

# CHRISTIANA BOROUGH AUTHORITY

## CHRISTIANA BOROUGH LANCASTER COUNTY PENNSYLVANIA

### *REQUIREMENTS*

### *FOR CONSTRUCTION OF RESIDENTIAL WATER SYSTEMS AND BUILDING SEWERS*

April 2019

Prepared by:



**B E C K E R**  
**E N G I N E E R I N G**

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## **INTRODUCTION**

The following Requirements for Construction of Residential Water Systems and Building Sewers are in accordance with, and subject to Resolution No. \_\_\_\_\_ and subsequent amendments as adopted by the Christiana Borough Authority hereinafter referred to as the Authority. All construction shall conform to the Christiana Borough Authority "Rules and Regulations for Construction of Water Systems and Sewer Systems". A copy of this information may be obtained at the Borough office. All construction must comply with the requirements of the Pennsylvania Uniform Construction Code.

No building sewer shall be constructed or connected to the sewer system without first obtaining a permit, in writing, from the Authority.

## **GENERAL REQUIREMENTS**

1. Every plumber and sanitary sewer contractor, including excavators, performing work covered by these Requirements for a fee or any other form of compensation must provide evidence of adequate insurance coverage for himself and/or his subcontractors and register with the Administrative Authority providing the data required by the Administrative Authority.

## **INSURANCE REQUIREMENTS**

1. Every plumber and sanitary sewer contractor, including excavators, performing work covered by these Requirements for a fee or any other form of compensation must execute and deliver to the Administrative Authority an effective street bond in the sum of \$20,000, with corporate surety to be approved by the Administrative Authority. Such plumber or sanitary sewer contractor shall also keep and maintain a general liability insurance policy with limits of not less than \$500,000 for bodily injury, \$50,000 for property damage and \$50,000 completed operations liability insurance. In addition to the above, such plumber or sanitary sewer contractor, including excavators, shall carry Pennsylvania workers' compensation insurance as required by law. Certificates of such insurance shall be supplied to Administrative Authority.

## **APPLICATION**

1. Prior to beginning work in the Borough, every plumber and sanitary sewer contractor, including excavators, performing work covered by these Requirements for a fee or any other form of compensation must register with the Administrative Authority providing data relative to experience, business location and similar matters on the application as provided by the Administrative Authority. The plumber or sanitary sewer contractor, including excavators, will also be required to acknowledge awareness of the Authority's Rules and Regulations for construction of water systems and sewer systems. Any changes in the data supplied on the original application must be supplied, in writing, to the Administrative Authority.

## **MINIMUM CONSTRUCTION SPECIFICATIONS FOR BUILDING SEWERS**

1. Building sewers shall meet the following requirements and as shown on the associated detail drawings.
2. The pipe and fittings shall be made of PVC SDR 35 or Schedule 40 PVC material.

3. All building sewers shall maintain a minimum horizontal separation of 5-feet with other utilities. A 10-foot horizontal separation is preferable.
4. A minimum pipe slope of 2% shall be maintained for the building sewer. A minimum cover of 3'-6" shall be maintained over the top of the pipe. All pipe shall be placed on a 6-inch bedding of PADOT 1B fine crushed stone. The PADOT 1B crushed stone shall be used to backfill the pipe to a minimum of 12-inches above the top of the pipe.
5. Ground and surface water shall not be permitted to enter the sewer system. Care shall be used to avoid debris from entering the sewer system.
6. Building sewers shall be placed in straight lines, or a cleanout shall be installed at all bends. 90-degree bends shall be completed by use of two 45-degree fittings. 90-degree fittings shall not be permitted.
7. Cleanouts shall be placed such that there is a maximum of 100-feet of pipe between cleanouts.
8. No trench shall be backfilled until the building sewer has been inspected and approved by an Authority representative.
9. A building trap shall be installed as indicated on the "Typical Building Sewer Connection" detail.
10. Basement and garage drains, cellar drains, sump pumps and any other drains conveying any liquid other than domestic sanitary sewer shall not be connected to the sewer system.
11. Each building sewer shall be subjected to an air test prior to approval by the Authority. The air test shall be witnessed by a representative of the Borough and the building sewer shall not be deemed acceptable until the building sewer has satisfactorily passed the air test. All costs of testing and subsequent tests shall be the responsibility of the owner.

The building sewer shall be tested by plugging the line at the point of connection with the building sewer by using a test tee and by plugging the building sewer just before the point of connection with the sewage drainage system of any structure. All risers, vents, plugs and cleanouts shall be adequately blocked, plugged and supported to withstand the pressure associated with the test.

An air test shall be performed. A pressure of 6.0 psi shall be maintained for 6 minutes, with no drop in pressure.

12. Building sewers greater than 12-feet deep shall be placed in accordance with the Authority's "Deep Sanitary Sewer Lateral" detail.
13. Building Sewers shall be located within the property lines of the property being serviced unless an easement has been obtained, and approved by the Authority.
14. A single sewer connection to the Authority's system for each property is required. Multiple sanitary sewer lateral connections for one property will not be permitted.
15. All construction shall be performed in a competent, workmanlike manner in accordance with recognized standards of the plumbing trade and specifications currently on file with the Authority.
16. The Authority, at its sole discretion, may stop or require reconstruction of, any work not conforming to these standards or specifications.
17. Property owners shall be responsible for the completion of the building sewer connection to the point of connection to the Authority's sanitary sewer main.

## **MINIMUM CONSTRUCTION SPECIFICATIONS FOR WATER SERVICE LINES**

1. Water service lines shall meet the following requirements and as shown on the detail drawing for "STANDARD DOMESTIC SERVICE INSTALLATION."
2. Copper Tubing: The water service line shall be in conformance with ASTM B 88, Type K, for ¾-inch to 2½-inch lines. Service Line Fittings: Threads for underground service line fittings shall be in full accordance with AWWA C800. Water service pipe listed in the Water Supply and Distribution section of the International Plumbing Code may be substituted with specific Authority approval.
3. All water service lines shall maintain a minimum horizontal separation of 5-feet with other utilities. A 10-foot horizontal separation is preferable.
4. A minimum cover of four (4) feet shall be maintained over the top of the pipe. All pipe shall be placed on a 6-inch bedding of sand. The sand shall be used to backfill the pipe to a minimum of 18-inches above the top of the pipe. Stone or quarry dust backfill is not acceptable.
5. No trench shall be backfilled until the water service line has been tested, observed and approved by an Authority representative.
6. Water service lines shall be located within the property lines of the property being serviced unless an easement has been obtained, and approved by the Authority.
7. A single water connection to the Authority's system for each property is required. Multiple water lateral connections for one property will not be permitted.
8. All construction shall be performed in a competent, workmanlike manner in accordance with recognized standards of the plumbing trade and specifications currently on file with the Authority.
9. A backflow prevention device (dual check valve ASSE 1024 approved) shall be installed on each water service line adjacent to the meter.
10. The Authority requires that a water metering chamber be installed for all water service lines greater than 100 feet measured from public right-of-way to face of building along the water service line. This applies to both residential and commercial installations.
11. After the water lateral is installed, the contractor, under observation from the Authority, shall open the corporation stop and introduce water into the new water service piping. All leaks shall be properly addressed by the contractor at his expense, prior to backfilling the water lateral.
12. The Authority, at its sole discretion, may stop or require reconstruction of, any work not conforming to these standards or specifications.

