsible for any downtime or construction delays associated with insufficient materials being available during construction as the Contractor shall notify the City of foreseen insufficient materials during the bid period. Contractor shall be responsible for all delays and downtime associated with Contractor supplied materials, and shall purchase, provide, and install materials not explicitly listed below that are necessary to construct the project as designed.

All City provided materials, not used during construction, shall be returned to the City within one week of water main and service installation completion, unless otherwise directed by the City's project manager. The Contractor shall be responsible for transporting any excess material from the project site to 415 E. Stockbridge Ave., Kalamazoo, MI. This includes, but is not limited to, partial and full sticks of pipe, partial and full rolls of copper (including tag ends of copper services), valves, fittings, gaskets, bolts, etc.

City provided materials shall be used efficiently and waste from cutting pipes, etc. shall be minimized. City provided materials shall be handled with care and protected from damage, vandalism and thievery. City shall not be responsible for providing additional materials due to theft or mishandling by contractor.

Contractor shall wash the inside of all pipe and fittings with chlorinated water (maximum 200 ppm chlorine solution) immediately prior to placement in the trench. Water pressure and velocity during washing shall not exceed manufacture's recommendations or damage the pipe or fittings.

Contractor shall provide 2 year warranty as described in the City of Kalamazoo Standard Specifications for Water Main and Service Installation. Warranty shall cover all City and Contractor provided parts and materials; and associated contractor labor costs.

Contractor and Engineer shall track City provided material delivery and usage on a daily basis.

Unit pricing is included below for the for the City's procurement of materials for the Contractor to account for sales and use tax per the Michigan Department of Treasury RAB 2016-18. Sales and use tax pricing shall be included in the major items of work.

ITEM	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
6X6-INCH TAPPING SADDLE WITH VALVE	1	EA	\$1,824.17	\$1,824.17
8X8-INCH TAPPING SADDLE WITH VALVE	1	EA	\$2,691.21	\$2,691.21
24X8-INCH TAPPING SADDLE WITH VALVE	1	EA	\$3,147.76	\$3,147.76
DIP 6 INCH	20	FT	\$24.98	\$499.60
DIP 8 INCH	780	FT	\$35.25	\$27,495.00
8" 11.25 DEG BEND	2	EA	\$145.00	\$290.00
8" 22.5 DEG BEND	2	EA	\$159.00	\$318.00
8" 45 DEG BEND	8	EA	\$162.00	\$1,296.00
8" SOLID SLEEVE	2	EA	\$159.00	\$318.00
8"X6" REDUCER	2	EA	\$133.00	\$266.00
8"X6" TEE	1	EA	\$251.00	\$251.00
4" CAP	6	EA	\$42.00	\$252.00
4" PLUG	6	EA	\$54.00	\$324.00
4" MEGA LUGS W/ GASKET AND BOLT KIT	6	EA	\$48.00	\$288.00
6" MEGA LUGS W/ GASKET AND BOLT KIT	10	EA	\$56.00	\$560.00
8" MEGA LUGS W/ GASKET AND BOLT KIT	40	EA	\$75.00	\$3,000.00
8" FIELD LOCKING GASKET	21	EA	\$126.70	\$2,660.70
6" GATE VALVE	2	EA	\$794.00	\$1,588.00
HYDRANT	2	EA	\$3,634.00	\$7,268.00
VALVE BOX	5	EA	\$257.83	\$1,289.15

ITEM	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
8"x1" SADDLE	16	EA	\$ 30.05	\$ 480.80
1.25" SERVICE BRASS - STREET REDUCING	16	EA	\$ 256.61	\$ 4,105.76
1.25" COPPER	480	FT	\$ 9.90	\$ 4,752.00
0.75" SERVICE BRASS - YARD	16	EA	\$ 107.92	\$ 1,726.72
0.75" COPPER	480	FT	\$ 6.03	\$ 2,894.40
CURB BOX	16	EA	\$ 124.10	\$ 1,985.60
<b>TOTAL PRICE</b>			<b>\$</b>	<b>71,571.87</b>

**Item 1.25" SERVICE BRASS – STREET REDUCING:** Shall include one each of the following parts per the Standard Specifications.

