

**CITY OF FARGO SPECIFICATIONS
SEWER AND WATER SERVICE CONNECTIONS**

**PART 1
DESCRIPTION OF WORK**

The work to be done under this section of the Specifications and the accompanying plans consists of the furnishing of all labor, material, accessories and equipment necessary to construct sewer and water service connections. The work includes excavation, furnishing and laying sewer and water pipe according to these Specifications; protecting existing utilities and public and private property; testing all new water connections; backfilling trenches and other work as may be necessary to insure that the work be completed in accordance with these Specifications and the plans accompanying them.

PART 2
MATERIAL

2.1. SEWER SERVICE CONNECTIONS

2.1.1. *PIPE*

The material shall conform to “Standard Specifications for Rigid Polyvinyl Chloride Compounds”, ASTM D-1784, Class 12454-B or 12454-C or 12364-C. The pipe shall be produced using a continuous extrusion process employing a prime grade of white unplasticized polyvinyl chloride.

All PVC pipe and specials shall be 6 inch diameter complying with the requirements of ASTM D-3034 PVC pipe, SDR 26 or Schedule 40 PVC. 4” PVC, when approved by the Engineer, shall be Schedule 40 PVC.

2.1.2. *JOINTING*

The joint system shall be an integral bell gasketed joint that forms a watertight seal in accordance with ASTM Specification D3212 and F477. If Schedule 40 is used, the joints shall be solvent weld, watertight and installed as per the manufacture recommendation.

2.1.3. *WYES AND FITTINGS*

Wyes and fittings shall be as manufactured by GPK Products, Inc. or approved equal. Gasketed wyes and fittings shall be used unless otherwise approved by the Engineer.

- A. New construction: In line wyes will be required on all new construction. Saddle wyes or Inserta-Tees can be used on RCP and Vylon/Diamond PVC closed profile sewer mains as stated below.
- B. Existing mains, RCP and Vylon/Diamond PVC closed profile sewer mains: PVC saddle wyes or Inserta-Tees shall be used when taps are necessary. Saddle wyes shall be PVC with a rubber gasket and shall be installed as per the manufacturer’s recommendation and attached with two stainless steel straps.

Inserta- tees shall be installed by coring the existing sewer main, patching any openings and installing the Inserta-Tee as per Section 1200.2.2.4.

- C. Connections to existing clay tile wyes: Compression seals (donuts) and couplings shall be pliable elastomeric PVC by Fernco, GPK Products, or approved equal.

2.1.4. CONNECTIONS TO EXISTING SERVICE LINES

Repair couplings used at the connection between a new and existing service lines shall be made with a flexible elastomeric PVC wrapped in a stainless steel shear ring. Approved products include Fernco Strong Back RC Series repair couplings, GPK couplings with stainless steel sheer rings, or approved equal.

2.1.5. MARKERS

Markers shall be a 2" by 2" wood stake with the top 2 feet painted green. Marker shall extend from the cap at the end of the sewer service to 6' above the ground.

2.2. WATER SERVICE CONNECTIONS

All products (treatment chemicals and material) that may come into contact with water intended for use in a public water system shall meet American National Standards Institute (ANSI)/National Sanitation Foundation (NSF) International Standards 60 & 61, as appropriate. A product will be considered a meeting these standards if so certified by NSF, The Underwriters Laboratories, or other organizations accredited by ANSI to test and certify such products.

2.2.1. PIPE

Type "K" copper tubing shall be used for all underground water services 2 inches in diameter and smaller. AWWA C900 PVC DR18 watermain pipe shall be used for services larger than 2 inches in diameter.

2.2.2. *JOINTS*

Copper services shall have flared or compression fittings. Compression fittings shall be Mueller 110, Ford 44 Series, McDonald Mac-Pak or approved equal and will only be allowed on copper tubing 1 1/2" or larger. PVC joints shall be rubber gasketed and conform to ASTM D-3139.

2.2.3. *CORPORATION COCKS*

Corporation cocks shall be Mueller H-15000, Ford F-600, McDonald 4701 or approved equal.

After pressure testing the water main, if the Contractor elects to turn on new corporation stops through a telescoping pipe from finished grade, the Contractor must install a Ford FB600 Ballcorp corporation stop or approved equal.

2.2.4. *CURB STOPS*

Curb stops shall be Mueller Oriseal or Ford or McDonald ball valve with a copper water service pipe inlet and outlet or approved equal. The arrow shall be placed in the direction of water flow. They shall be of the Minneapolis pattern type.

2.2.5. *CURB BOXES*

Curb boxes shall be A. Y. McDonald 5622C or approved equal. They shall be of the extension type with a Minneapolis pattern base and have an 8-foot bury length. Boxes shall be American made and furnished with a cast iron (not brass) plug threading into a cast iron cover (no brass insert).

2.2.6. *MARKERS*

Markers shall be a 2" by 2" by 8-foot long wood stake with the top 2 feet painted blue or a metal "T" post painted blue.

2.2.7. SERVICE CONNECTIONS

All service connections to PVC pipe shall be stainless steel, double bolt (minimum) service saddles. Service saddles shall have stainless steel washers between the nut and the plastic washer to equalize tightening stress. Rubber tapered gaskets shall be required to resist circumferential and longitudinal forces along with O-ring or flat gaskets for hydraulic seal. Saddle bolts shall be tightened to the manufacturers recommended tightness and verified with a torque wrench. Bolt tightness shall be rechecked with a torque wrench after the pipe tap is complete. All services shall be pressure tested with the mains. A flared coupling with copper plug shall be installed at the end of the service and testing shall include both sides of the curb stop.

