

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Eric Rakers, P.E., City Engineer
Date: January 8, 2024

RE: **Consideration and possible action on updates to 2024 General Conditions and Standard Specifications**

Listed in this memo are proposed updates to the City of De Pere's 2024 General Conditions and Standard Specifications. Specifications need to be updated on a regular basis to accommodate changes in the industry, as well as improving the clarity of the documents. The last update was completed in January 2022. There are several changes to the document. Listed below is a summary of the major changes to the specifications.

Section 00 70 00 – General Conditions

- 1) Under EXTRA WORK
 - a. Added language limiting the amount a prime contractor can markup on extra work completed, that is not included in a bid item, by a subcontractor to 5%.
- 2) Under LIQUIDATED DAMAGES
 - a. Increased the liquidated damages approximately 10%

Section 01 45 23-10 – Testing & Inspection of Pipeline & Appurtenances

- 1) Removed the lamping requirements and references throughout the section.
- 2) Under Section 1.2 References, removed ASTM C628 which is the standard method for the low-pressure air test of vitrified clay pipe.
- 3) Under Section 3.4 Televising Gravity Pipelines, updated Section D to eliminate the requirement for hard copy reports. Contractors will submit electronic reports.
- 4) Under Section 3.5 Deflection Test for Gravity Pipelines That Are Not Reinforced Concrete Pipe, has been updated as follows:
 - a. Include the requirements for Polypropylene (PP) pipe.
 - b. Allow mandrel tests to be completed prior to 30 days if approved by the Engineer.
 - c. Require testing prior to installing Inserta Tees.

Section 31 05 10 – Soils and Aggregates for Earthwork

- 1) Added the specifications for Bentonite Clay as an engineered soil along with the need to provide technical data sheets for any engineered soil used on a project.

Section 32 12 16 – Asphaltic Concrete Pavement

- 1) Under Section 3.1, Surface Preparation, updated the tack coat application rate from 0.025 gallons per square yard to between 0.05 and 0.07 gallons per square yard to match the WisDOT standard.

Section 32 13 13 – Portland Cement Concrete Pavement

- 1) Under Section 1.4, Quality Assurance/Quality Management, updated the testing being done by the City for large quantity projects.

Section 32 16 13 – Concrete Curb and Gutter

- 1) Under Section 3.7, Placing Concrete
 - a. Under Section E, updated the requirement to use mechanical vibration for all concrete curb and gutter placed with a slump of 2 inches or less.
 - b. Under Section F, updated that contraction joints can be created by sawing or forming a plane of weakness.

Section 32 16 20 – Concrete Sidewalks and Driveways

- 1) Under Section 3.6, Concrete, B., 7., added the requirement that all concrete 8" thick or greater be consolidated with mechanical vibration.

Section 33 00 02 – PVC Pipe and Fittings

- 1) Under Section 1.4, Quality Assurance, added language that the Engineer may extend the date of production of pipe up to 12 months if properly stored.

Section 33 00 03 – HDPE Pipe and Fittings

- 1) Under Section 1.4, Quality Assurance, updated language to match PVC pipe and fitting for date of production, defects, and pipe marking.

Section 33 00 05 – Double and Triple Walled Polypropylene Pipe

- 1) This is an entirely new section. Polypropylene is a pipe that the City has been using for storm sewer for several years. A special provision was included with each project manual when allowed.

Section 33 11 00 – Water Distribution Systems

- 1) Under Section 2.2, Hydrants, Section Q, deleted Mueller A-423 as an acceptable hydrant.
- 2) Under Section 2.3, Valves,
 - a. Under Section A. General, eliminated push-on joints.
 - b. Under Section D, Valve Boxes, added Sigma as an accepted manufacturer.
- 2) Under Section 2.6, Water Services D, Tapping or Service Saddles, added Smith Blair Model 372 as an accepted manufacturer.

Section 33 31 00 – Sanitary Sewer Systems

- 1) Under Section 2.2, Transition Couplings, added Maxadapter as an accepted manufacturer.
- 2) Section 3.1, Gravity Sewer Installation
 - a. Under D. Manholes, 1., f., 1), removed the requirement to mortar the joints on the inside of the manhole.
 - b. Under E. Sewer Services, 1., g., added that the clay dam needs to be made of bentonite.

- 3) Under Section 3.5, Tracer Wire, updated that the tracer wire for the sewer can be brought to the surface on the curb stop or in a tracer wire box.

Section 33 41 00 – Storm Sewer Systems

- 1) Under Section 2.1, Pipe, added the use of polypropylene pipe for storm sewer.
- 2) Under Section 2.2, Transition Couplings, added Maxadapter as an accepted manufacturer.
- 3) Under Section 3.1, Gravity Sewer Installation, D. Manholes, 1., f., 1), removed the requirement to mortar the joints on the inside of the manhole.
- 4) Under Section 3.5, Tracer Wire, updated that the tracer wire for the sewer can be brought to the surface on the curb stop or in a tracer wire box.

Standard Detail Updates

- 1) Updated C-1 – Residential Concrete Driveways – Updated for new driveways widths in the zoning code.
- 2) Updated C-2 – Duplex Driveway – Updated to eliminate the need for the small strip of landscaping between drives in the right of way.
- 3) Updated C-5 – Concrete Curb, Curb and Gutter, and Gutter – Updated the curb gutter to a 4% slope.

CITY OF DE PERE



DEPARTMENT OF PUBLIC WORKS

2024 STANDARD SPECIFICATIONS

JANUARY 8, 2024

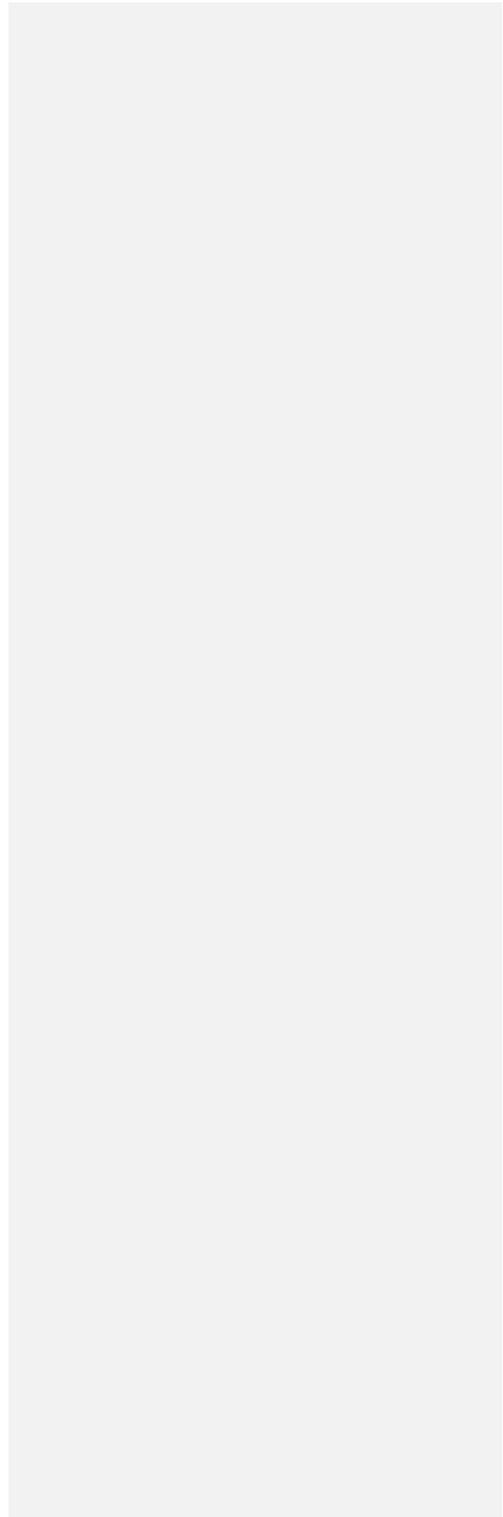


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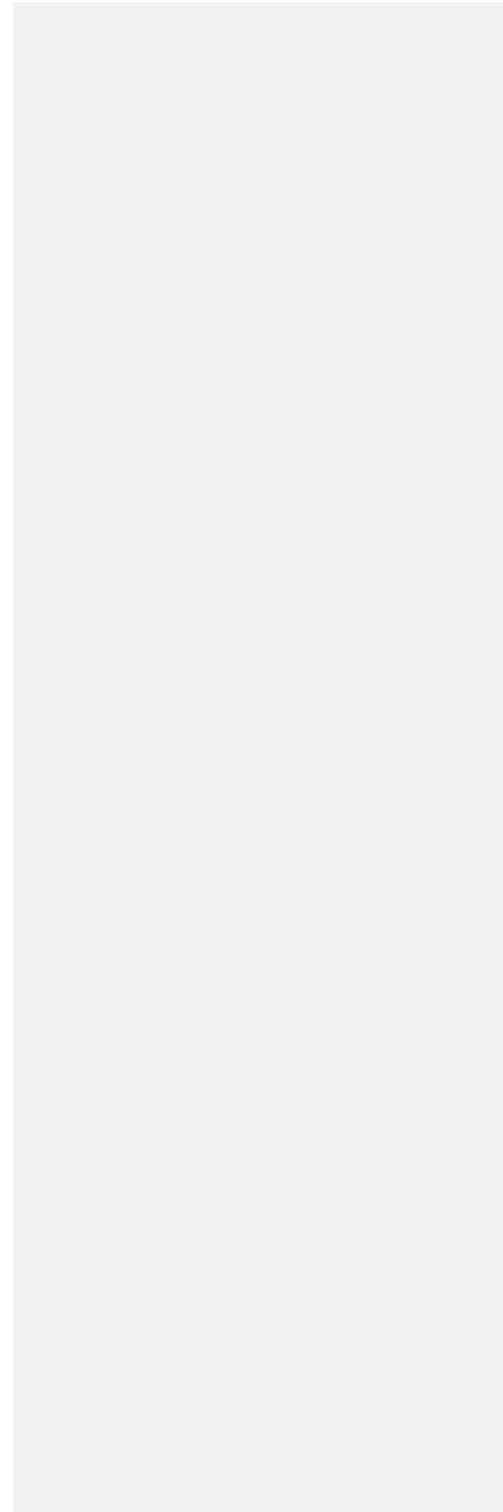
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be allowed the Contractor without the above-specified 15% added thereto. The 15% basis shall not be charged on the Contractor's equipment rates. Contractor equipment shall only be paid when it is in use for construction of the extra work as determined by the Engineer.