# CONSTRUCTION DETAILS

## FOR CONSTRUCTION OF RESIDENTIAL

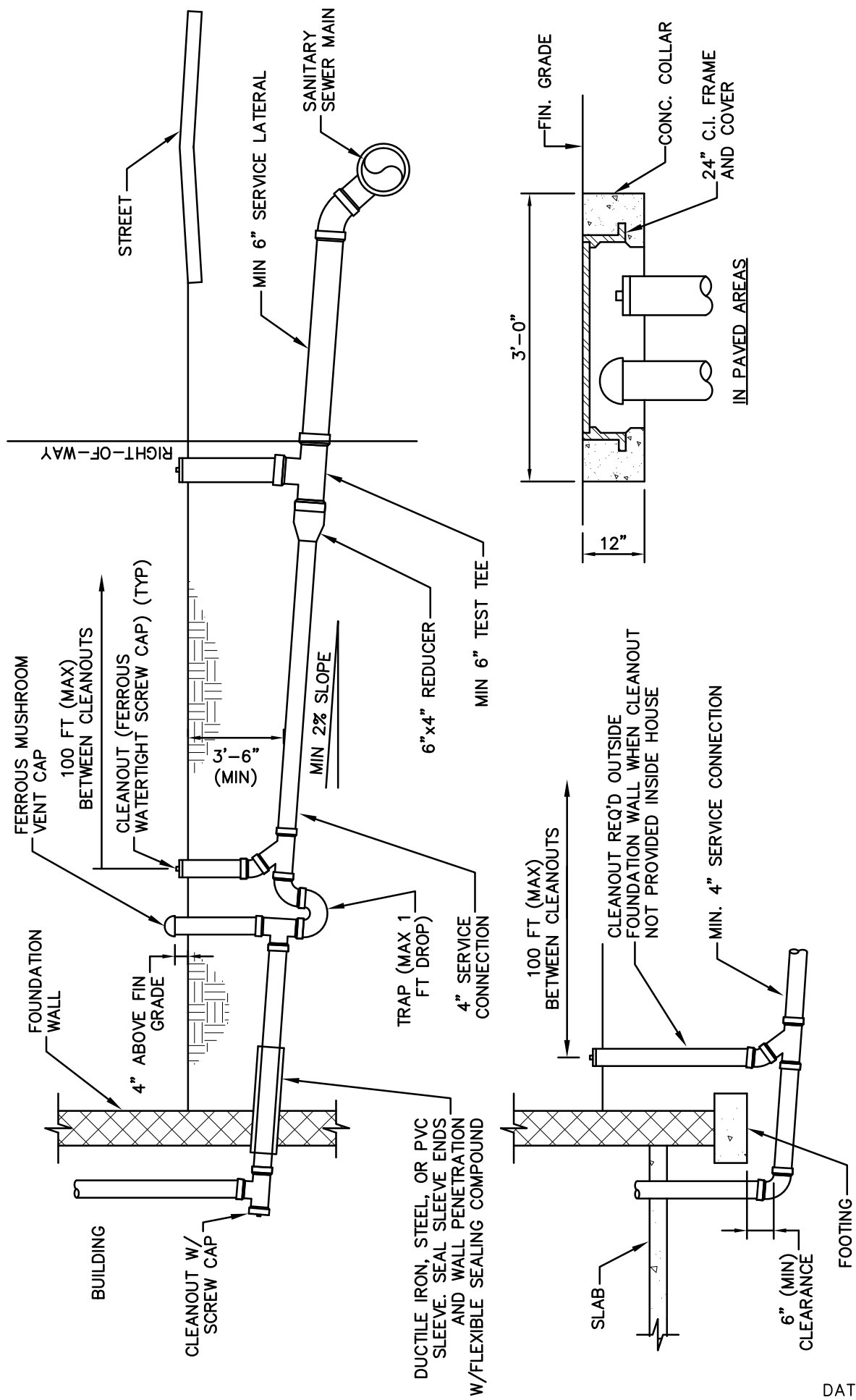
### BUILDING SEWERS

### &

### WATER SERVICE LINES

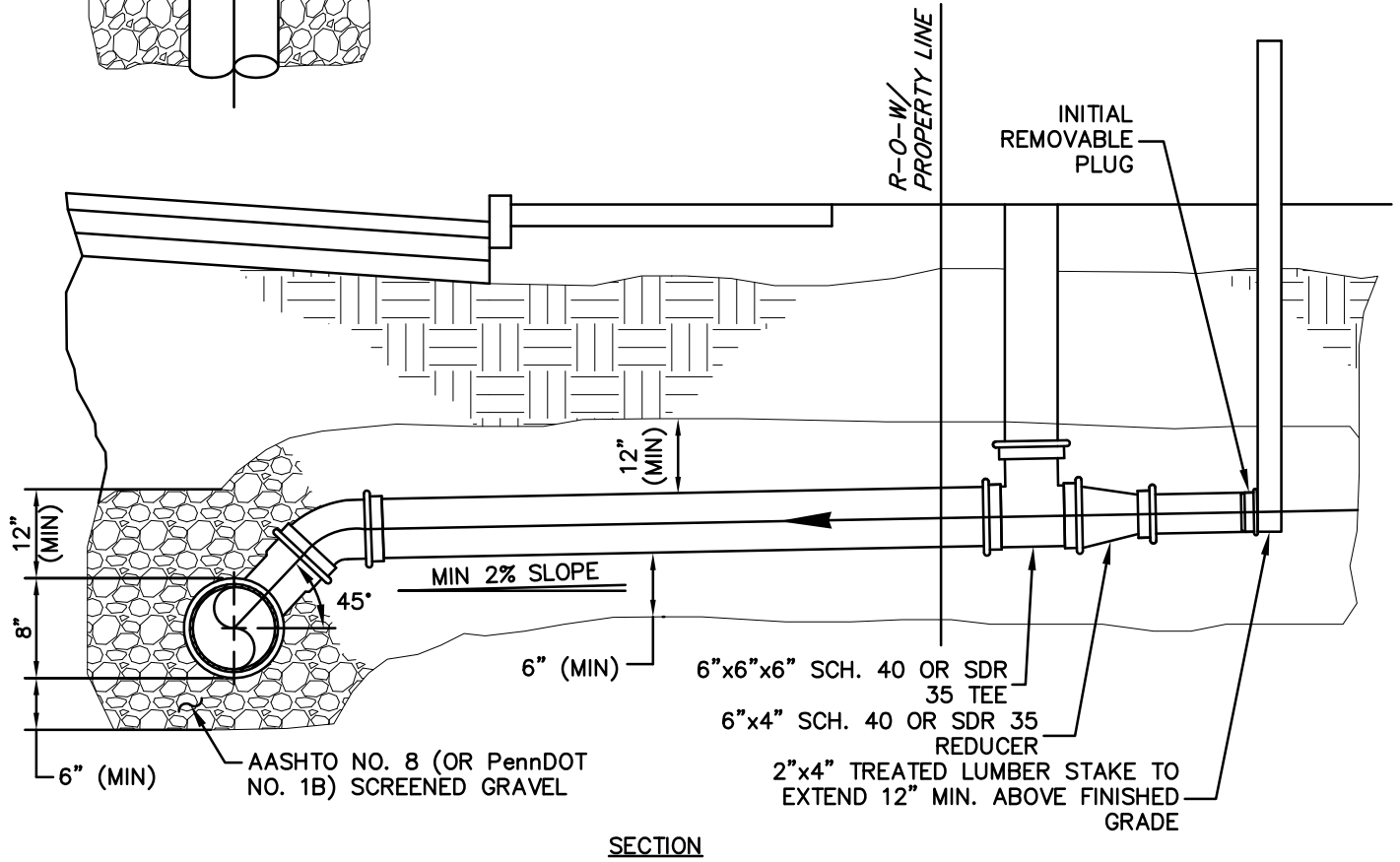
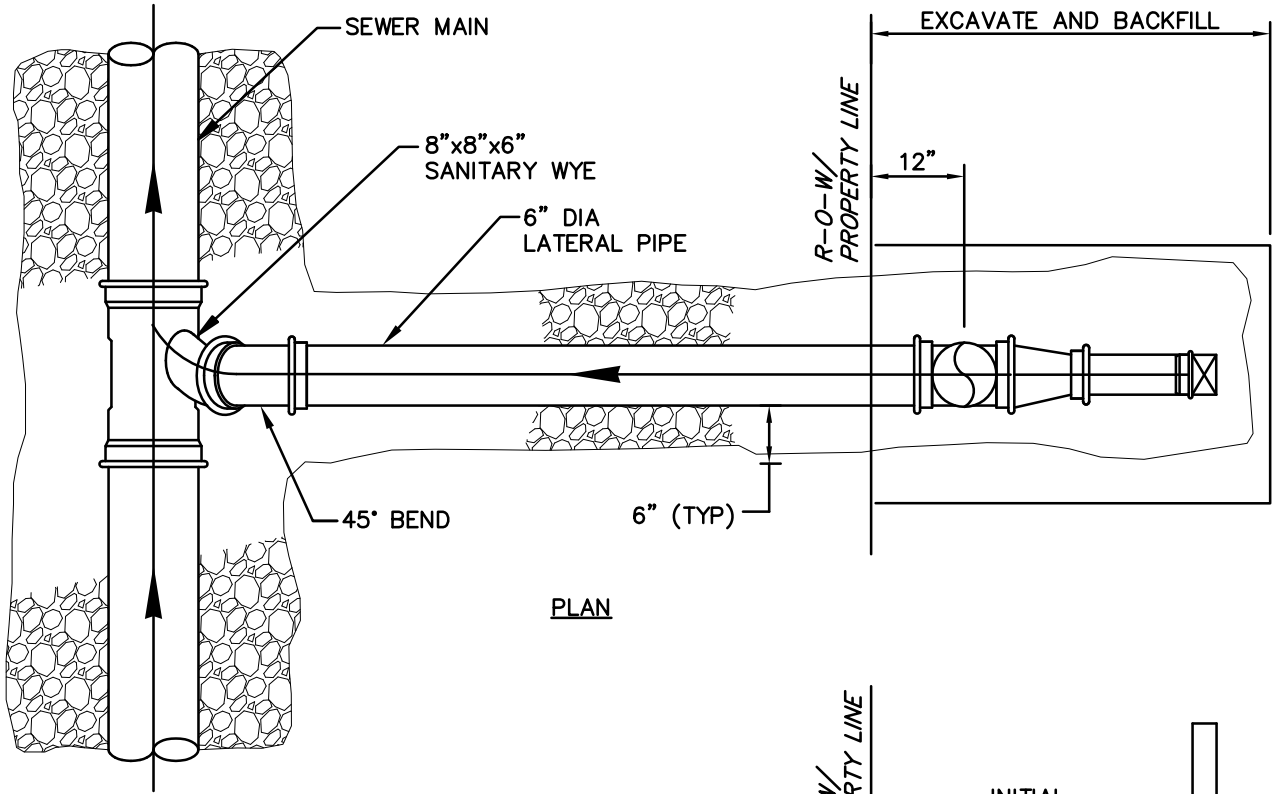
<u>DESCRIPTION</u>	<u>DETAIL #</u>
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NOTE:  
 PROVIDE 6" OF AASHTO NO. 8 (OR PennDOT NO. 1B) STONE  
 BELOW PIPE AND 12" ABOVE ENTIRE LENGTH OF PIPE.