Approved saddle types:

Romac style 304

Ford style FS 303

Powerseal 3412AS

Cascade CSC-1 and CSC-2

PART 3
CONSTRUCTION

3.1. EXCAVATION, TRENCHING, AND BACKFILLING

Excavation, trenching and backfilling shall be done in accordance with Section #1000, with the following special considerations:

A. BACKFILLING- EARTH

Backfilling shall be commenced as soon as the connection has been measured and accepted by the Engineer and a certificate given therefore. Such fill shall be done by tamping, except when in the opinion of the Engineer, satisfactory results can be obtained by flushing with water. Special attention is called to the backfilling around the water pipe at the corporation. The earth shall be tamped as solidly as possible to prevent settlement that may cause a strain at this joint. Backfilling shall be done in layers of 6 inches or less and thoroughly compacted. No trench shall be left open for more than 48 hours.

B. BACKFILLING- GRAVEL

Backfilling shall be commenced as soon as the connection has been measured and accepted by the Engineer and a certificate given therefore. Under this item, N. D. Class 3 (modified to 3-15% passing the number 200 sieve) gravel shall be used. The backfilled trench shall be compacted to 95% Proctor Density or, with the Engineer's approval, inundated with water and sufficient gravel used to completely fill the trench after inundation from the point of the connection to a point approximately 2-feet back of the curb line. The Engineer will stake the point where the change is made from gravel to dirt.

3.2. LOCATION AND GRADE

The Engineer will stake location of the service connections and curb stops. Connections to the main sewer shall be made only to existing wyes. Wyes may be sprung in only with written permission from the Engineer. No excavation for any connection shall be made until the location of the connection is resolved and the line and grade established. Normally a 1/8 bend shall be

used next to the sewer wye for sewer service connections. The sewer grade shall not be less than 1/8 inch per foot and pipe shall be laid straight and to grade.

3.3. PIPE LAYING

3.3.1. SEWER SERVICE CONNECTIONS

The bottom of the trench shall be excavated so that at least 1/3 of the circumference of the pipe shall have a firm bearing. Bell holes shall be dug to prevent damage to the pipe and prevent the pipe from resting on the bells. Vertical or nearly vertical risers from deep sewer mains shall be protected by tamping the earth around them in a manner that protects them from breaking. The ends of the pipe shall be plugged during construction to prevent earth or other material from entering the pipe and closed with a plug or disc made from the same material as the pipe and properly secured to prevent its displacement. The marker shall be installed to a 3 foot bury depth at the end of the service to indicate its location.

3.3.1.A. Bored Sewer Services

When sewer services are bored or cored, the size of the bore hole shall be limited to 2" larger than the pipe size being installed. Care shall be taken to ensure that minimum grade is maintained on the sewer service.

3.3.1.B. Transfer Sewer Service

When it is indicated on the plans to transfer existing sewer service connections to a new sewer main, all applicable work shall be done in accordance with these Specifications.

3.3.2. WATER SERVICE CONNECTIONS

All connections to watermains shall be made with a corporation cock furnished by the plumber and placed in the main by the City Water Department when it is desired to tap the water main.

On new construction under city contract, all materials and labor necessary to make the connection to the new water main shall be furnished and installed by the Contractor at his expense. All connections shall be laid in accordance with the ordinances of the City of Fargo and Water Department regulations governing the same. The copper pipe shall be laid in a wavy line in the trench and shall be of a length of at least 2 feet longer than the distance from the corporation to the curb stop. Water pipe shall not be less than 7 1/2 feet below the finished street grade.

When connections are made to cast iron or ductile iron watermain, the copper tubing shall be wrapped with polyethylene or dielectric tape for a minimum clear distance of 3 feet away from the main.

The water service pipe shall be looped at a 45-degree angle at the main into a gooseneck that shall be supported from displacement and settlement to prevent strain. The curb cocks and curb boxes shall be furnished by the Contractor and shall be located and set as shown on the plans and details, as staked in the field and set to mid-height of adjustment. Any extensions required to achieve this shall be made with threaded couplers; no bolt-on extensions will be allowed. The marker shall be set 3 feet into the ground and securely wired to the curb box.

As soon as the connection to the main is completed and prior to backfill, the corporation shall be opened and the connection examined for defects. All connections on the non-tested side of the curb stop or service valve shall pass visual inspection under city pressure by the Engineer in the field prior to backfilling.

The City Water Department will be checking all curb stop boxes for height adjustment and straightness at the end of the project. If defects are discovered, the Contractor shall make necessary repairs at his expense.

3.3.2.A. Bored Water Services

When water services are bored or cored, the size of the borehole shall be limited to 2" larger than the pipe size being installed.

3.4. RIGHT OF PROPERTY OWNER TO INSTALL SERVICE

Property owners have the legal right, within a specified period, to cause sewer and water connections to be made as required by these Specifications, and reductions in the quantities may therefore result.

3.5. RECORDS TO BE KEPT

As soon as the sewer and water pipe have been properly laid in place and connected up, the length of the connection, its depth and location shall be ascertained and a record made by the Engineer. No work shall be paid for unless such measurements have been made.