In the event that additional work is performed by Subcontractors, the method for determining the basis of payment shall be the same as the Contractor in the paragraph above. The Contractor may include a Subcontractor cost plus 5% basis.

INGRESS AND EGRESS. The Contractor shall at all times conduct the work in such a manner as to insure the least possible obstruction to pedestrian and vehicular traffic serving abutting properties along the project and to that end shall, at its own expense, provide and maintain in reasonably passable condition such temporary roads and temporary approaches as are deemed reasonable and practical by the Engineer.

CONTROL OF WORK

AUTHORITY OF ENGINEER. All work shall be done under the supervision of and performed to the satisfaction of the Engineer. The Engineer shall decide all questions which arise as to the quality and acceptability of materials furnished, work performed, manner of performance (excluding safety), rate of progress of the work, interpretation of the plans and specifications, acceptable fulfillment of the contract, compensation, and disputes and mutual rights between Contractors under the specifications. The Engineer shall determine the amount and quantity of work performed and materials furnished, and the decision of the Engineer estimates shall be final. The Engineer's estimate in such event shall be a condition precedent to the right of the Contractor to receive money due under the contract.

The Engineer shall have executive authority to enforce and make effective such decisions and orders as the Contractor fails to carry out promptly and, in case of failure on the part of the Contractor to execute work ordered by the Engineer, the Engineer may, after giving notice in writing to the Contractor, proceed to execute such work as may be deemed necessary and the cost thereof shall be deducted from compensation due or which may become due the Contractor under the contract.

COORDINATION OF PLANS, SPECIFICATIONS AND SPECIAL PROVISIONS. These specifications, the plans, special provisions and all supplemental documents are essential parts of the contract and a requirement occurring in one is as binding as though occurring in all. They are intended to be cooperative, to describe and provide for a complete work. In the case of a discrepancy between the plans and the specifications, the plans shall govern; between the special provisions and the specifications or the plans, the special provisions shall govern.

The Contractor shall take no advantage of any apparent error or omission in the plans or specifications, and the Engineer shall be permitted to make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specifications.

LINE AND GRADE. The Engineer will furnish and set the construction survey stakes or reference points necessary to establish the alignment and grade for all types of work. These stakes and points shall constitute the field control by and in accordance with which the Contractor shall govern and execute the work. The Contractor shall furnish, at its own expense, such other facilities and labor as may be required by

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Authorizations or orders to suspend work shall be in writing. Unless otherwise specifically provided, no additional or extra compensation or additional contract time will be allowed due to such suspensions of operations.

DETERMINATION AND EXTENSION OF CONTRACT TIME. The time for completion of the Work contemplated under the Contract will be calendar days or completion date. For calendar day contracts, work will be specified in the Bid as a specific number of calendar days including Sundays and holidays on or before which the Work shall be completed. For completion date contracts, work will be specified in the bid as a date. Fifteen (15) percent of the contract time as specified is allocated to bad weather, which will not warrant an extension of contract time.

The Contract starting date, for purposes of determining contract time and extensions, will be construed to be the date construction operations are started or the tenth day following the date of written notification by the Engineer to the Contractor to begin work, whichever is earlier.

Contract time will not be charged during periods of complete suspension of operations, when ordered by the Engineer suspending operations.

Contract time will be extended by an amount as is mutually agreed upon by the Engineer and the Contractor, on the basis of contract change orders involving alterations in the contract affecting the prosecution of work, or involving extra or additional work, when such alterations are necessary for the purposes or convenience of the Engineer, or when such extra or additional work is of such character or is ordered to be done at such a time that the amount of time reasonably necessary to perform such work is disproportionate to the contract time originally set up in the bid.

Should the Contractor find it impossible to complete the Work on or before the time for completion as specified in the Contract, or extended as above set forth, the Contractor may, at any time prior to 3 days after completion of Work under the Contract, make a written request to the Engineer for an extension of time, setting forth therein reasons to justify the granting of the request. If the Engineer finds that the work was delayed because of conditions beyond the control of the Contractor, it may grant an extension of time for completion in such amount as it finds to be warranted and justified.

LIQUIDATED DAMAGES. Should the Contractor fail to complete the work within the time agreed upon in the contract, interim completion dates included in the work sequence, or within such extra time as may have been allowed by extensions, there shall be deducted from any monies due or that may become due the Contractor, for each and every calendar day, including Sundays and holidays, that the work shall remain uncompleted, a sum specified as follows:

LIQUIDATED DAMAGES		DAILY CHARGE
ORIGINAL CONTRACT AMOUNT		
FROM MORE THAN	TO AND INCLUDING	CALENDAR DAY
\$0	\$150,000	\$470
\$150,000	\$300,000	\$600
\$300,000	\$500,000	\$815
\$500,000	\$1,000,000	\$1160
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SECTION 01 45 23.10

TESTING AND INSPECTION OF PIPELINE & APPURTENANCES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Low pressure air test.
2. ~~Inspection of gravity pipelines by lamping.~~
3. Televising gravity pipelines.
4. Deflection test for gravity pipelines that are not reinforced concrete pipe (PVC and other).
5. Pressure and leakage test for pressurized pipelines.
6. Continuity testing.

Deleted: Inspection of gravity pipelines by lamping.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. ASTM D3034 Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
2. ~~ASTM C828 Standard Test Method for Low-Pressure Air Test of Vitrified Clay Pipe Line....~~
3. ASTM F679S Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.
4. ASTM C1107 Spec. for Packaged Dry, Hydraulic –Cement Grout (Nonshrink)

Deleted: ASTM C828 Standard Test Method for Low-Pressure Air Test of Vitrified Clay Pipe Line....

B. American Water Works Association (AWWA)

1. AWWA C600 Installation of Ductile-Iron Water Mains and Their Appurtenances
2. AWWA C605 Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
3. AWWA C651-14 Disinfecting Water Mains

1.3 SUBMITTALS

A. Quality Control Submittals

1. Test reports and results.
2. Proposed method to correct deficiencies.
3. Record of deficiency repair method and location.

1.4 PROJECT/SITE CONDITIONS

- A. Notify Engineer a minimum of 48 hours prior to any testing.
- B. Notify Engineer when testing equipment is setup and ready for testing.

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- C. Testing shall be performed in the presence of the Engineer.
- D. Provide access to test equipment to enable the Engineer to monitor and record test results.
- E. Repeat failed test after correction of deficiencies until satisfactory tests are obtained.
- F. Proposed correction of deficiencies shall be approved by Engineer prior to correction.
- G. Repair visible leaks within the pipeline and/or pipeline appurtenances.

PART 2 – PRODUCTS

2.1 EQUIPMENT

- A. Low Pressure Air Test
 - 1. Inflatable pipe lugs.
 - 2. Bracing.
 - 3. Compressor.
 - 4. Hose and fittings.
 - 5. Pressure gauge.

B.

C. Televising of Pipelines

1. Cleaning Equipment:

- a. Mechanically operated cleaning equipment shall be of the movable dam type constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the pipe.
 - i. Sewer cleaning balls or other such equipment which cannot be collapsed instantly is not acceptable cleaning equipment.
 - ii. Provide the movable dam with equal diameter as the pipe being cleaned.
 - iii. Provide a flexible scraper around the outer periphery to insure total removal of grease.
- b. Truck mounted hydraulically propelled high velocity cleaning equipment.
 - i. Provide a minimum of 500 feet of ¾ inch I.D. high pressure hose with a selection of two or more high velocity nozzles.
 - ii. 60 GPM nozzle capacity at a working pressure of 1000 to 1500 pound psi capable of producing a scouring action from 15° to 45° in all size pipe lines designated to be cleaned.
 - iii. Provide a high velocity gun adjustable from fine spray to narrow stream with a flow rate of 3 ½ to 27 GPM operating between 200 and 800 psi. for washing and scouring manhole walls and floors.
 - iv. Provide a 1500 gallon water tank capable of holding corrosive or caustic cleaning or sanitizing chemicals, if required by the Engineer, auxiliary engines and pumps, and hose reel.

Deleted: Gravity Sewer Lamping¶
1. Battery operated light.¶
2. Mirror.

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3.4 TELEVISION GRAVITY PIPELINES

- A. Preparation of Pipeline Before Televising
1. Clean pipelines and manholes to be televised to degree to allow visual inspection of sewer interior.
 2. Completely block off water or sewage from both upstream and downstream of section being televised providing bypass pumping, if necessary to prevent sewage backup.
 3. Stop any dewatering operations a sufficient time before televising to allow groundwater elevation to reach its normal level, but not less than 72 hours before televising.
 - a. Provide the following equipment and services:
 - i. Street signs, barricaded detours, flashers.
 - ii. Traffic control personnel.
 - iii. Permits to work in public streets.
 - iv. Safety equipment including safety equipment for confined entry.
 4. Provide utilities required to perform the work such as water, electricity, etc.
- B. Televising the interior surface of the pipeline by pulling a camera through the pipeline showing on a T.V. monitor and recorded on video tape.
1. Record on the audio system concurrently with the picture the following information:
 - a. Pipeline section being inspected designated by manhole numbers at each terminus of section.
 - b. Date of survey.
 - c. Type of pipe.
 - d. Owner of pipeline.
 - e. Name of televisor.
 - f. Principal client
 - g. Description of defect with location.
 2. Superimpose on television image (and on tape) the following information:
 - a. Date.
 - b. Section being televised.
 - c. Footage from entering manhole.
 3. Produce still photographs from monitor of any defective section of the pipeline.
- C. Televising Operation
1. Move camera through the line in either direction at a uniform rate no greater than ½ foot per second by means of cable winches in each manhole.
 2. Provide telephone or other suitable means of communications between the two winches, the pulling unit, and the monitor control.
 3. Halt camera and video record for a minimum of five seconds at each joint, lateral connection, leak, unusual condition, roots, collapsed sections, presence of scale or other defect.
 4. While video recording, provide an audio description of the line being televised, defects encountered, infiltration/inflow sources, etc.
 5. Measure location of joints, connections or defects horizontal at the ground level by means of a target in front of the camera and a meter device accurate to 0.5 feet per 100 feet.