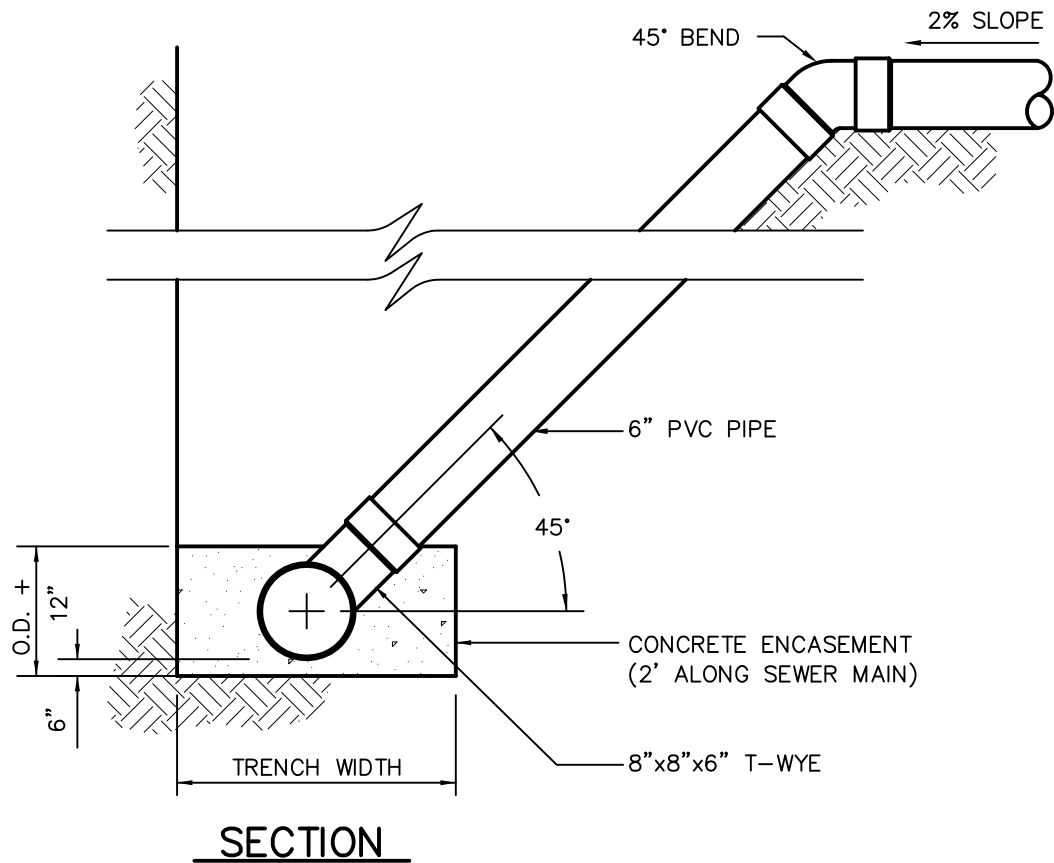
TYPICAL GRAVITY BUILDING SEWER CONNECTION