3.6. FINAL INSPECTION

The Contractor and the City of Fargo representative will operate all main valves and inspect all stop boxes for access. This procedure will be accomplished after all clean up, etc. has been completed. This inspection will be made prior to the final payment for work performed. Any defects shall be promptly repaired by the Contractor at his cost.

PART 4
GUARANTEE, MEASUREMENT & PAYMENT

4.1. GUARANTEE

The guarantee shall be per the contract.

4.2. MEASUREMENT AND PAYMENT

All costs for removal of replaced materials shall be included in the contract unit price of the material being installed as the replacement.

4.2.1. EXCAVATION, TRENCHING AND BACKFILLING

Excavation, trenching and backfilling will be paid for as indicated in Specification Section #1000-4.2.3.

4.2.2. SEWER SERVICES

The Contractor will not be paid for any sewer service repairs which are caused by his carelessness and/or negligence.

4.2.2.A. Pipe will be paid at the contract unit price per linear foot installed, including riser length if applicable, and will be measured from the wye at the sewer main to either the point of connection to the existing service line or the end of the new service line. The contract unit price for service pipe shall include all costs for required bends.

1. Bored Sewer Services: The contract unit price for boring shall include the cost of the bore and the pipe/tubing for the length of the bore. Where services shown to be open-cut on the plans are bored as a more feasible option, payment will be made on the open-cut bid item.

4.2.2.B. Sewer service connections will be paid as follows:

1. New construction: All costs to make connections and for plugging and marking the end of the new service pipe shall be included in the contract unit price for the service pipe.

2. Sewer main replacement without service line replacement: The Transfer Sewer Service bid item shall include all costs to connect an existing service line to a new sewer main wye, including the short piece of new service pipe between the existing service pipe and the new wye.
3. Sewer service replacement without sewer main replacement: The sewer service connection bid item shall include all costs to connect new/replaced service lines to existing sewer main wyes. Connections to existing VCP wyes shall be per Connection Option A shown on the Sanitary Sewer Service Replacement Detail. Where field conditions require Connection Option B or C to be used, payment will be made for the upgraded connection on a per each basis in addition to the sewer service connection bid item.

4.2.3. WATER SERVICES

4.2.3.A. Pipe/tubing will be paid at the contract unit price per linear foot, and will be measured horizontally from the centerline of the water main to either the point of connection to the existing service line or the end of the new service line. The contract unit price shall include testing from the corporation to the curb stop and/or the end coupling.

1. Bored Water Services: The contract unit price for boring shall include the cost of the bore and the pipe/tubing for the length of the bore. Where services shown to be open-cut on the plans are bored as a more feasible option, payment will be made on the open-cut bid item.

4.2.3.B. Water service connections will be paid per each and shall include the following:

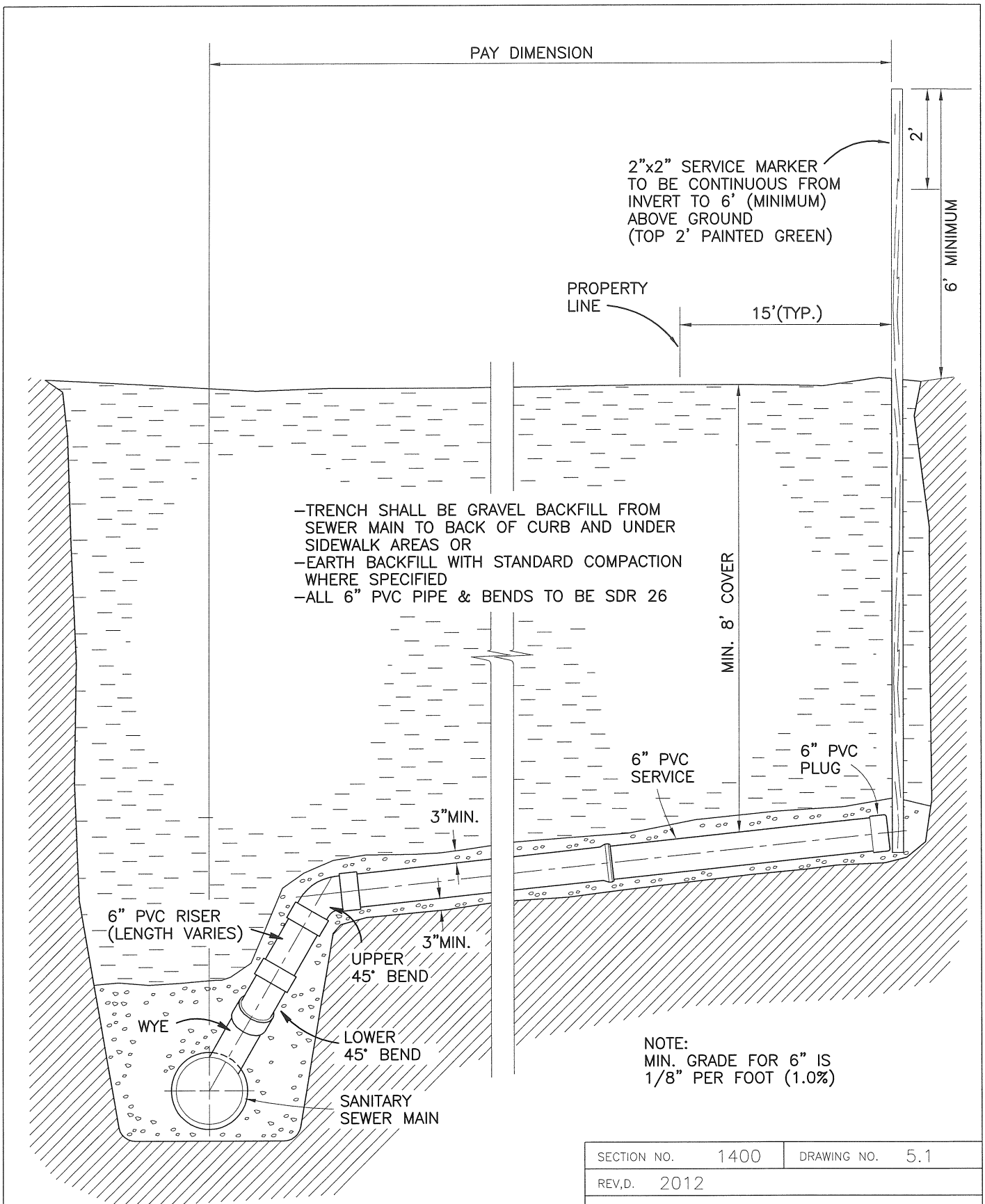
1. New construction: The water service connection bid item shall include the furnishing and installing of the stainless steel saddle, corporation stop, curb stop and box and marker and coupling and testing.
2. Water main replacement: The transfer water service bid item shall include the stainless steel saddle, corporation stop and any service fittings necessary to reconnect the existing water service. If the