Deleted: 3.3 INSPECTION OF GRAVITY PIPELINES BY LAMPING¶

- ¶
- A. Whether televised or not, gravity pipelines shall be lamped and a record of the results of lamping furnished to the Engineer.¶
 - ¶
 - B. Check vertical and horizontal alignment by sighting through newly constructed pipeline after illuminating opposite end with a flashlight.¶
 - ¶
 - C. Light beam should be full throughout the section, but no less than two-thirds full under any circumstances.¶
 - ¶
 - D. Relay any section of pipe found to be out of alignment.¶

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D. Televising Report

1. Provide the televising inspection report prepared by the televisor which includes the following items listed below. The report shall be provided in an electronic format approved by the Engineer.
 - a. Manhole section televised (using construction manhole numbering system with corresponding video tape number of manhole).
 - b. Photos with location and date photographed of all joints, lateral connections, roots, collapsed pipes, presence of scale or other observed defects, estimates of infiltration/inflow amounts, etc.

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E. Correction of Damage Caused By Televising Operations

1. Correct any damage to surfaces such as landscaping, pavement, sidewalks, roads, etc.
2. Dig up and repair streets or property, to remove equipment lodged in sewers.
3. Cleanup and/or provide restitution for damage caused to private property and sewer systems as a result of cleaning, televising or bypass pumping.

3.5 DEFLECTION TEST FOR GRAVITY PIPELINES THAT ARE NOT REINFORCED CONCRETE PIPE (PVC, PP, AND OTHER)

- A. Unless stated elsewhere, perform deflection tests per PVC gravity pipeline requirements for flexible pipes.
- B. Pipe shall not exceed a deflection of 5%.
 1. The following table shall be used for PP (polypropylene):

<u>Pipe Type</u>	<u>Pipe Diameter (Inches)</u>	<u>Minimum Inside Diameter (Inches)</u>	<u>Inside Diameter With 5% Deflection (Inches)</u>
<u>Dual Wall</u>	<u>12</u>	<u>11.90</u>	<u>11.31</u>
	<u>15</u>	<u>14.85</u>	<u>14.11</u>
	<u>18</u>	<u>17.93</u>	<u>17.03</u>
	<u>21</u>	<u>20.79</u>	<u>19.75</u>
	<u>24</u>	<u>23.90</u>	<u>22.71</u>
	<u>30</u>	<u>29.79</u>	<u>28.30</u>
<u>Triple Wall</u>	<u>30</u>	<u>29.62</u>	<u>28.14</u>
	<u>36</u>	<u>35.40</u>	<u>33.63</u>
	<u>42</u>	<u>41.31</u>	<u>39.24</u>
	<u>48</u>	<u>47.31</u>	<u>44.94</u>
	<u>60</u>	<u>59.30</u>	<u>56.34</u>

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- C. Conduct test after final backfill has been in place a minimum of 30 days unless a shorter timeframe is approved by the Engineer.

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- D. Pull test mandrel without mechanical pulling devices.
- E. Complete the mandrel test on sewer main prior to lateral installation if using Inserta Tees or other connections that prevent the use of the mandrel.
- E. The pipeline will pass the test when the mandrel passes through the entire section of pipe between manholes or other structures in one pass pulled by hand without use of excessive force.
- F. Any section of pipeline failing to pass this test is to be repaired and retested.

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1.3 SUBMITTALS

- A. Provide test reports showing the results of required material testing.
- B. Provide technical data sheets for Engineered Soils.
- C. Provide topsoil analysis performed in accordance with ASTM D5268 and demonstrating the topsoil meets Soil Conservation Service specified soil types. Also, submit results of test for nutrient levels and provide recommendations for fertilizer type and application.
- D. Daily delivery tickets for each load of material delivered to the site.

1.4 QUALITY ASSURANCE

- A. The Engineer will provide an independent testing.

PART 2 – PRODUCTS

2.1 ENGINEERED SOILS AND AGGREGATES (SOIL CLASS A)

A. General

- 1. Material shall be clean, sound, hard, dense, durable, field or quarry stone which is free from seams, cracks, or other structural defects. It shall be angular material from shot rock (blasted) or crushed rock having substantially all face of which have resulted from artificial crushing.
- 2. Loss due to sulfate soundness test shall not exceed 10 percent.
- 3. Loss due to abrasion test shall not exceed 40 percent.
- 4. Material shall not be frozen.

B. Gradation

- 1. Riprap dimensions shall confirm to the following:

AVERAGE DIMENSION RANGES FOR EACH RIPRAP GRADE (Inches)				
FRACTION OF GROSS IN-PLACE RIPRAP VOLUME OCCUPIED BY STONES	EXTRA HEAVY RIPRAP	HEAVY RIPRAP (A-1)	MEDIUM RIPRAP (A-2)	LIGHT RIPRAP (A-3)
0%	>30	>25	>20	>16
10%-14%	22-25	18-20	14-16	11-13
15%-21%	18-22	14-18	11-14	9-11
20%-28%	8-18	6.5-14	5-11	4-9
5%-7%	<8	<6.5	<5	<4
2% or less	<1	<1	<1	<1

- 2. Soil Class A-4 through A-5 Not Used.

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5. Soil Class C-5 (Crushed Stone, Gravel or Concrete)- Granular Backfill

Sieve Size	% Passing by Weight
1-inch	100
¾-inch	85-100
3/8-inch	50-80
No. 4	35-60
No. 40	15-30
No. 200	5-15

2.3 ENGINEERED SOILS AND AGGREGATES (SLURRY BACKFILL)

A. General

1. Material shall be placed in a clean concrete mixer truck and thoroughly mixed.
2. No additional water will be allowed. The weights are damp weights.
3. Just prior to placing the slurry backfill, the mixer shall be run at mixing speed for one full minute to assure an even mixture.

B. Gradation/Mix Ratio

1. Slurry backfill ratio per cubic yard for structure abandonment and trench backfilling shall conform to the following table:

Per Cubic Yard	
Material	Weight/Amounts
Sand	1,350 lbs
A-7	750 lbs
A-6	1,150 lbs
Water	25 Gallons

2. Alternatives for the slurry backfill for pipe abandonment may be required due to site conditions and means and methods as determined by the Contractor. Changes in the slurry backfill shall be approved by the Engineer.
3. Sand for slurry backfill shall be a granular material having at least 90% passing the No. 4 Sieve and predominantly retained on the No. 200 Sieve.

2.4 ENGINEERED SOILS (BLOW SAND)

A. Blow Sand

1. Blow sand shall be M50 Grade Foundry Silica Sand or approved equal.

2.5 ENGINEERED SOILS (BENTONITE CLAY)

A. Bentonite Clay

1. Material shall be clean and dust free.
2. Material shall consist of a granular sodium bentonite between 3/8" and 3/4" chips.

2.6 BANK RUN SOILS

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2.2 EQUIPMENT

- A. All equipment shall conform to WisDOT Standard Specifications for Highway and Structure Construction Section 450.

2.3 SOURCE QUALITY CONTROL TESTING

- A. Materials to be tested:
 - 1. Aggregate.
 - 2. Asphaltic concrete mix design confirmation.
- B. Tests for source quality control testing shall be in accordance with WisDOT Standard Specifications for Highway and Structures Construction Sections 450, 455 and 460.

PART 3 – EXECUTION

3.1 SURFACE PREPARATION

- A. Prepare a compacted foundation in accordance with Section "Crushed Aggregate Base Course".
- B. For existing pavement remove the following asphalt:
 - 1. Localized areas which tend to ravel, shove, or bleed.
 - 2. Areas unsuitable as a base.
 - 3. Unstable patching.
- C. Remove loose concrete and protruding joint material.
- D. Clean surface and joints of foreign material, e.g. dust, dirt, water, vegetation, etc.
- E. Control weeds with herbicide conforming to governing state or local authority, rules and regulations.
- F. ~~Apply tack coat, on existing surfaces and between layers~~ at minimum rate of 0.05 to 0.07 gallon per square yard ~~after dilution.~~
- G. Fill potholes and depressions with a leveling course of asphaltic concrete mix compacted to required density of surface course.
- H. Adjust and reset the casting after placing the binder course and prior to placing the surface course.

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3.2 MIX PREPARATION

- A. Aggregates
 - 1. Separate into three sizes as defined under mix uniformity.

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- a. Less than 150 cubic yards of structure concrete placed under a single bid item.
- b. Less than 2500 cubic yards of slip-formed pavement placed using a single mix design.
- c. Less than 1000 cubic yards of non-slipped formed pavement placed using a single mix design.

B. Small Quantity Project Requirements

1. Installation testing to be completed by the Owner includes the following:
 - a. Slump
 - b. Air-entrainment
 - c. Compressive strength test
2. Other testing per the WisDOT State Specification Sections 415 is to be completed by the Contractor including:
 - a. Probing method for depth on slipped form pavement per Section 415.3.16.4.2.
 - b. Surface Testing and Correction per 415.3.10.
3. Submit an abbreviated QMP per the WisDOT State Specification Sections 710.2.2 (2) and (3) and 710.2.
 - a. Eliminate sections regarding measurement and payment and incentive and disincentive based on the results.
4. Additional tests may be conducted by the Contractor for those conducted by the Owner.

C. Large Quantity Projects

1. Installation testing to be completed by the Owner includes the following:
 - a. Slump
 - b. Air-entrainment
 - c. Compressive strength test
2. Other testing per the WisDOT State Specification Sections 415 is to be completed by the Contractor including:
 - a. Probing method for depth on slipped form pavement per Section 415.3.16.4.2.
 - b. Surface Testing and Correction per 415.3.10.
3. Modify the WisDOT QMP for concrete pavement based on the following:
 - a. Arrange one pre-pour meeting to discuss concrete placement.
 - b. Number of compressive strength tests to be as noted below.
 - c. Eliminate sections regarding measurement and payment and incentive and disincentive based on the results.