NO SCALE



# SHALLOW SANITARY LATERAL

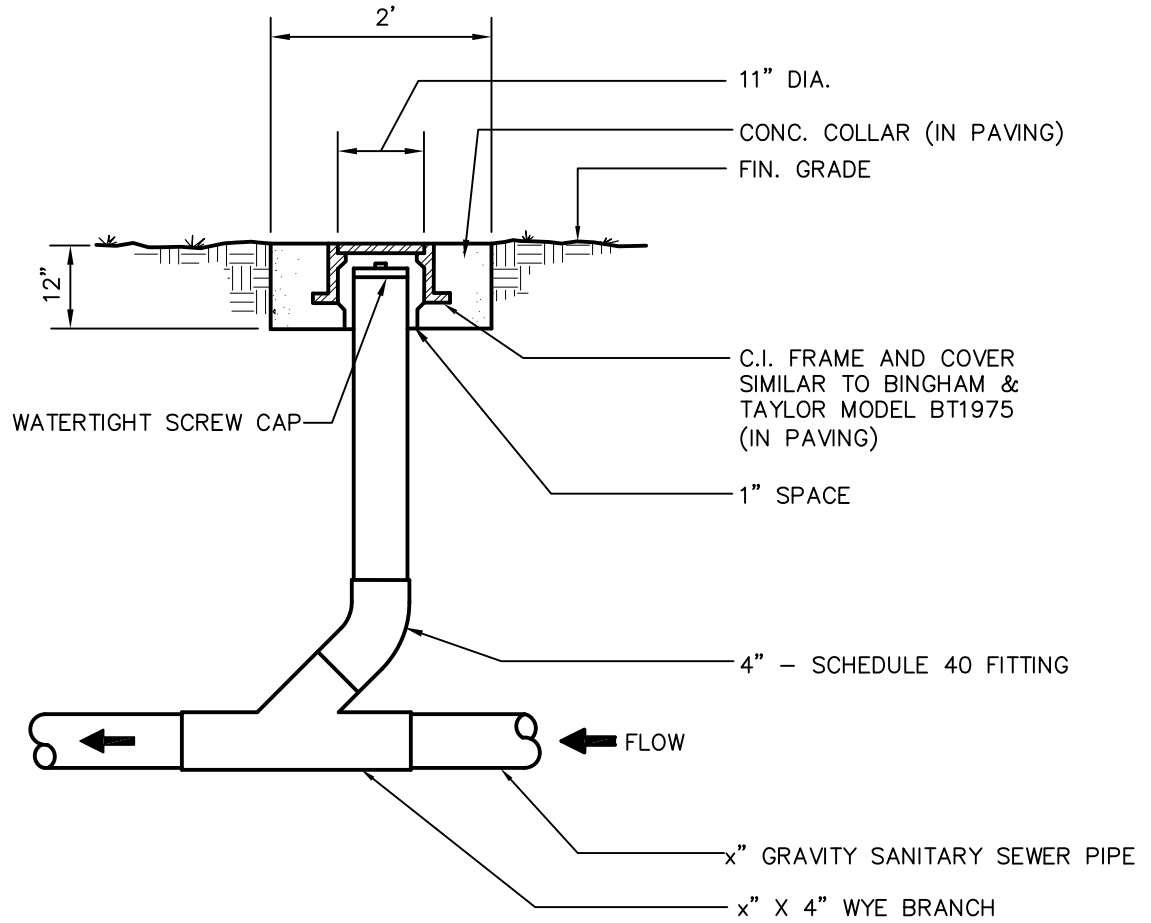
NO SCALE



## DEEP SANITARY SEWER LATERAL (12' AND DEEPER)

NOT TO SCALE

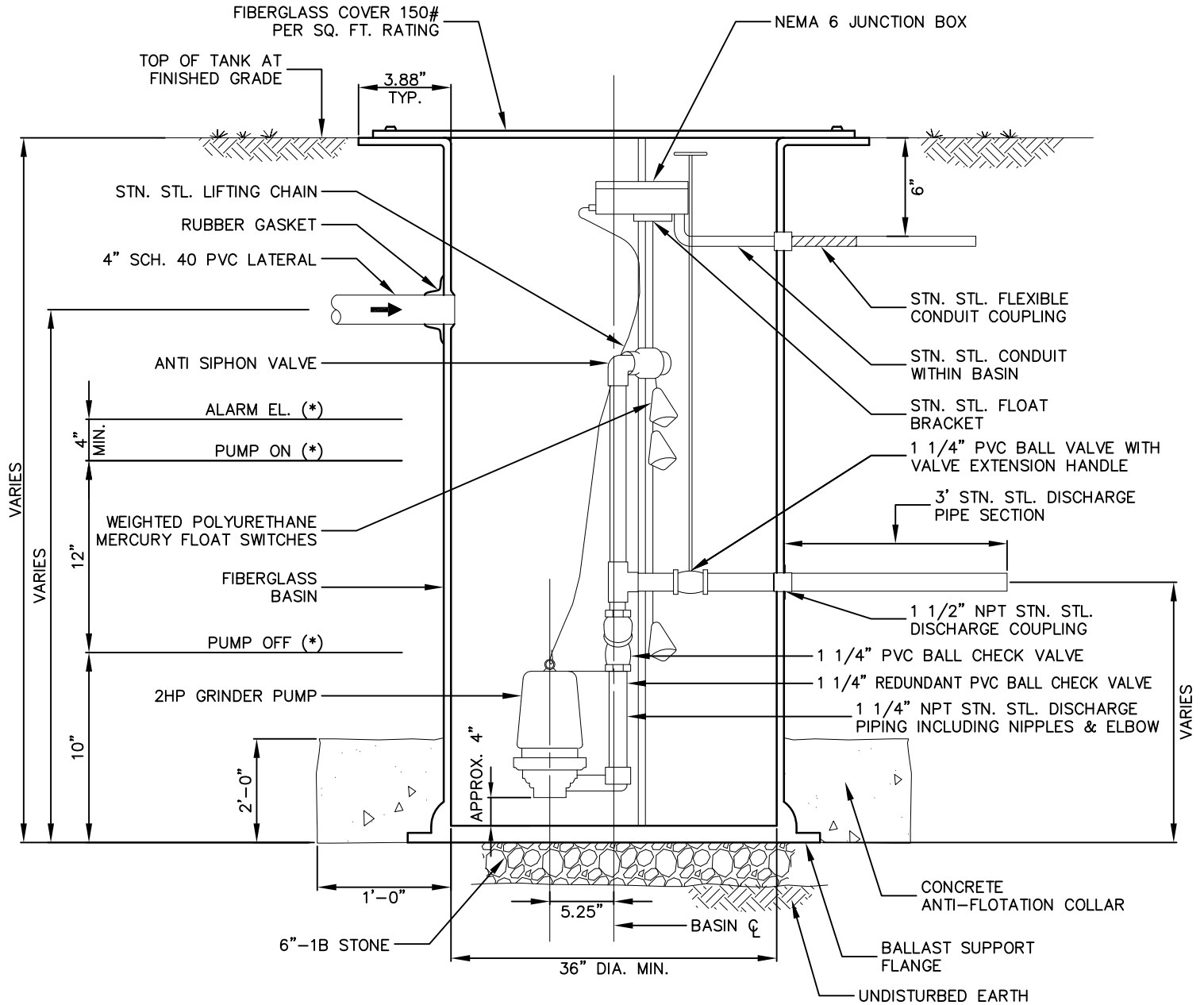




NOTE: GLUE ALL FITTINGS

# CLEANOUT

NOT TO SCALE



SECTION

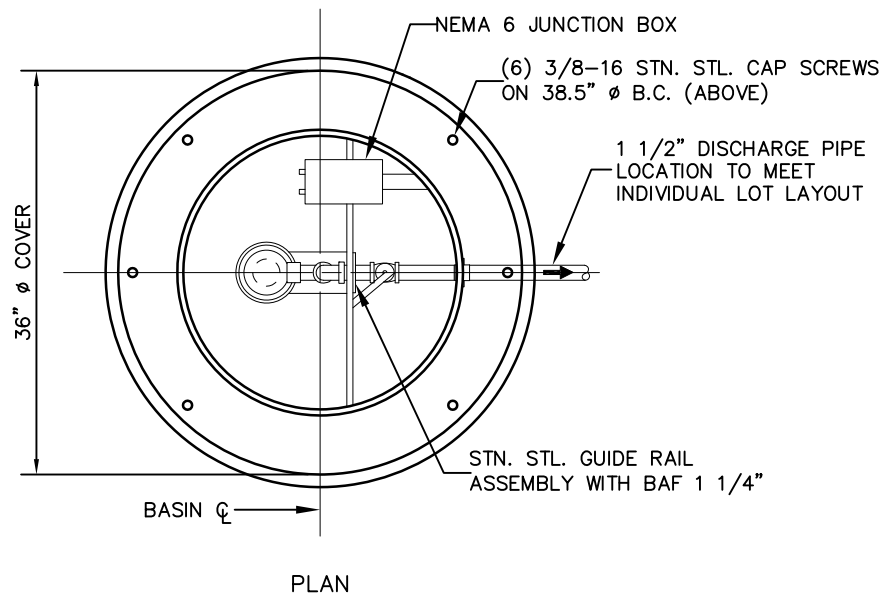
NOTE:  
\* ELEVATIONS PER SITE CONDITIONS.