existing water service is shown to be replaced from the main through the curb stop, the curb stop and box will be paid for under a separate bid item.

In the event a live tap is necessary only the City Water Department will be allowed to perform the tap unless authorized by the City Water Department Supervisor, the charge will be billed to the Contractor. This charge shall be included in the unit bid price for the water service connection bid item.

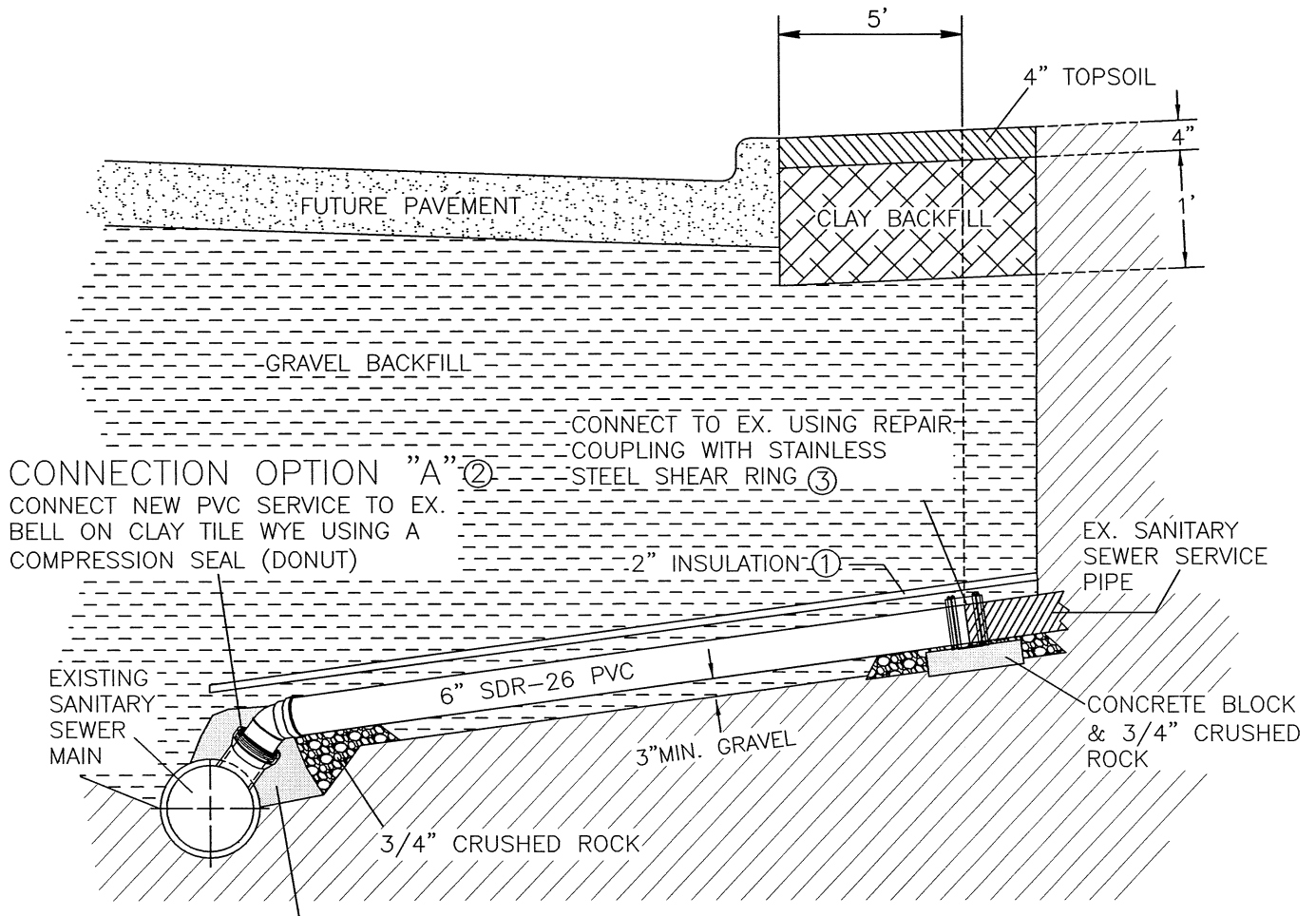
4.2.4. OTHER COSTS

All other costs for work necessary to properly complete the work specified herein shall not be bid items; the costs shall be charged to other items unless a bid item is specifically included on the bid sheet.