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D. Compressive Strength Testing

1. Small Quantity Projects
 - a. Tests to be taken for each 200 cubic yards of concrete placed or at least once each day for each design mix.
 - b. Test one cylinder at 7 days.
 - c. Test two cylinders at 28 days.
 - d. Remaining cylinder will be tested in the event a prior test fails.
2. Large Quantity Projects

2024 Specifications

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- B. Construct curb and gutter on the prepared and moistened foundation in one course.
- C. Construct curb and gutter to the required lines and grades as shown on the drawings.
- D. Place concrete by using the slipform or fixed form method.
- E. ~~Use mechanical vibration for concrete with slump less than or equal to two (2) inches. After consolidation strike off, and finish to the required section.~~
- F. Contraction Joints
 1. ~~Provide joints at 10-foot intervals.~~
 2. ~~Create contraction joints by sawing or forming an induced plane of weakness at least two (2) inches deep.~~
 3. ~~If sawing, perform as soon as practicable after concrete has set sufficiently to preclude raveling during the sawing and before any shrinkage cracks occur.~~
- G. Place expansion joints as follows:
 1. 300 feet maximum spacing on tangent sections.
 2. Where radial curb and gutter meet tangent sections.
 3. Adjacent to existing expansion joints in abutting concrete paving.
 4. Three (3) feet from inlets.
 5. Place at right angles to the flow line and surface of the gutters.
- H. Place depressions for handicapped ramps and driveways as required and shown on the drawings.
- I. Place a concrete stamp per the detail.

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3.8 REINFORCEMENT

- A. Install two (2) - twenty (20) foot long number four (4) deformed reinforcement bars over all trenches that fall under any portion of the Concrete Curb & Gutter being constructed. The Engineer will determine the location of all deformed reinforcement bars.
- B. Install two (2) number four (4) epoxy coated deformed reinforcement bars, 12 inches long between new and existing slabs. The bars shall be drilled six inches into the existing concrete slab.

3.9 FINISHING

- A. Finish in accordance with the WisDOT Standard Specifications for Highway and Structure Construction, Latest Edition
- B. Thoroughly trowel and brush or lightly broom the face surfaces of the curb and gutter prior to concrete set.

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- A. Hot Weather Concreting
 1. Follow ACI 305 whenever mean surrounding air temperature equals or exceeds 80°F (27°C).
 2. Do not place concrete whenever air temperature equals or exceeds 90°F (32°C).
- B. Cold Weather Concreting
 1. Follow ACI 306 whenever mean surrounding air temperature is below 40°F (4.5°C).
- C. Do not place concrete during rain, sleet, or snow unless protection is provided.

3.6 PLACING CONCRETE

- A. Conveying Concrete
 1. Convey concrete from mixer to place of final deposit by methods that will prevent separation or loss of materials.
 2. Equipment for chuting, pumping, or pneumatically conveying concrete shall be capable of providing a supply of concrete at site of work without separation of ingredients and without interruptions sufficient to permit loss of plasticity between successive placements.
 3. Unless otherwise approved, conform to ACI 304.
- B. Depositing Concrete
 1. Place concrete on prepared and moistened foundation in a single lift.
 2. Deposit concrete as nearly as practicable to its final position to avoid segregation due to rehandling or flowing.
 3. Carry on concreting at such a rate that concrete is at all times plastic, and flows readily into spaces between reinforcing.
 4. Do not deposit concrete that has partially hardened or that has been contaminated by foreign materials.
 5. Do not use retempered or remixed concrete.
 6. After concreting is started, it shall be carried on as a continuous operation until placing a section is completed.
 7. Thoroughly consolidate concrete by suitable means during placement, and thoroughly work concrete around reinforcement and embedded fixtures, and into corners of forms.
 - a. Provide mechanical vibration for concrete eight (8) inches thick and greater.
- C. Provide a concrete stamp per the detail.

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3.7 REINFORCEMENT

- A. Install two (2) number four (4) epoxy coated deformed reinforcement bars over all trenches that fall under any portion of the concrete sidewalk or driveway being constructed. The Engineer will determine the final location of all deformed reinforcement bars. In general, reinforcement bars shall be extended into the adjacent concrete slab that is outside of the trench as follows:
 1. When the adjacent concrete slab is existing, drill 6" into the concrete.
 2. When the adjacent concrete slab is new, overlap the reinforcement bar at least 12 inches into the adjacent concrete slab.

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B. American Water Works Association (AWWA)

1. C104 Cement Mortar Lining for Cast Iron and Ductile Iron Pipe and Fittings for Water
2. C110 Gray Iron and Ductile Iron Fittings, 3-inch through 48-inch for Water and Other Liquids
3. C111 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Rittings
4. C153 Ductile-Iron Compact Fittings, 3-inch through 16-inch, for Water and Other Liquids
5. C900 Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch through 12-inch for water
6. C905 Standard for Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14-inch through 36-inch

1.3 SUBMITTALS

A. Submit the following:

1. Certification of production date of all materials.
2. Manufacturer's certification that the materials delivered were manufactured, sampled, tested, and inspected in accordance with this specifications and appropriate referenced standards.
3. Product data sheet.
4. Manufacturer's recommendations for assembly.

1.4 QUALITY ASSURANCE

A. Make pipe available to the Engineer's Representative for inspection.

B. Pipe shall be considered defective and will be rejected when:

1. Pitted or cratered.
2. Flaking.
3. Straightness varies more than ½ inch in 10 feet.
4. Any defect which prevents assembly according to manufacturer's recommendations.
5. Not utilized within six months of date of production. The Engineer may extend this date to twelve (12) months if property stored.
6. Pipe is not properly marked.

C. Material brands and/or pipe classes shall not be mixed.

D. Pipe Marking – pipe and fittings shall be marked as follows:

1. Manufacturer's name, trademark or logo.
2. Nominal size.
3. PVC cell classification.
4. Pipe stiffness designation, dimension ratio, or schedule size and pressure class.
5. ASTM or AWWA specification designation.
6. National Sanitation Foundation approval (pipe for potable water).
7. Production date.

1.5 DELIVERY, STORAGE, AND HANDLING

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- C. National Sanitation Foundation
 - 1. NSF No. 14 Plastics Piping Components and Related Materials

1.3 SUBMITTALS

- A. Product Data
 - 1. Provide product data on pipe and fittings including dimensions.
- B. Quality Assurance/Control Submittals
 - 1. Certification that the tests required by this specification section were performed and meet the stated minimum requirements.
 - 2. Evidence from the pipe manufacturer that the personnel completing joints is qualified to perform the thermal butt fusion.
 - 3. Manufacturer’s instructions and procedures for joining the pipe and pipe fittings.

1.4 QUALITY ASSURANCE

- A. Pipe shall be available to Owner's Representative for inspection.
- B. Pipe shall be considered defective and will be rejected when:
 - 1. Any defect which prevents assembly according to manufacturer’s recommendations.
 - 2. Not utilized within six months of date of production. The Engineer may extend this date to twelve (12) months if property stored.
 - 3. Pipe is not properly marked.
- C. Material manufacturer, pipe diameters and pressure classes shall not be mixed.
- D. Personnel completing the joints shall be certified by the pipe manufacturer as being qualified to perform the thermal butt fusion.

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1.5 DELIVERY, STORAGE AND HANDLING

- A. Upon delivery inspect pipe and fittings for damage, cracks, holes, or foreign inclusions.
- ~~B. Store pipe and accessories on flat level ground with no rocks or other objects under the pipe.~~

Deleted: <#>Check date of production to verify the pipe will be installed within six (6) months of date of production.¶

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Pipe Sizes 4-inch and Larger
 - 1. Pipe and fittings shall be high density polyethylene (HDPE) meeting AWWA C906 standards.
 - 2. Materials used for the manufacture of the HDPE pipe and fittings shall be made from a PE 3608 resin compound meeting the minimum cell classification of PE 345434C in accordance

SECTION 33 00 05

DOUBLE AND TRIPLE WALLED POLYPROPYLENE PIPE

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Double walled polypropylene pipe for mainline gravity storm sewer.
- 2. Triple walled polypropylene pipe for mainline gravity storm sewer.

B. The products described are not installed under this Section.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

- 1. D3212 Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- 2. F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- 3. F2736 Standard Specification for 6 to 27 in. (152 To 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe and Double Wall Pipe
- 4. F2764 Standard Specification for 30 to 60 in. [750 to 1500 mm] Polypropylene (PP) Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications

1.3 SUBMITTALS

A. Submit the following:

- 1. Certification of productions date of all materials.
- 2. Manufacturer’s certification that the materials delivered were manufactured, sampled, tested, and inspected in accordance with this specifications and appropriate referenced standards.
- 3. Product data sheet.
- 4. Manufacturer’s recommendations for assembly.

1.4 QUALITY ASSURANCE

A. Make pipe available to the Engineer’s Representative for inspection.

B. Pipe shall be considered defective and will be rejected when:

- 1. Pitted or cratered.
- 2. Flaking.
- 3. Straightness varies more than ½ inch in 10 feet.

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- 4. Any defect which prevents assembly according to manufacturer’s recommendations.
- 5. Not utilized within six months of date of production. The Engineer may extend this date to twelve (12) months if property stored.
- 6. Pipe is not properly marked.

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C. Material brands and/or pipe classes shall not be mixed.

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D. Pipe Marking – pipe and fittings shall be marked as follows:

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- 1. Manufacturer’s name, trademark or logo.
- 2. Nominal size.
- 3. Pipe stiffness designation, dimension ration, or schedule size and pressure class.
- 4. ASTM specification designation.
- 5. Production date.

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1.5 DELIVERY, STORAGE, AND HANDLING

A. Inspect the pipe shipment to identify shifted loads, broken packaging or rough treatment, which could be an indication of damage.

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B. Unload the pipe in a manner which will not put stress on the pipe or strike anything causing damage.