# SIMPLEX GRINDER PUMP STATION FIBERGLASS BASIN - SECTION

NO SCALE

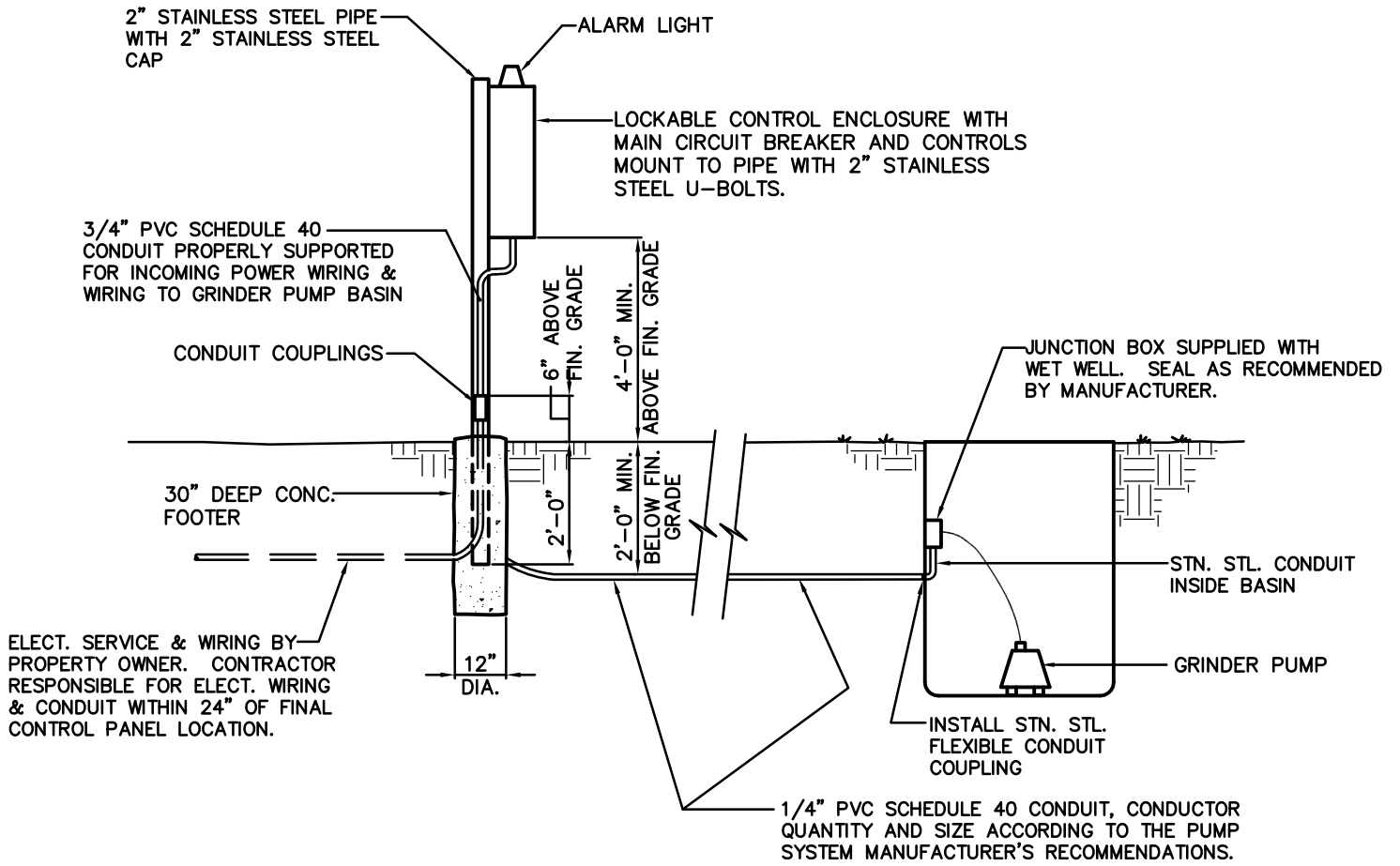
**NOTES:**

1. CONTRACTOR SHALL PROVIDE A MINIMUM 3' SECTION OF 1 1/2" STAINLESS STEEL DISCHARGE PIPING OUTSIDE OF BASIN. THE 1 1/2" STAINLESS STEEL PIPE SHALL BE CONNECTED TO THE 1 1/2" PVC SERVICE LATERAL BY USE OF A COMPRESSION FITTING OR DRESSER COUPLING.
2. BACKFILL WITH EXCAVATED MATERIAL APPROVED BY THE ENGINEER & CONTAINING NO SOIL LUMPS, STONE, CONCRETE OR FOREIGN OBJECTS LARGER THAN ONE (1) INCH IN MAXIMUM DIMENSION OR WITH CLASS 1S MATERIAL CONSISTING OF NO. 8 COARSE AGGREGATE TO 6" BELOW GRADE; THEN TOPSOIL & SEED TOP 6".
3. MINIMUM NET EFFECTIVE STORAGE VOLUME BETWEEN PUMP SHUT-OFF ELEVATION & INVERT OF INFLUENT LINE SHALL BE 50 GALLONS.
4. ALL COVER & ACCESS HARDWARE SHALL BE STAINLESS STEEL INCLUDING ALL NUTS, BOLTS, WASHERS, ETC. WHICH PENETRATE THE COVER OR THE BASIN.
5. ALL CONTROL PANEL EXTERIOR HARDWARE SHALL BE STAINLESS STEEL.
6. FIBERGLASS BASINS MAY NOT BE USED IN AREAS SUBJECT TO TRAFFIC LOADING.
7. LOCATION OF BASIN TO BE DETERMINED BY PROPERTY OWNER.
8. FINISHED GRADE SHALL BE SLOPED AWAY FROM THE BASIN TOP.