NOTE:
 IF RISER IS 5 FEET IN LENGTH OR GREATER,
 THE WYE, WYE BEND, AND LOWER BEND SHALL
 BE SUPPORTED WITH 1 1/4" CRUSHED ROCK
 ENCASEMENT

SECTION NO.	1400	DRAWING NO.	5.1
REV.D.	2012		
SANITARY SERVICE FOR NEW INSTALLATION			
CITY OF FARGO ENGINEERING DEPARTMENT			
APPROVED	<i>BED</i>	DATE	<i>2-21-2012</i>



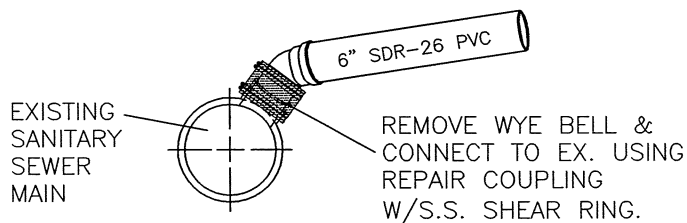
CONNECTION OPTION "A" ②
 CONNECT NEW PVC SERVICE TO EX. BELL ON CLAY TILE WYE USING A COMPRESSION SEAL (DONUT)

ENCASE WYE AND NEW CONNECTION IN CONCRETE (ALL CONNECTIONS)

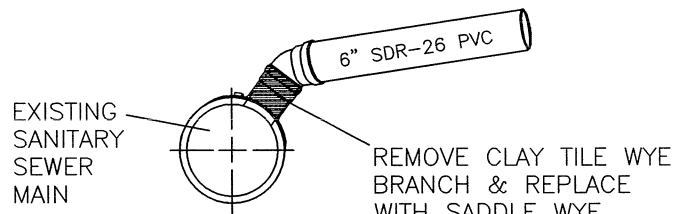
NOTES:

1. INSULATION REQUIRED WHERE SERVICE IS LESS THAN 7' DEEP.
2. USE CONNECTION OPTION "A" IF EX. WYE BELL IS GOOD, "B" WHEN EX. WYE BELL IS BROKEN & "C" WHEN EX. WYE IS BROKEN DOWN TO THE MAIN.
3. PIPES SHALL BE BUTTED TOGETHER WITH REPAIR COUPLING CENTERED ON BUTT-JOINT.

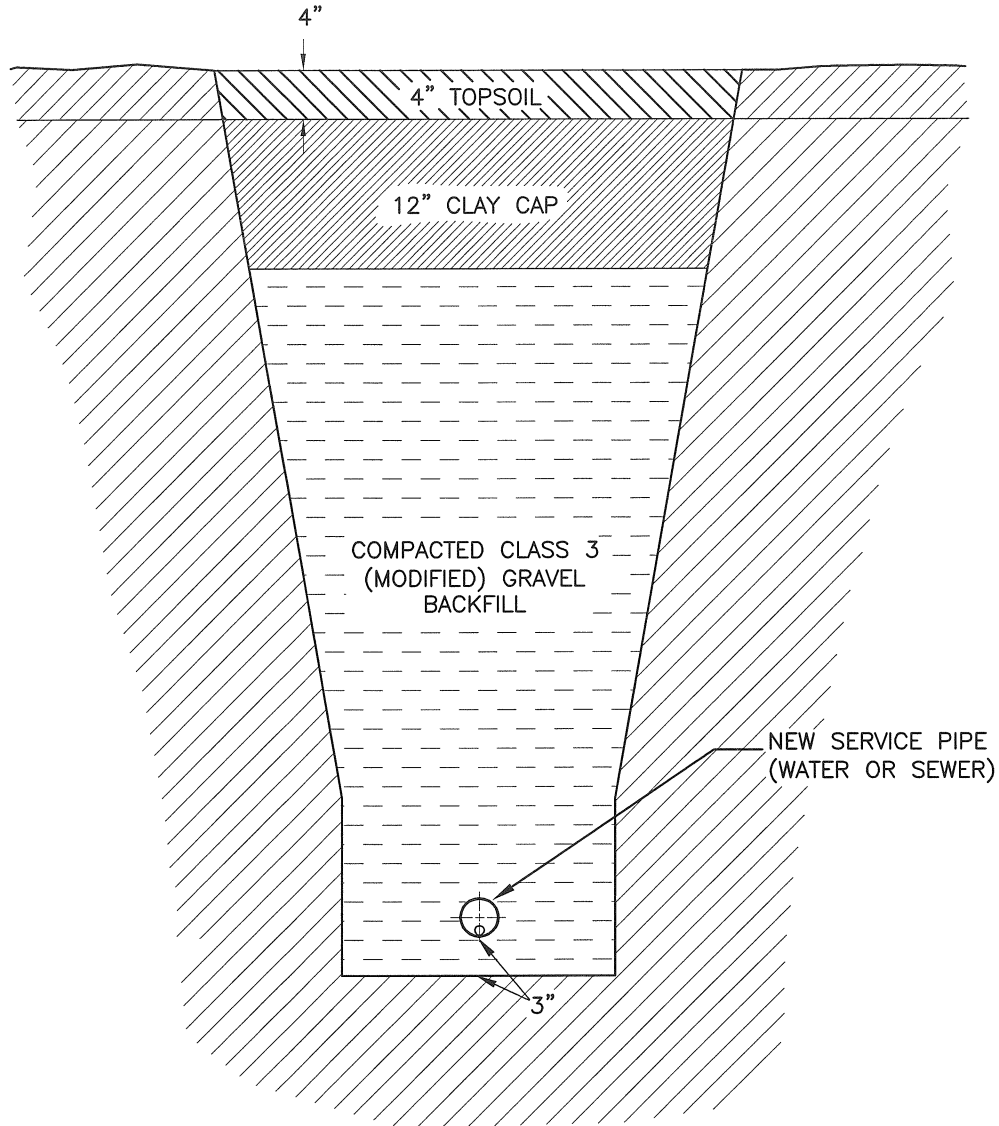
CONNECTION OPTION "B"