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C. Place and store the pipe package units on level ground stacked no more than 8 feet high. Do not store close to heat sources.

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D. For onsite gasket installation on pipe, store gaskets away from excessive exposure to heat, direct sunlight, ozone, oil or grease.

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E. For gaskets installed on the pipe offsite, keep the protective wrap on gaskets until installation.

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F. Handle pipe in a manner to prevent impact blows, abrasion damage, gouging or cutting.

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G. When handling pipe in cold weather, provide additional care to prevent damage due to impact.

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PART 2 – PRODUCTS

2.1 NON-PRESSURE RATED PIPE

A. Mainline Gravity Sewer and Sewer Services

1. Pipe fittings and repair couplings shall be manufactured and tested in accordance with the following standards:

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a. Sizes 8 inch through 27 inch and depths up to 20 feet: ASTM F2736, PSM SDR-35 PVC

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b. Sizes 30 inch through 60 inch and depths up to 20 feet: ASTM F2764, PS46 PVC, T-1 minimum cell classification

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2. Pipe shall have a minimum pipe stiffness of 46 PSI.

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3. Minimum height of cover to the top of pipe to the existing elevation or proposed finished elevation (whichever is less) shall be two feet.
4. Elastomeric Gaskets: Conform with ASTM F477
5. Elastomeric Joints: Conform with ASTM D3212
6. Solvent Weld Joints: Not permitted.

B. Sewer Services

1. 4" and 6" pipe shall be Schedule 40 PVC and conform to section 33 00 02, Polyvinyl Chloride (PVC) Pipe and Fittings.
2. Branch laterals shall be designed to accept SDR 35.

END OF SECTION

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2024 Specifications

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- I. Nozzles
 1. Provide three-way design with one 4 1/2" NST pumper nozzle and two 2 1/2" NST hose nozzles.
 2. Provide nozzle caps with nut the same size as the operating nut and chain.
- J. Bury depth shall be 6.5 feet measured to the nearest 1/2 foot from the bottom of the connecting pipe to the ground line of the hydrant.
- K. Inlet connection shall be 6 inch mechanical joint with 304 stainless steel bolts and nuts with anti-seize mechanism.
- L. The hydrant top section shall be painted the color yellow, excluding the caps.
- M. The caps on the hydrant shall be painted per NFPA Standard 291, based on available fire flows as determined by the Engineer and shown on the plans.
 1. Class AA –Blue Caps M4137 Hydrant National Blue – Rated capacity of 1500 gpm or greater
 2. Class A –Green – Rated capacity of 1000-1499 gpm
 3. Class B –Orange – Rated capacity of 500-999 gpm
 4. Class C –Red – Rated capacity of less than 500 gpm
- N. Hydrant to have a 16" break-off section.
- O. 1 1/2" pentagon operating nut to open left.
- P. Hydrant markers shall consist of a five (5) foot long 3/8 inch diameter fiberglass shaft attached to a heavy duty MIL SPEC zinc plated carbon steel spring mount with a flat bracket. The shaft shall be completely wrapped with alternating six (6) inch wide reflective tape strips so that there will be no exposed fiberglass. The reflective tape color shall match the hydrant cap color. Complete assembly shall be corrosion and UV resistant. Flat mounting bracket shall fit onto the 5/8-inch hydrant bolt.

Q. Hydrants shall be Waterous WB67250

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<#>Waterous WB67250¶

2.3 VALVES

- A. General
 1. Valves shall be for buried service.
 2. Valve ends shall be mechanical joint for buried service.
 3. Operating stem shall turn counterclockwise to open.
 4. Shaft or stem shall be sealed using O-ring seals.
 5. Manufactured within one year of installation.
- B. Butterfly Valves
 1. Conform to requirements of AWWA C504 mechanical joint end valves, Class 150B
 2. Used where water main is larger than 12 inches diameter.

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and have a durometer hardness of 70 +/- 5 when tested in accordance with ASTM Designation D-2240.

9. Operating Nut:

- a. The valve shall be equipped with a standard 2 inch square operating nut with cast-on directional arrow.
- b. Valve to open counter clockwise.

10. Valves will be fitted with a three (3) foot long extension stem with bottom bolts for tightening to the valve at 90 degrees to each other.

- a. Extension stem manufacturer shall be Ess Brothers and Sons Inc. or approved equal.

11. Acceptable Manufacturers:

- a. Mueller
- b. Kennedy
- c. American Flow Control/Waterous
- d. Clow

D. Valve Boxes

1. Cast iron, three-piece screw type, 5 ¼ inch shaft, round or oval base sized for valve.
2. Threads shall be cast into top and bottom sections.
3. Cover shall be anti-rattle type mark with the word "water" on top.

4. Acceptable Manufacturers:

- a. Tyler 6860DD
- b. Bingham Taylor
- c. [Sigma](#)

2.4 POLYETHYLENE ENCASEMENT FOR DUCTILE IRON PIPE AND FITTINGS

A. Conform to requirements of AWWA C105.

B. Type: I

C. Class: "A" (natural color) or "C" (black).

D. Grade: "E-1"

E. Thickness: 8 mils

2.5 WATER MAIN

A. Pipe material and size shall be stated in the Proposal and shown in the Drawings.

B. If the material is not stated, water main is to be Polyvinyl Chloride Pipe (PVC).

2.6 WATER SERVICES

A. Pipe and Tubing

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1. Pipe and/or tubing material and size shall be as stated in the proposal and shown on the drawings.
 2. Copper tubing shall conform to the requirements of ASTM B88, Type K for sizes up to 2 inches diameter.
 3. Polyethylene (PE) tubing shall be blue and conform to the requirements of AWWA C901, PE 3608, DR 9 for sizes up to 2 inches.
 4. Polyethylene (PE) pipe shall be blue and conform to the requirements of AWWA C901, PE 3608, DR 11, for sizes greater than 2 inches up to 3 inches.
 5. Polyvinyl Chloride Pipe (PVC) shall conform to the requirements of AWWA C900 for sizes 4 inches or greater.
- B. Corporation Stops/Valves
1. Conform to the requirements of AWWA C800.
 2. Ball type valve with double O-ring seals.
 3. Outlet shall include a copper flare connection for copper tubing or compression connection with stiffeners for polyethylene tubing.
 4. The pipe stiffener length for polyethylene tubing shall match the length of the fitting at the location of the compression nut.
 5. Acceptable Manufacturers:
 - a. Ford F1000
 - b. McDonald
 - 1) 1" - 74701Q
 - 2) 1 ½" & 2" – 74701BQ
- C. Curb Stops/Valves
1. Conform to the requirements of AWWA C800.
 2. Ball type valve with double O-ring seals.
 3. Inlet and outlet shall include a copper flare connection for copper tubing or compression connection with stiffeners for polyethylene tubing.
 4. The pipe stiffener length for polyethylene tubing shall match the length of the fitting at the location of the compression nut.
 5. Curb Stop to Curb Box Rod Connection
 - a. Material: Stainless steel 304
 - b. Bolt Size: ¼ - 20 x 1 ¼
 - c. Nylon Stainless Steel Locker
 6. Acceptable Manufacturers:
 - a. Ford B44-444M
 - b. McDonald 6104Q
 - c. Mueller B25155
- D. Tapping or Service Saddles
1. Stainless steel double strap designed for ductile iron pipe.
 2. Full circumference wide band stainless steel double bolt designed for PVC pipe.
 3. Required for PVC service taps and taps over 1" in diameter for ductile iron pipe.
 4. All taps shall be made with a Rockwell 372, Romac, [Smith Blair Model 372](#), or equal service

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1.3 SUBMITTALS

- A. A manufacturer's certification for each product stating that the products were manufactured in accordance with the designated reference standards with test results and date of tests.

PART 2 – PRODUCTS

2.1 PIPE

A. Pipe Material

1. PVC Sewer Pipe shall be in accordance with Section 33 00 02 Polyvinyl Chloride (PVC) Pipe and Fittings.
2. Pipeline material shall be PVC Pipe unless stated elsewhere in the proposal schedule or as shown on drawings
3. Pipe diameters shall be as shown on drawings.

B. Wyes, Tees, Risers and Fittings

1. Wyes, tees and fittings shall be the same type of material and class as the mainline pipe.
2. Risers and fittings shall be the same material and class as the service connections.
3. Tees can only be used for connecting to existing sanitary sewers when approved by the Engineer.
4. Wye branches for a lined sewer shall be a saddle type connector compatible with the lined pipe.
Acceptable manufacturers:
 - a. Fernco Tap Saddle
 - b. GPK gasketed sewer fittings,
 - c. Approved equals (saddle wye gasket branch and gasket skirt with straps) will be considered.

2.2 TRANSITION COUPLINGS

A. Couplings for transition between dissimilar pipe diameters or dissimilar pipe materials

1. Fernco Inc., Mission Rubber Company, and Maxadapter are acceptable manufacturers.
2. Conform to ASTM C1173.
3. Provide stainless steel shear rings, bands, nuts and housings of marine grade stainless steel conforming to ASTM A240.

Deleted: or

2.3 MANHOLES

A. Precast Reinforced Concrete Manholes

1. Components including base sections, riser sections, grade rings (adjustment rings), eccentric cone, flat slab top and manhole reducing bench shall meet ASTM C478.
2. Base section shall include base riser section with integral monolithic bottom extending minimum of 6 inches beyond riser section.
3. Tops for manholes shall be eccentric cone or, if required elsewhere, flat slab top.
4. Adjusting rings
 - a. Precast concrete minimum of 2 inches thick.
 - b. Rubber: Infra-Riser, Pro-Ring, or approved equal.
 - c. HDPE: Tadtech or approved equal.
5. Eccentric cones, flat slab tops and adjusting rings.

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- 1) Install gravity carrier pipe in accordance with Section "Trenchless Excavation Construction" at line and grade and location shown on the Drawings.
- 2) Fill the annular space between the bore hole and the gravity carrier pipe with a bentonite slurry.