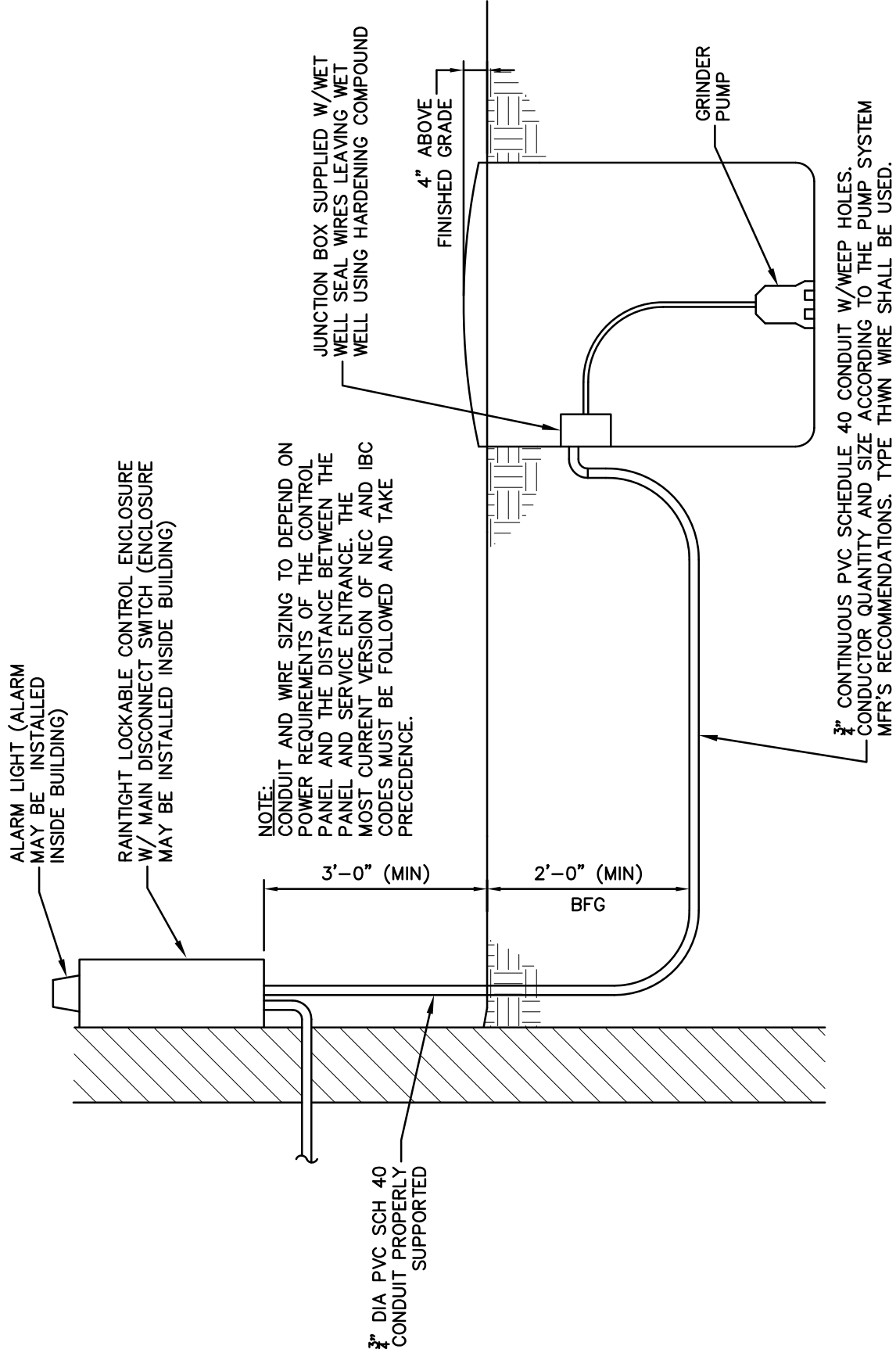
## SIMPLEX GRINDER PUMP STATION FIBERGLASS BASIN - PLAN

NO SCALE



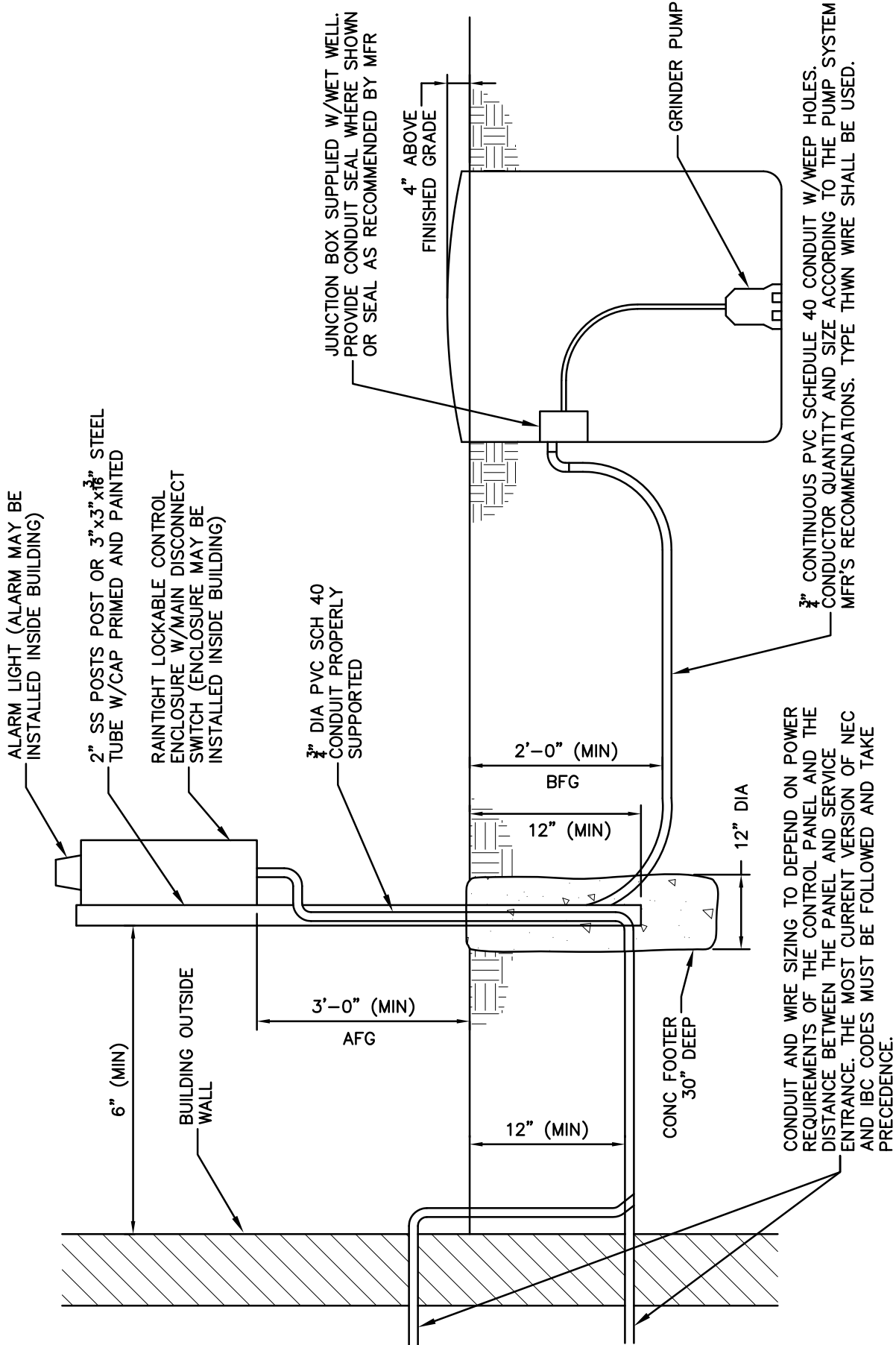
# GRINDER PUMP ELECTRICAL

NOT TO SCALE



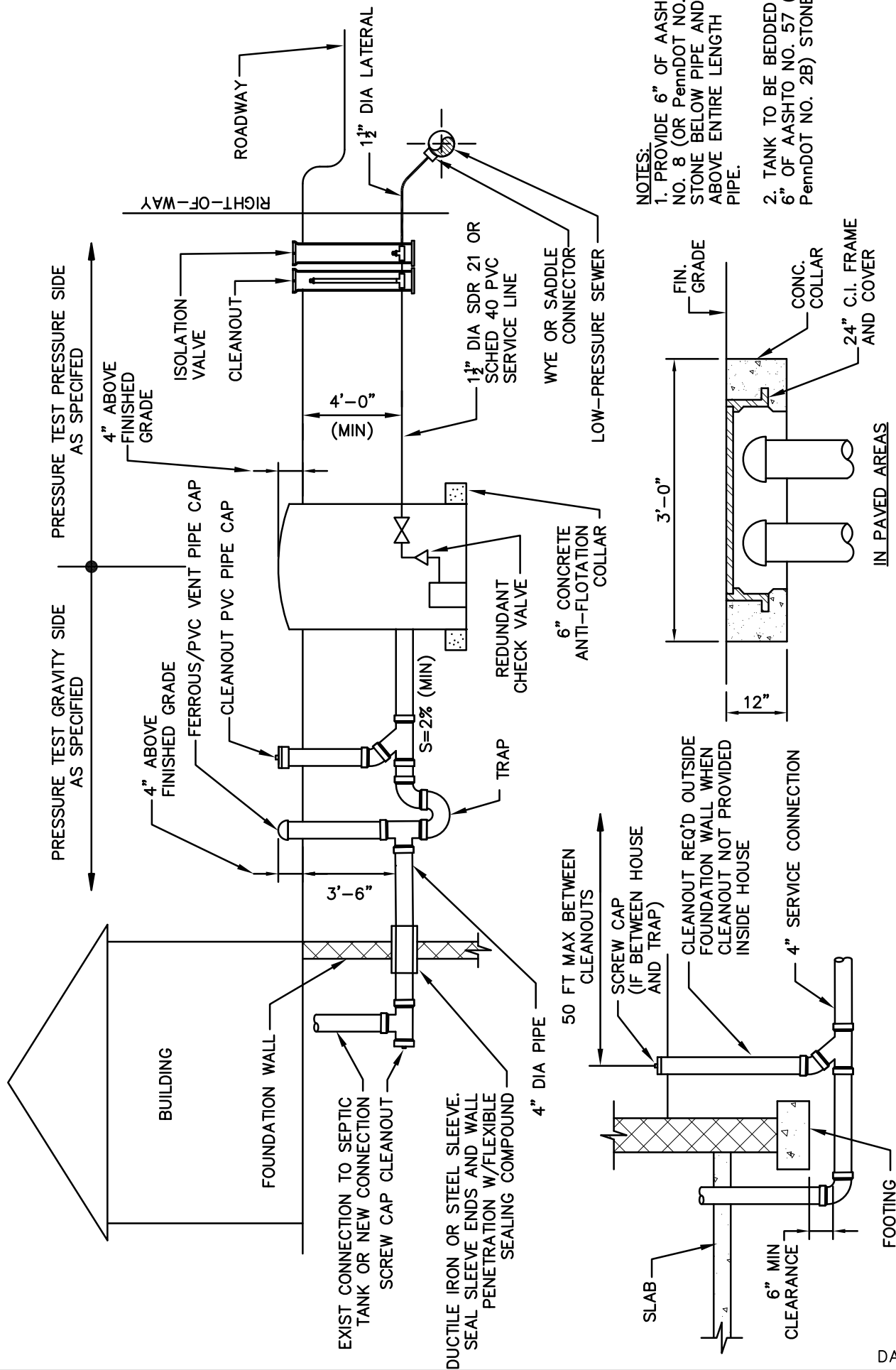
# GRINDER PUMP WALL MOUNTED CONTROL PANEL

NO SCALE



# GRINDER PUMP POST MOUNTED CONTROL PANEL

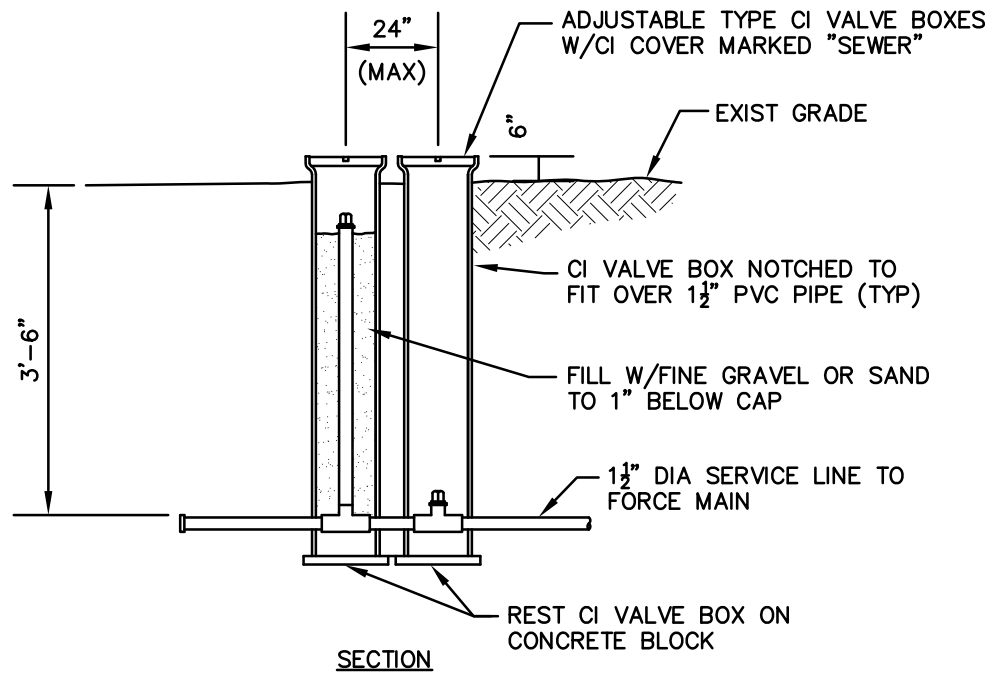
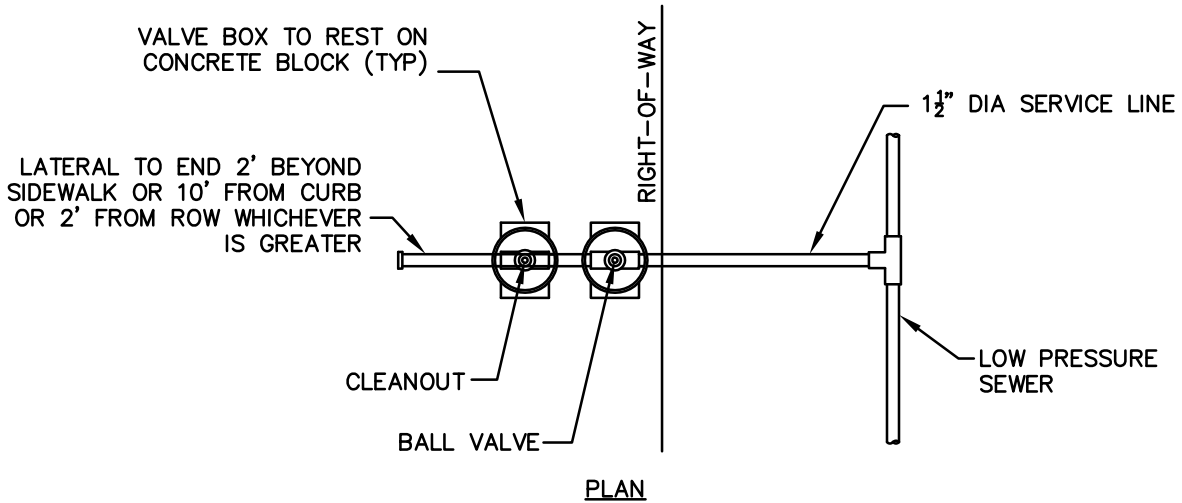
NO SCALE