CONNECTION OPTION "C"



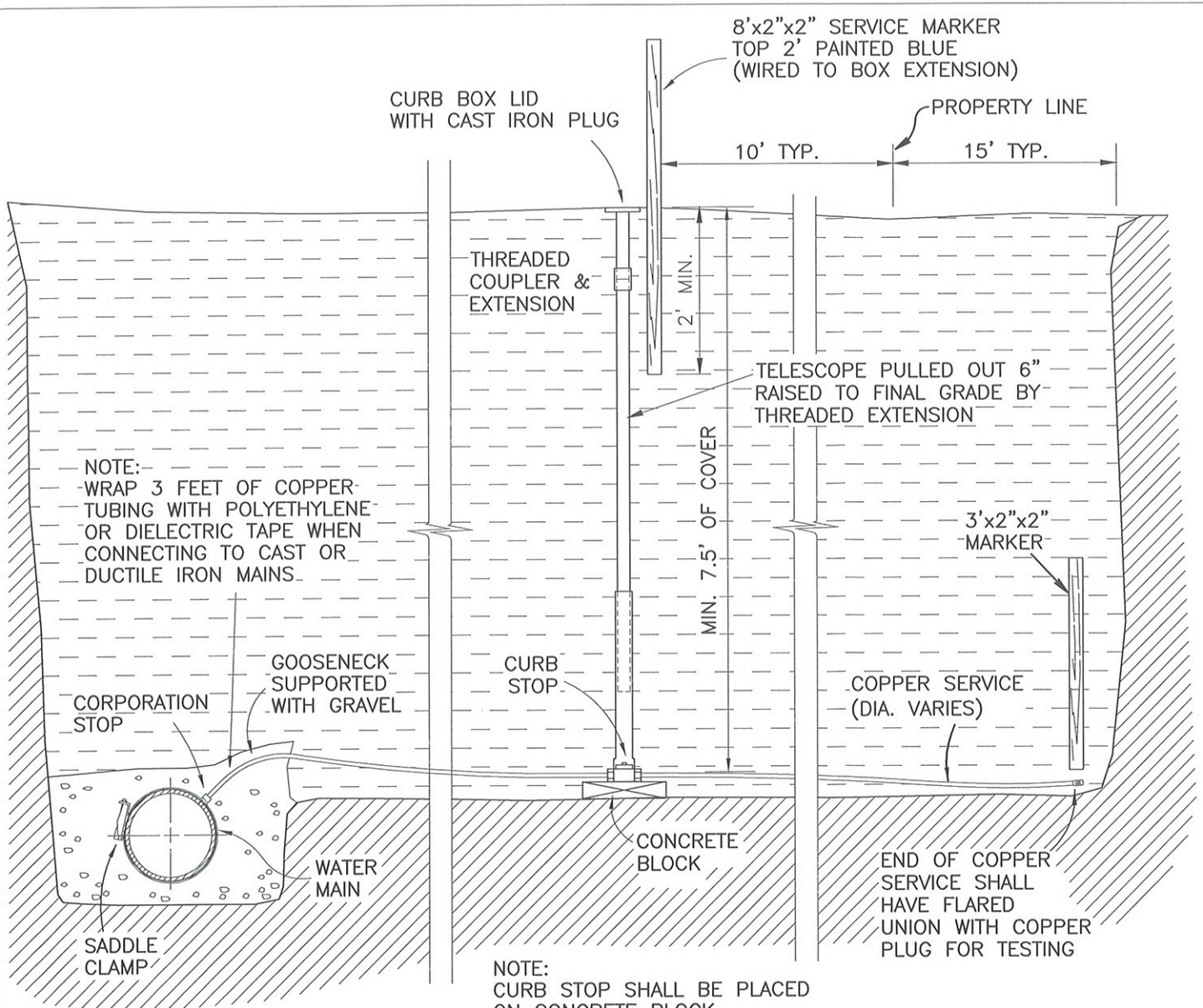
SECTION NO.	1400	DRAWING NO.	5.2
REV.D.	2014		
SANITARY SEWER SERVICE REPLACEMENT			
CITY OF FARGO ENGINEERING DEPARTMENT			
APPROVED	<i>[Signature]</i>	DATE	12/18/13