D. Manholes

1. General Installation Requirements:

- a. Depths shown on Drawings shall be considered approximate.
- b. Establish flow lines and casting elevations from grade stakes and cut sheets.
- c. Provide 6 feet minimum height from top of casting to flowline.
- d. Place bases on a minimum of four (4) inches of bedding material:
 - 1) Soil Class A-7 or A-8.
 - 2) Place and work by hand to insure all excavated voids are filled.
 - 3) The maximum amount of adjusting rings is twelve inches.
- e. Seal exterior of lift holes with bituminous plastic cement.
- f. Fill the following with mortar and finished smooth.
 - 1) Interior lift holes.
 - 2) Annular space around pipes: interior bottom half only.
- g. Construct manholes in accordance with the appropriate detail drawings.
- h. Install structures plumb.

2. Detailed Installation:

- a. Unless indicated otherwise, provide precast concrete manhole construction.
- b. Four foot diameter shall be considered standard.
- c. Pitch casting to match street crowns where applicable.
- d. Provide precast risers in a combination of lengths to minimize the number of joints.
- e. Install Butyl Rubber Joint Sealant at risers:
 - 1) Rope configuration.
 - 2) Install to be compressed by subsequent riser.
- f. Manhole adjusting
 - 1) Manholes must have only **ONE** concrete ring (2", 4", or 6") on top of the cone section.
 - a) Asphaltic Concrete Pavement - Secure ring to the pre-cast cone section with a 3 and ½ inch wide Kent Seal or equal.
 - b) Concrete Pavement – Secure ring to pre-cast cone section with concrete vibrated in place during the paving operation.
 - 2) For manholes in pavement, above the concrete ring attach ½ inch thru 3 inch thick tapered rubber ring using two (2) 5/16 inch bead above and below the ring, of sealant type as recommended by the rubber ring manufacturer. There shall be a minimum of 2" in depth of rubber rings.
- g. The maximum amount of adjusting rings is twelve inches. Do not enter manhole with pipe through cone section.

The pipe shall enter the barrel of the manhole through a flexible, watertight gasket or connector.
- h. Precast flat top may be used in lieu of a cone section when elevation is limited.

Provide Type 1 frames and covers for each manhole unless otherwise shown on the plan details.
- i. Manhole Drops:
 - 1) Conform to the detail Drawings.

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- 2) Furnish where designated on Drawings.
 - j. Inverts:
 - 1) Shall conform to the following:
 - a) Shape to the lower half diameter of the largest connecting pipe.
 - b) Slope concrete bench upward to manhole wall.
 - c) Maintain a uniform flow line slope through manhole which matches minimum pipe slope.
 - 2) Precast manholes shall be furnished with a manufacturer installed invert.
 - k. Future Sewer Connections:
 - 1) Pipe stubs shall be provided as shown on the drawings.
 - 2) Stubs shall extend a maximum of 12 inches from outer wall of structure unless otherwise stated.
 - 3) Stub shall be capped or bulkheaded and water tight.
- E. Sewer Services
1. Laterals:
 - a. Unless otherwise specified, terminate laterals at the property line.
 - b. In the absence of grade stakes, install laterals deep enough to pick up the lowest service point, or a minimum depth of 10 feet, whichever is greater.
 - c. Install laterals in conformance with all plumbing codes and ordinances.
 - d. Provide cleanouts required by plumbing codes and ordinances as part of the lateral installation.
 - e. When a lateral is not connected for immediate use:
 - 1) Mark the location with a 4" x 4" pressure treated board, installed 4 feet in the ground and 4 feet out of the ground. Sanitary marker shall be painted green.
 - 2) Provide a watertight cap on the lateral end.
 - f. Install sewer lateral and water services with location and separation per the details.
 - g. Construct a bentonite clay dam around the lateral at the right-of-way, or at end of the new lateral.
 - 1) Clay dam is to be 12" thick
 - 2) Install in place of the bedding stone and initial backfill
 2. Risers:
 - a. Risers shall be located at the mainline pipe unless noted otherwise on the plans or in the special provisions.
 - b. Bends shall be 45 degrees.
 - c. Riser pipe shall be placed on a minimum of four (4) inches of bedding material.
 3. Service Branches:
 - a. New Sewers: Install a factory assembled wye branch wherever possible.
 - b. Existing and Lined Sewers:
 - 1) Provide "Y" branches with a saddle type connector compatible to the pipe material being used.
 - 2) Provide concrete or hard wood blocking under the wye.
- F. Connecting New Pipe to Existing Pipe
1. If pipe are of the same material and size, then use a coupling of the same pipe material designed for coupling of the same material and size.
 2. If pipe are of dissimilar material or size or there is no coupling made of the same material, then

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- D. Remove any stuck cleaning, inspection or testing equipment from sewer lines.

3.5 TRACER WIRE

- A. Provide for all non-metallic service laterals within public right-of-way.
- B. Lateral or branch tracer wire splice connections will be typical Western Union-type solder splice made by stripping the coating off the main run tracer wire and then tightly wrapping the branch tracer wire around the main run tracer wire a minimum of 8 times. Both wire splices would then be soldered with a self-flux, 50-50 rosin core solder and tightly wrapped with a 1 1/2" wide by 3.2 mm Scotchfill™ electrical insulation tape, or equivalent then coated with 3M Scotchkote™ electrical coating, or equivalent so that no copper wire is exposed. A stripping tool shall be used to remove the plastic coating on the wire. The Contractor will be responsible to have all the correct types of tools necessary to install the tracer wire materials as specified above and to ensure that the tools are in good working order.
- C. Tracer wire will be securely attached to the mainline sewer pipe, within (6) six inches of each end of the pipe, and at equally spaced locations with a maximum spacing of (6) six feet. Any exposed copper wire will be sealed and covered with materials approved by the Engineer.
- D. Tracer wire at the end of laterals on new sewer construction shall be brought to the surface at the right-of-way perpendicular to the end of the lateral and will be inserted into a three (3) foot long piece of a one (1) inch PVC with a double slotted cap and securely attached to the treated four by four (4"x4"). The top of the four by four will be placed such that four (4) feet extends above the finished grade. The one (1) inch PVC shall be placed such that eighteen (18) inches extend above the finished grade. The tracer wire at the top of the PVC will protrude out of one of the slots and back into the PVC pipe through the other slot with at least eighteen inches of slack.
- E. Tracer wire at the end of laterals on sanitary sewer replacements with connections to existing laterals shall be as follows:
 - 1. Wrapped around the curb stop if near the curb stop.
 - 2. Extended to the surface and installed in a tracer wire box if not near the curb stop.

3.6 FIELD QUALITY CONTROL

- A. Provide the following service in accordance with the section on Testing and Inspection of Pipeline Appurtenances.
 - 1. Televiser all sanitary sewers.
 - 2. Lamp sanitary sewers if required by the Engineer.
 - 3. Perform a low pressure air test.
 - 4. Perform a deflection test on all plastic pipes.
 - 5. Perform a continuity test on all tracer wire.

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Deleted: If the lateral is not located near the curb stop, provide a 1/2 -inch diameter by 4 ft. long rod to connect the tracer wire at the connection to the existing lateral....

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C. Federal Specifications (FS):

1. FS SS-C-153C Cement, Bituminous, Plastic.

1.3 SUBMITTALS

- A. A manufacturer's certification for each product stating that the products were manufactured in accordance with the designated reference standards with test results and date of tests.

PART 2 – PRODUCTS

2.1 PIPE

A. Sewer Pipe

1. Concrete sewer pipe shall be in accordance with 33 00 01 Concrete Pipe-Reinforced.
2. PVC Sewer Pipe shall be in accordance with Section 33 00 02 Polyvinyl Chloride (PVC) Pipe and Fittings.
3. CMCP shall be in accordance with Section 33 00 04 Corrugated Metal Culvert Pipe and Fittings.
4. Polypropylene sewer pipe shall be in accordance with Section 33 00 05 Double and Triple Walled Polypropylene Pipe.
5. Pipeline material shall be as stated in the proposal schedule or as shown on drawings
6. Pipe diameters shall be as shown on drawings.

B. Wyes, Tees, Risers and Fittings

1. Wyes, tees and fittings shall be the same type of material and class as the mainline pipe.
2. Risers and fittings shall be the same material and class as the service connections.
3. Allowable lateral connections for mainline pipe greater than 12" diameter is as follows below. Installation shall conform to manufacturer's recommendation based on pipe type.
 - a. RCP Pipe - NPC Kor-N-Tee, Multi-Tite Gasket, ProFlow Gasket, ADS Inserta Tee Onefit or Engineer approved equal.
 - b. PVC/PP – Kor-N-Tee Saddle, Multi-Tite Pipe Saddle, ADS Inserta Tee Onefit or Engineer approved equal.
 - c. Lateral, Fernco Multi-Tite Pipe Gaskets or Saddle Connector as recommended by the manufacturer may be used where mainline pipe is greater than 12" diameter.

2.2 TRANSITION COUPLINGS

A. Couplings for transition between dissimilar pipe diameters or dissimilar pipe materials

1. Fernco Inc., Mission Rubber Company, and Maxadapter are acceptable manufacturers.
2. Conform to ASTM C1173.
3. Provide stainless steel shear rings, bands, nuts and housings of marine grade stainless steel conforming to ASTM A240.

Deleted: or

2.3 MANHOLES AND INLETS

A. Precast Reinforced Concrete Manholes and Inlets

1. Components including base sections, riser sections, grade rings (adjustment rings), eccentric cone, flat slab top and manhole reducing bench shall meet ASTM C478 and rectangular, inlets

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- 2) If in rock, place Soil Class A-7 or A-8 material 6" below pipe to 12" above the pipe and work by hand to insure all excavated voids are filled.

C. Pipe Installation

1. Open Cut Method:

- a. Trench requirements shall conform to Section "Trenching, Backfilling, and Compacting."
- b. Do not use support blocking.
- c. Proceed pipe laying upgrade with spigot pointing in direction of flow.
- d. Lay each pipe true to line and grade within tolerances required for lamping.
- e. When pipe installation is not in progress, provide the forward end of the pipe with a temporary plug to prevent foreign material from entering.
- f. Push "home" the spigot end of the pipe joint in the socket before proceeding to install the next pipe.