- NOTES:
1. PROVIDE 6" OF AASHTO NO. 8 (OR PennDOT NO. 1B) STONE BELOW PIPE AND 12" ABOVE ENTIRE LENGTH OF PIPE.
  2. TANK TO BE BEDDED ON 6" OF AASHTO NO. 57 (OR PennDOT NO. 2B) STONE.

## TYPICAL GRINDER PUMP SERVICE LINE TO LOW PRESSURE SEWER SCHEMATIC

NO SCALE



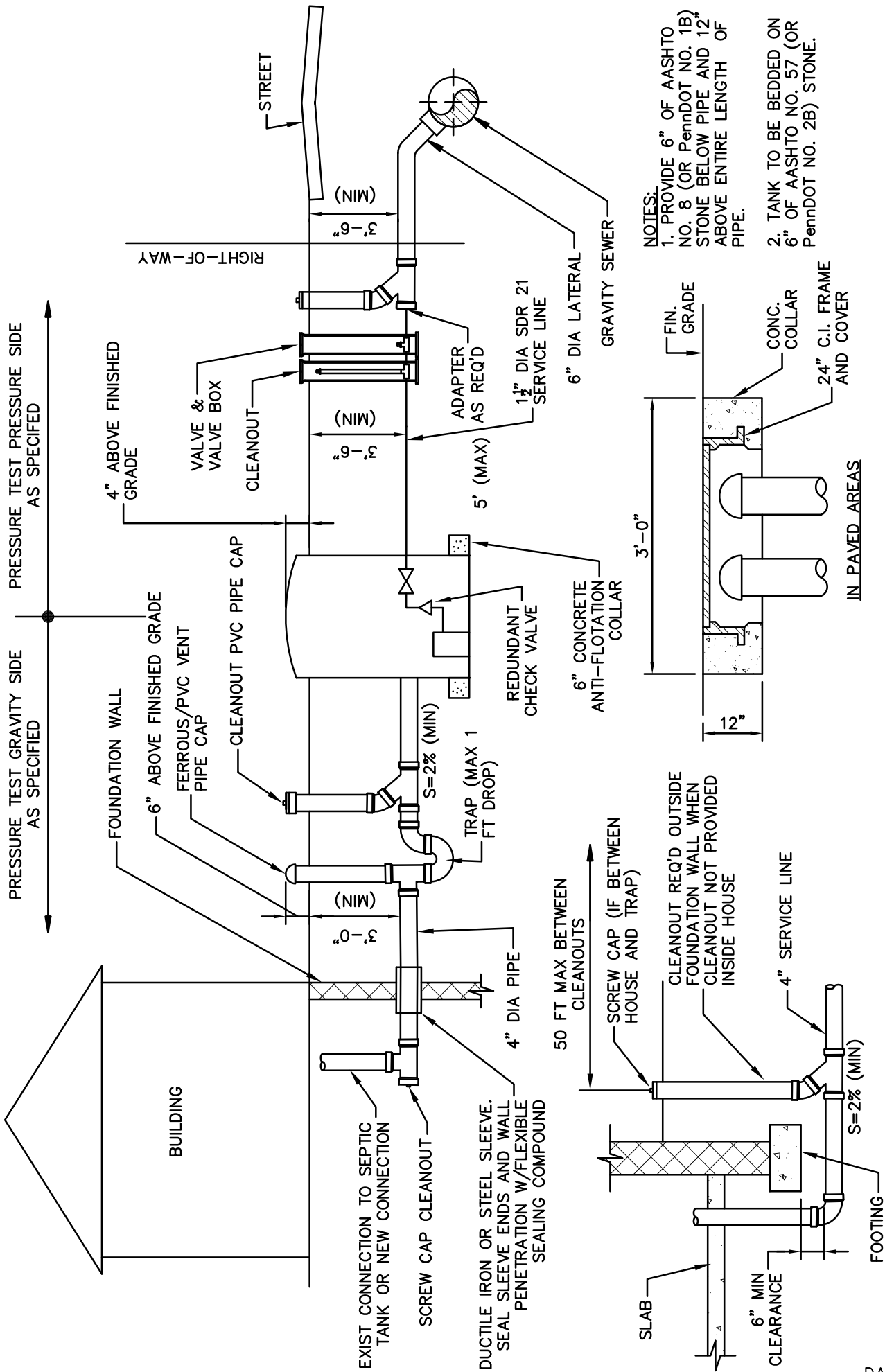
**NOTES:**

1. ALL PVC CONNECTIONS SHALL BE SOLVENT WELDED UNLESS NOTED OTHERWISE.
2. PROVIDE 6" OF AASHTO NO. 8 (OR PennDOT NO. 1B) STONE BELOW PIPE AND 12" ABOVE ENTIRE LENGTH OF PIPE.

## TYPICAL LATERAL CONNECTION TO LOW PRESSURE FORCEMAIN

NO SCALE



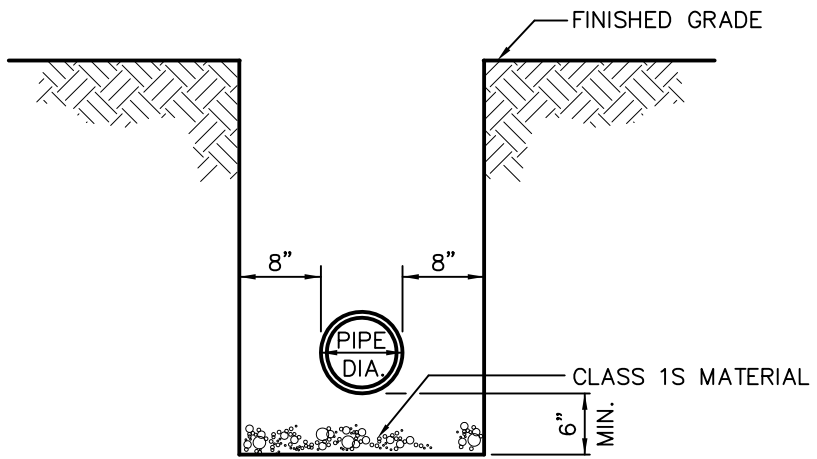


PRESSURE TEST GRAVITY SIDE AS SPECIFIED  
 PRESSURE TEST PRESSURE SIDE AS SPECIFIED

NOTES:  
 1. PROVIDE 6" OF AASHTO NO. 8 (OR PennDOT NO. 1B) STONE BELOW PIPE AND 12" ABOVE ENTIRE LENGTH OF PIPE.  
 2. TANK TO BE BEDDED ON 6" OF AASHTO NO. 57 (OR PennDOT NO. 2B) STONE.