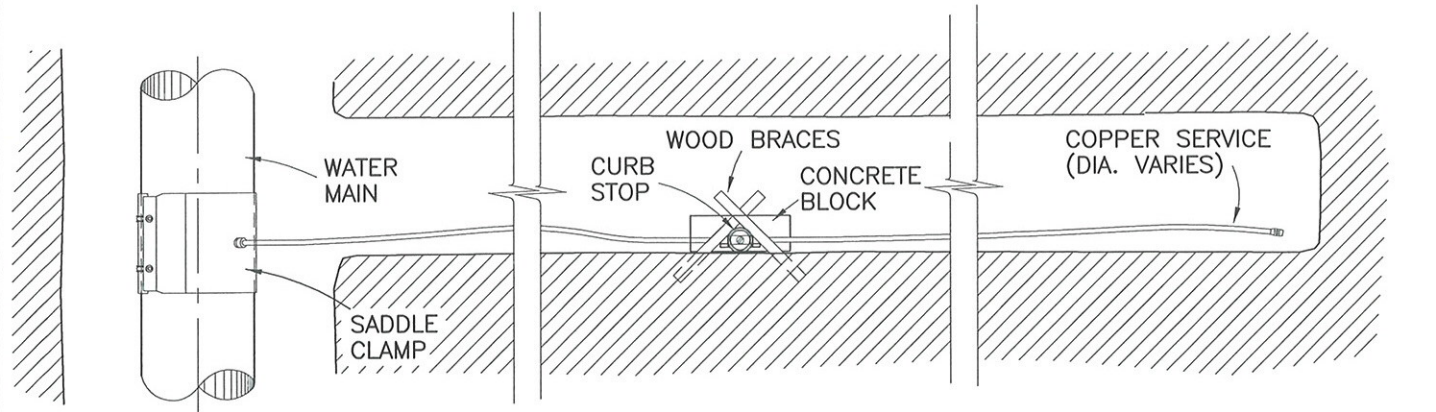
NOTE:

1. THIS DETAIL APPLIES IN REHABILITATION AREAS WHERE WATER OR SEWER SERVICE IS REPLACED BETWEEN THE CURB AND PROPERTY LINE.
2. FOR SANITARY SEWER SERVICE TRENCH UNDER CONCRETE ROADWAY SEE SECTION 1200 DETAILS.
3. FOR WATER SERVICE TRENCH UNDER CONCRETE ROADWAY SEE SECTION 1300 DETAILS.

SECTION NO. 1400	DRAWING NO. 5.3
REV.D.	
<i>SERVICE TRENCH (BLVD) FOR REPLACEMENT PROJECTS</i>	
CITY OF FARGO ENGINEERING DEPARTMENT	
APPROVED <i>BED</i>	DATE <i>2-21-2012</i>