When connecting to an existing sewer not terminating in a manhole, uncover the end of the existing sewer prior to laying sewer to allow horizontal and vertical adjustments.

- g. Install pipe such that pipe joints are located far enough from the manhole outside wall to permit future pipe repair without damaging the manhole and the joints shall not fall within manhole walls.
- #### 2. Trenchless Excavation Method
- a. Auger horizontal earth boring (boring and jacking)
 - 1) Bore and jack steel casing pipe at location and diameter or larger shown on the Drawings in accordance with Section "Trenchless Excavation Construction" at line and grade to accommodate the gravity carrier pipe.
 - 2) Install the gravity carrier pipe at line and grade through the casing pipe blocked to prevent contact with the casing pipe.
 - 3) Fill the annular space between casing pipe and gravity carrier pipe with sand or Engineer approved equal.
 - b. Horizontal directional drilling
 - 1) Install gravity carrier pipe in accordance with Section "Trenchless Excavation Construction" at line and grade and location shown on the Drawings.
 - 2) Fill the annular space between the bore hole and the gravity carrier pipe with a bentonite slurry.

D. Manholes and Inlets

1. General Installation Requirements:

- a. Depths shown on Drawings shall be considered approximate.
- b. Establish flow lines and casting elevations from grade stakes and cut sheets.
- c. Provide four feet eight inches (4'-8") minimum height from top of casting to base.
- d. Place bases on a minimum of four (4) inches of bedding material:
 - 1) Soil Class A-7 or A-8.
 - 2) Place and work by hand to insure all excavated voids are filled.
- e. Seal exterior of lift holes with bituminous plastic cement.
- f. Fill the following with mortar and finished smooth.
 - 1) Interior lift holes.
 - 2) Annular space around pipes
- g. Construct manholes and inlets in accordance with the appropriate detail drawings.
- h. Install structures plumb.

2. Detailed Installation:

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2024 Specifications

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be used to remove the plastic coating on the wire. The Contractor will be responsible to have all the correct types of tools necessary to install the tracer wire materials as specified above and to ensure that the tools are in good working order.

- C. Tracer wire will be securely attached to the mainline sewer pipe, within (6) six inches of each end of the pipe, and at equally spaced locations with a minimum spacing of (6) six feet. Any exposed copper wire will be sealed and covered with materials approved by the Engineer.
- D. Tracer wire at the end of laterals will be brought to the surface at the right-of-way perpendicular to the end of the lateral and will be inserted into a three (3) foot long piece of a one (1) inch PVC with a double slotted cap and securely attached to an eight (8) foot long, treated four by four ("4x4"). The top of the four x four will be placed such that thirty (30) inches extend above the finished grade. The one (1) inch PVC shall be placed such that eighteen (18) inches extend above the finished grade. The tracer wire at the top of the PVC will protrude out of one of the slots and back into the PVC pipe through the other slot with at least eighteen inches of slack.
- E. Tracer wire at the end of laterals on storm sewer replacements with connections to existing laterals shall be as follows:

- 1. Wrapped around the curb stop if near the curb stop.
- 2. Extended to the surface and installed in a tracer wire box if not near the curb stop.

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Deleted: 2. If the lateral is not located near the curb stop provide a ½ -inch diameter by 4 foot long rod to connect the tracer wire at the connection to the existing lateral.¶

3.6 FIELD QUALITY CONTROL

- A. Provide the following service in accordance with the section on Testing and Inspection of Pipeline Construction.
 - 1. Televisе all storm sewers.
 - 2. Perform a deflection test on all mains that are not reinforced concrete.
 - 3. Perform a continuity test on all tracer wire.

END OF SECTION



DEPARTMENT OF PUBLIC WORKS

STANDARD DETAILS

JANUARY 8, 2024

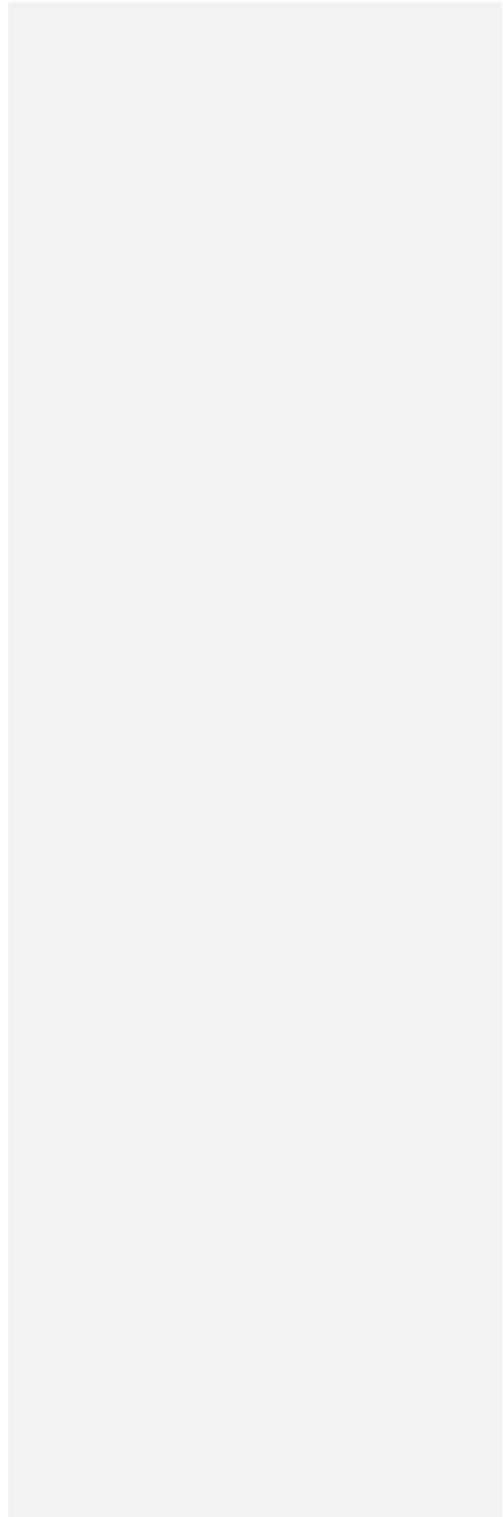
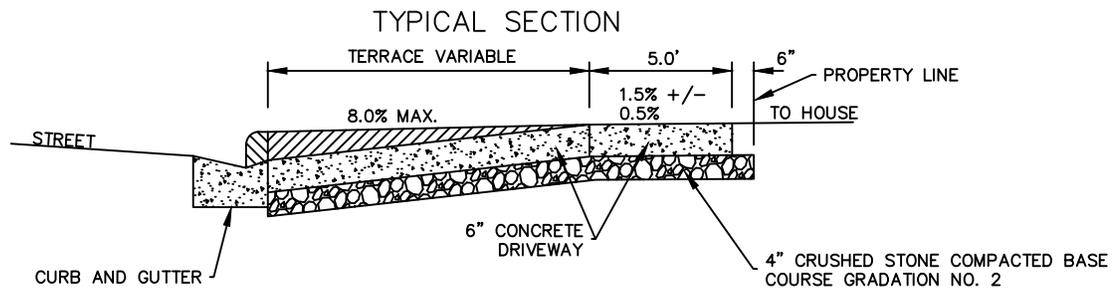
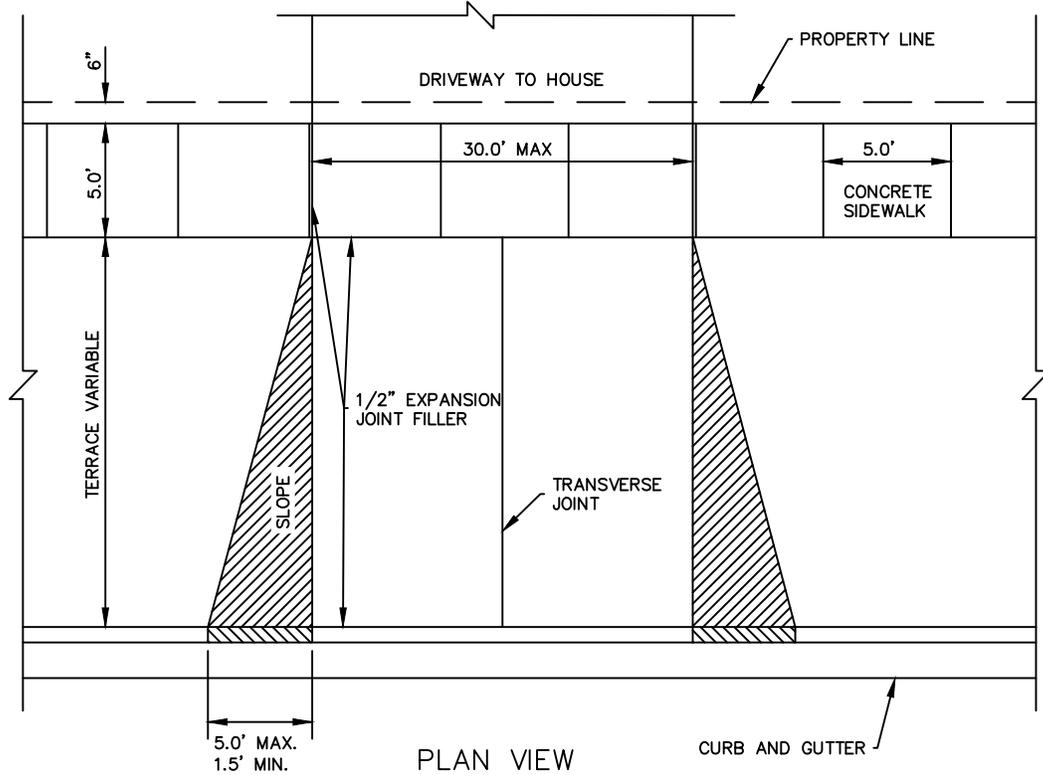


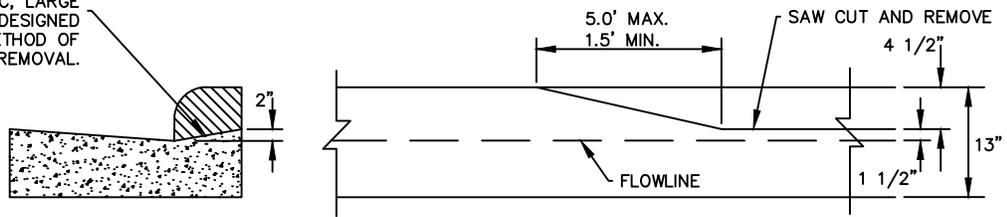
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ALL CURB CUTS WILL BE MADE BY A RAIL MOUNTED, HYDRAULICALLY CONTROLLED OR HIGH CYCLE ELECTRIC, LARGE DIAMETER CONCRETE SAW DESIGNED SPECIFICALLY FOR THIS METHOD OF THE CURB HEAD REMOVAL.