Part	Ford #	AY McDonald #
1" CC x 1.25" FC Corporation Stop	FB600-45-NL	74701B - NL, 5142-321
1.25" FCxFIP Curb Stop	B21-555-NL	76102 W - NL, 5142-356
0.75" x 1.25" Bushing	C18-35-NL	72206 D - NL; 5429-036
0.75" MIPxFC	C28-33-NL	74753 - NL, 5120-139

**Item 1.25" SERVICE BRASS – STREET:** Shall include one each of the following parts per the Standard Specifications.

Part	Ford #	AY McDonald #
1" CC x 1.25" FC Corporation Stop	FB600-45-NL	74701B, 5142-013
1.25" FCxFC Curb Stop	B22-555-NL	76100, 5142-340

**Item 0.75" SERVICE BRASS – YARD:** Shall include one each of the following parts per the Standard Specifications.

Part	Ford #	AY McDonald #	Apollo
Angle Valve, 0.75" FC x 5/8" MC	BA23-331W-NL	74642B, 5143-195	-
Meter Connector, 5/8" MC x 0.75" MIP	C38-13-2-188-NL	74620, 5124-065	-
0.75" Ball Valve	-	-	77FLF-104-01

**Item 1.25" SERVICE BRASS – YARD:** Shall include one each of the following parts per the Standard Specifications.

Part	Ford #	AY McDonald #	Apollo
1.25" FCx1"MC Angle Valve	KV23-454W-NL	-	-
Meter Connector, 1" MCx1" MIP	C38-44-2-625-NL	74620, 5124-111	-
1" Ball Valve	-	-	77FLF-105-01

**Item 2" SERVICE BRASS:** Shall include a 2"x5½" brass nipple, tapping valve, and coupling per the Standard Specifications.

**c. Measurement and Payment**

1. Payment for Water Mains shall be measured based on the sizes and trench details required, along the centerline of the pipe, with no deductions for fittings. The unit price of Water Main, DI, includes the cost of the following:
  - a. Excavation and backfill;
  - b. Dewatering operations (trench and/or pipe), including pretreatment to remove sediment;
  - c. Provide temporary water system to maintain service during construction;
  - d. Hydrostatic testing;
  - e. Disinfecting and flushing the water main and bacteriological testing;
  - f. All material **not supplied** by the City, labor and equipment necessary to remedy an unsatisfactory hydrostatic test, including removing and replacing any backfill;
  - g. Installing fittings, gaskets, bracing or sheeting, blocking and miscellaneous items for installing pipe and reconnecting to the existing Municipal system
  - h. Preparing and providing as-constructed plans within two weeks of water main completion, including autocad(dwg), shapefile, excel or CSV file(s) with coordinates of valves, valve boxes, fittings, hydrants, taps, curb stops and water main pipe (at 60 foot intervals). Michigan State Plane South Coordinate System shall be used and grid to ground scale shall be noted. Accuracy shall be sub-foot.
2. The City of Kalamazoo may withhold payment and/or final acceptance until the City of Kalamazoo accepts the as-built plans.
3. The cost of dewatering of trenches, pipe, or both associated with alterations to the Municipal Water System, is included in the unit price for relevant items of work.
4. The cost of excavating, disposing of excess material, and providing, placing, and compacting the backfill, is included in the unit price for related items of work.
5. The cost of removing or abandoning existing water mains, gate valve boxes, and other appurtenances to provide clearance for the proposed water main or roadway, is included in the unit price for relevant items of work.

The Contract Items included under this category of "Water Main and Fittings", "Water Services", and "Meter Vault" are as follows:

<u>Pay Item</u>	<u>Pay Unit</u>
WM – 4” Cut & Cap	Each
WM – 8” D.I.	Foot
WM – 6” D.I.	Foot
Water Service	Each
Water Service, Yard	Each
Fire Hydrant Assembly	Each

The cost of excavating, disposing of excess material, and providing, placing and compacting the backfill, is included in the unit price for related items of work.

The cost of removing or abandoning existing water mains, valve boxes, and other appurtenances to provide clearance for the proposed water main or roadway, is included in the unit price for relevant items of work.

The cost for dewatering of trenches, pipe, or both associated with alterations to the Municipal Water System is included in the unit price for relevant items of work.

Payment for Water Main, \_\_inch, Cut and Plug includes the cost of cutting the existing water main, and placing the required plugs and thrust blocks.

Payment for the installation of Compact Ductile Iron Fittings shall be included in the pay item WM – \_” D.I.