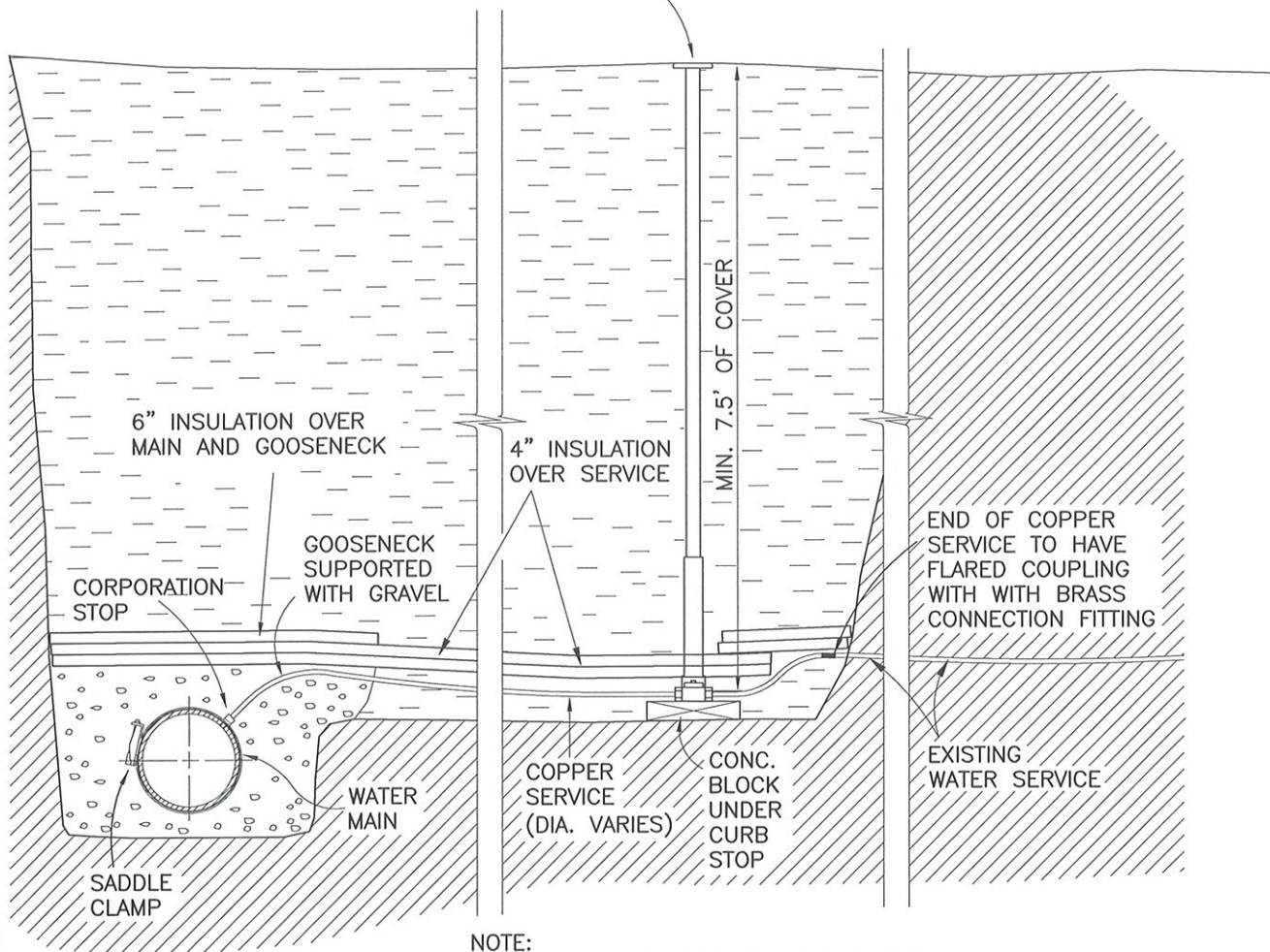
NOTE:
CURB STOP SHALL BE PLACED ON CONCRETE BLOCK ON UNDISTURBED GROUND



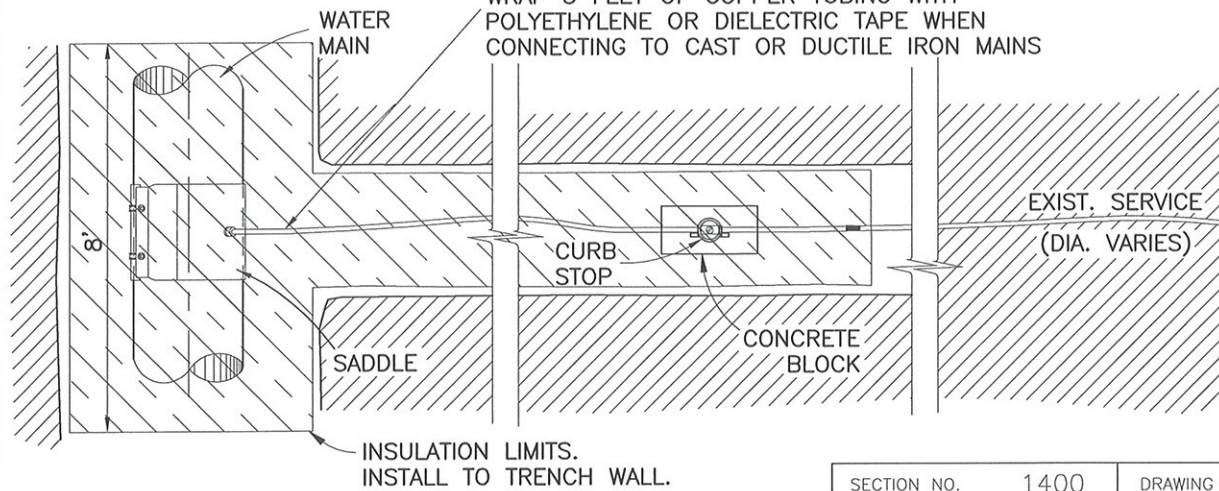
NOTE:
STOP BOX TO BE INSTALLED ALONG SIDE OF TRENCH AND SUPPORTED TO THE TRENCH WALL WITH TWO WOODEN BRACES TO PROVIDE SUPPORT DURING BACKFILL.

SECTION NO. 1400	DRAWING NO. 5.4
REV.D. 2013	
WATER SERVICE FOR NEW INSTALLATIONS	
CITY OF FARGO ENGINEERING DEPARTMENT	
APPROVED <i>CME</i>	DATE 1-2-13

CURB BOX
LID WITH CAST IRON PLUG
SHALL HAVE MINIMUM 6"
UP OR DOWN (INCIDENTAL)



NOTE:
WRAP 3 FEET OF COPPER TUBING WITH
POLYETHYLENE OR DIELECTRIC TAPE WHEN
CONNECTING TO CAST OR DUCTILE IRON MAINS



- NOTES:
1. CURB STOP TO BE PLACED ON A CONCRETE BLOCK.
 2. ALL INSULATION IS INCIDENTAL TO SERVICE PIPE.
 3. ALL INSULATION BOARDS SHALL BE 2" THICK, STACKED TO ACHIEVE TOTAL THICKNESS DESIRED.
 4. WHEN STACKING INSULATION BOARDS, STAGGER EACH LAYER SUCH THAT ALL BUTT JOINTS ARE OVERLAPPED BY THE LAYER ABOVE.

SECTION NO. 1400	DRAWING NO. 5.5
REV.D. 2013	
WATER SERVICE FOR REPLACEMENT PROJECTS	
CITY OF FARGO ENGINEERING DEPARTMENT	
APPROVED <i>JME</i>	DATE 1-2-13