CURB CUT SIDE VIEW

CURB CUT BACK VIEW



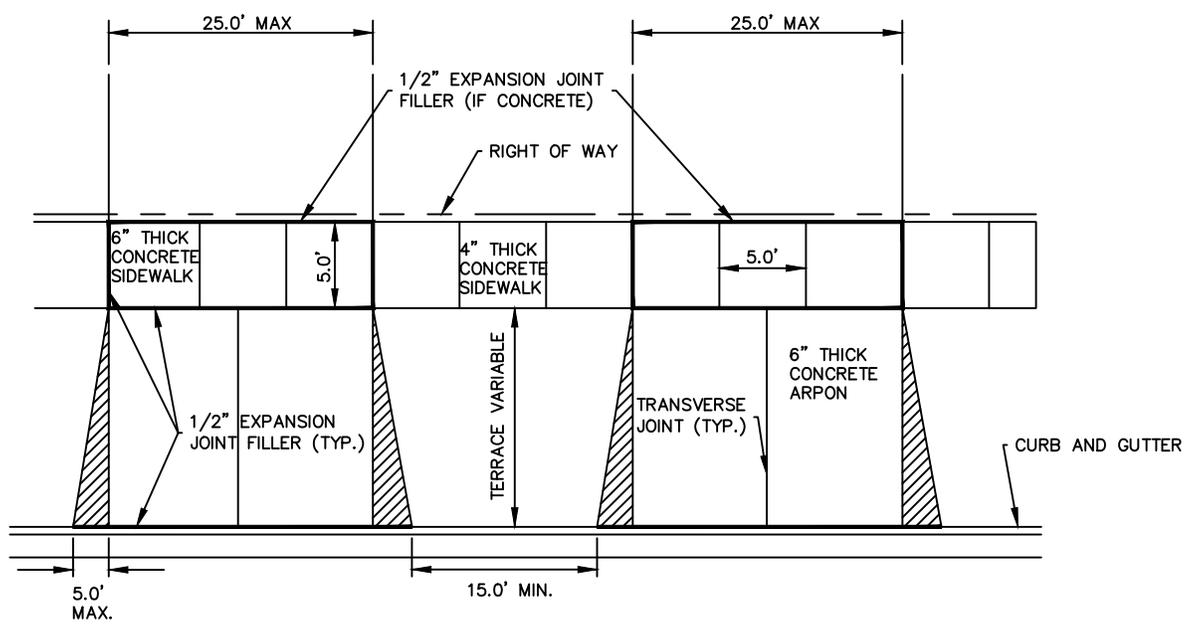
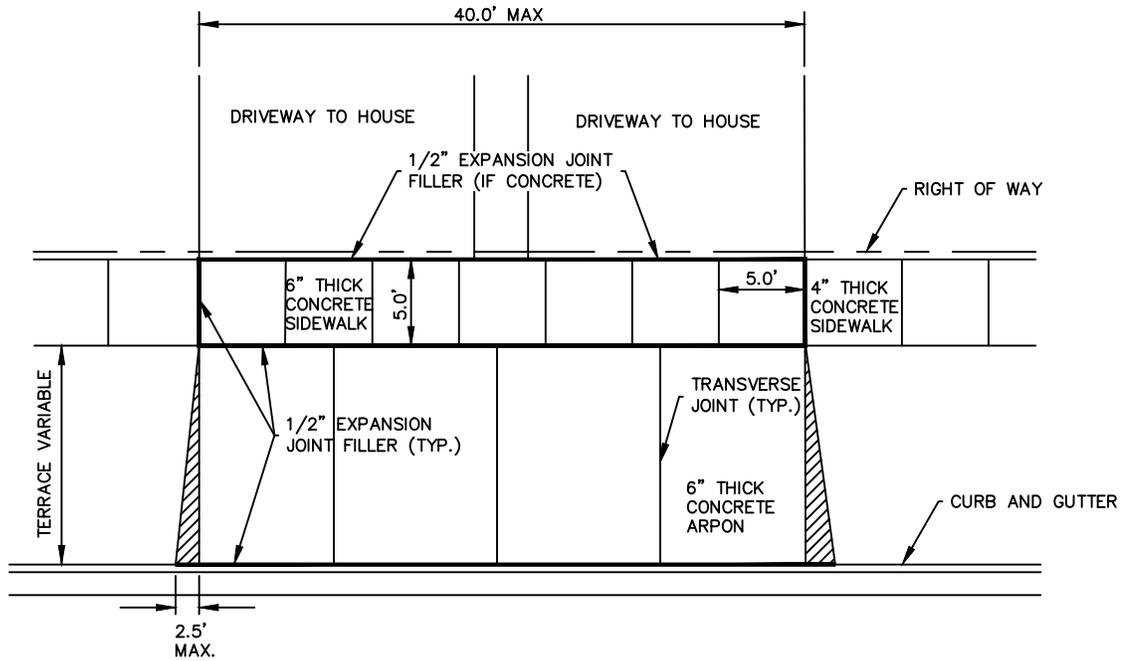
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 925 S. SIXTH ST
 DE PERE, WI 54115
 OFFICE 920-339-4061
 FAX 920-339-4071

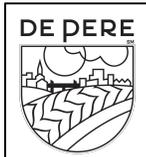
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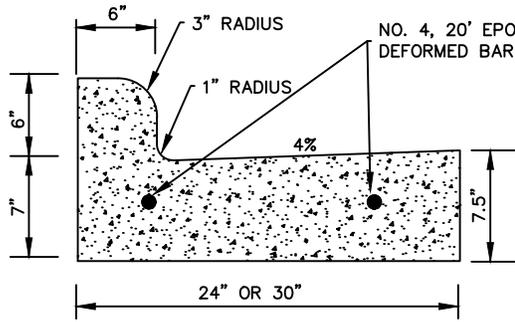
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 C-1

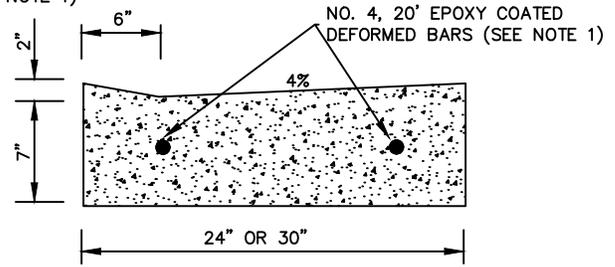
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 BY: MJT
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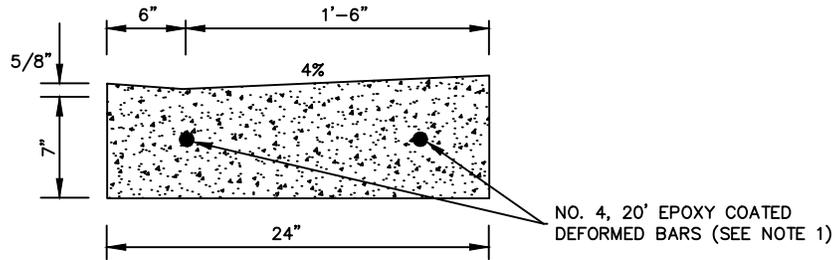
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OFFICE 920-339-4061 FAX 920-339-4071	DATE: 01/2024 BY: MJT CHECKED: EPR



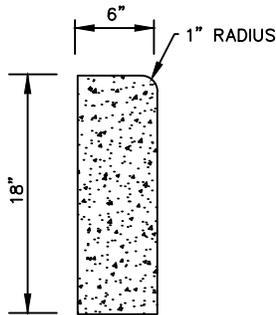
CURB AND GUTTER



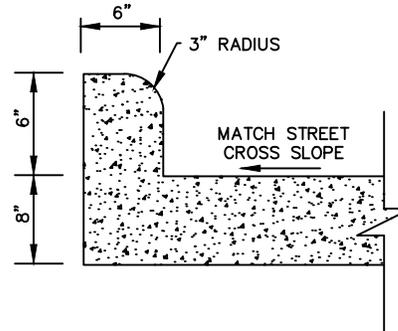
DRIVEWAY
GUTTER



PEDESTRIAN CURB RAMP
GUTTER



CURB



INTEGRAL CURB

NOTES:

1. 2-NO. 4, 20' EPOXY COATED DEFORMED BARS SHALL BE INSTALLED CENTERED OVER EACH SERVICE AND UTILITY TRENCH OR AS DIRECTED BY THE ENGINEER. FOR TRENCHES LYING UNDER THE CURB AND RUNNING PARALLEL TO THE CURB THE BARS SHALL BE INSTALLED FULL LENGTH OF THE TRENCH.
2. ALL EXPOSED EDGES OF THE CONCRETE SHALL BE FINISHED WITH AN EDGING TOOL HAVING A RADIUS OF 1/4 INCH UNLESS OTHERWISE NOTED.

 DE PERE ENGINEERING DIVISION 925 S. SIXTH ST DE PERE, WI 54115 OFFICE 920-339-4061 FAX 920-339-4071	TITLE: CONCRETE CURB CURB AND GUTTER AND GUTTER
	DIVISION: 32
	DRAWING NO: C-5
	DATE: 01/2024 BY: MJT CHECKED: EPR