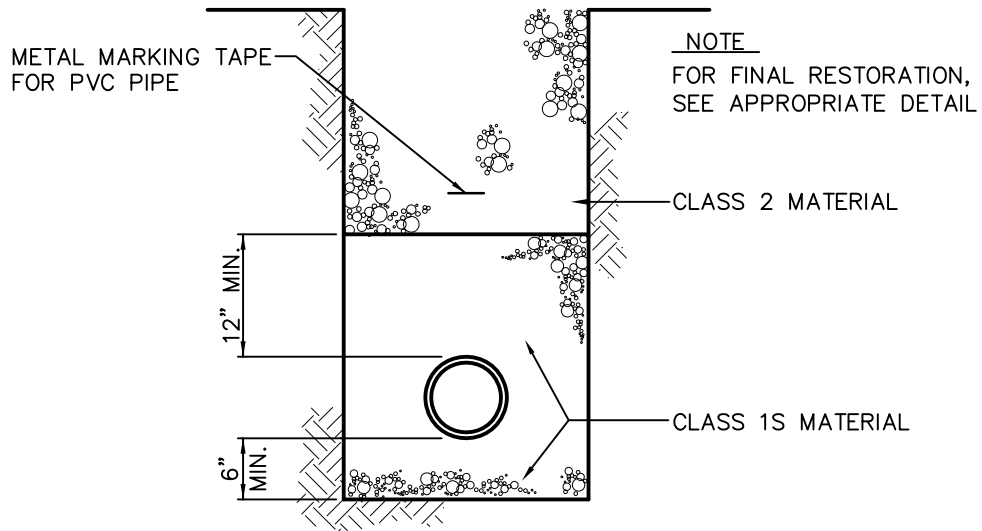
# TYPICAL GRINDER PUMP SERVICE LINE TO GRAVITY SEWER SCHEMATIC

NO SCALE

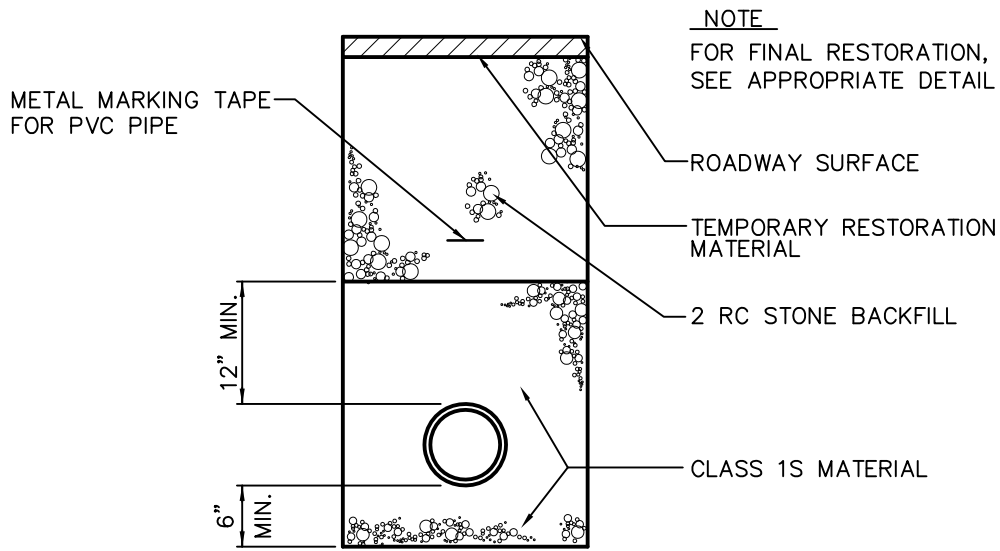


# TYPICAL TRENCH

NOT TO SCALE



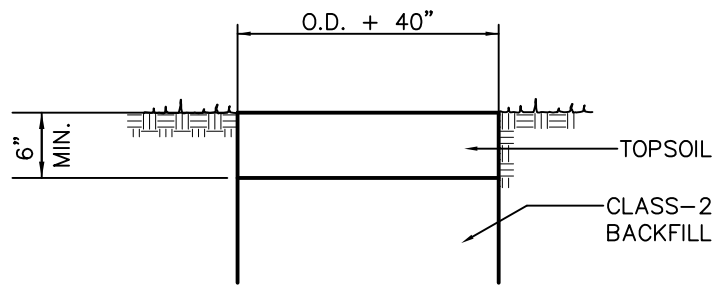
**TYPICAL BACKFILL  
(OTHER THAN PAVED AREAS)**



**TYPICAL BACKFILL  
(ALL PAVED AREAS)**

**TYPICAL TRENCH BACKFILL**

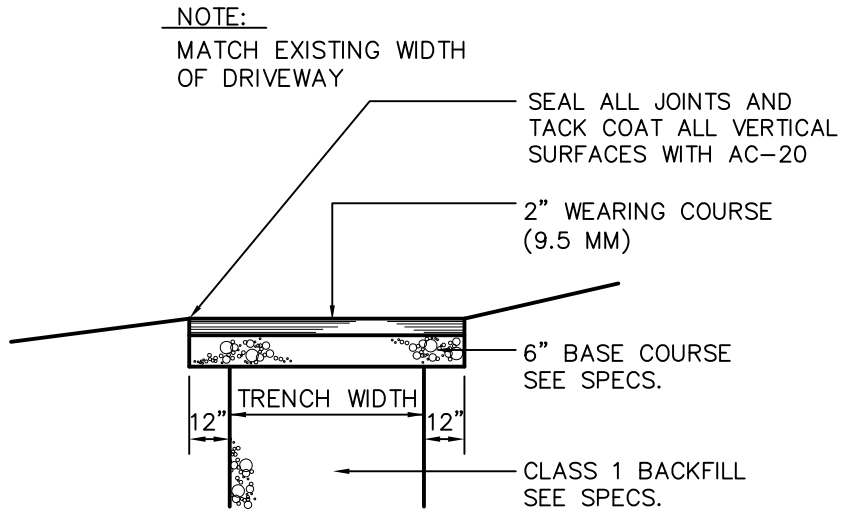
NOT TO SCALE



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## LAWN RESTORATION DETAIL

NOT TO SCALE

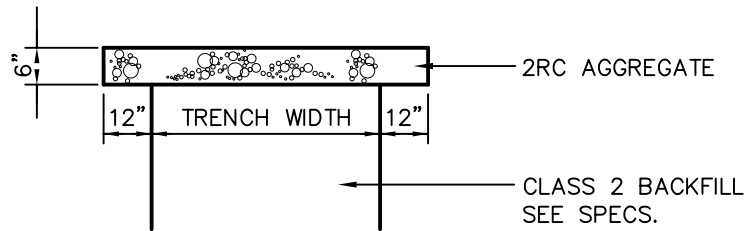


## PAVED DRIVEWAY RESTORATION

NOT TO SCALE

NOTE:

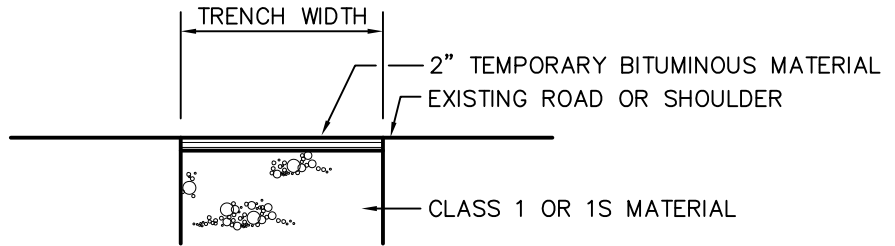
MATCH EXISTING WIDTH  
OF DRIVEWAY



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# STONE DRIVEWAY RESTORATION

NOT TO SCALE

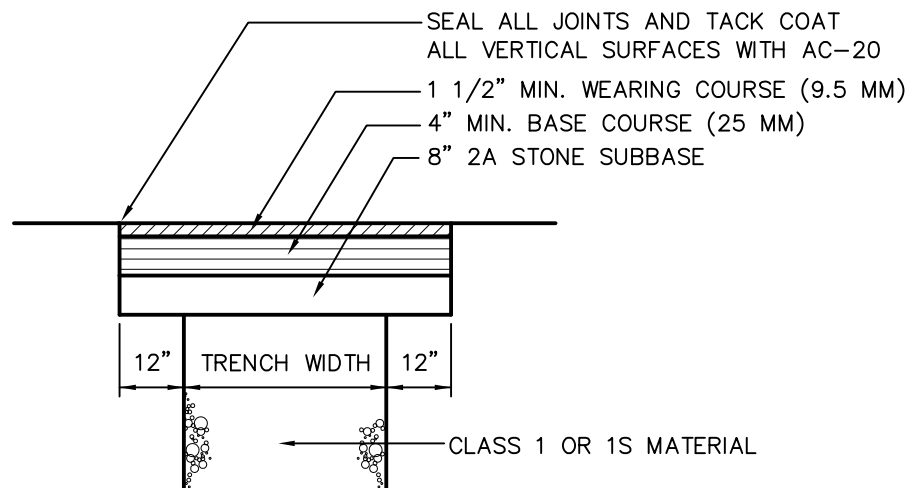


## TEMPORARY BOROUGH ROADWAY AND SHOULDER RESTORATION

NOT TO SCALE

NOTES

- ALL VERTICAL CUTS SHALL BE SAWCUT ONLY
- MATERIAL AND PLACEMENT FOR COARSE AND FINE AGGREGATES SHALL BE IN ACCORDANCE WITH PENNDOT SPECIFICATIONS PUBLICATIONS 408, LATEST EDITION.



## PERMANENT BOROUGH ROADWAY AND SHOULDER RESTORATION

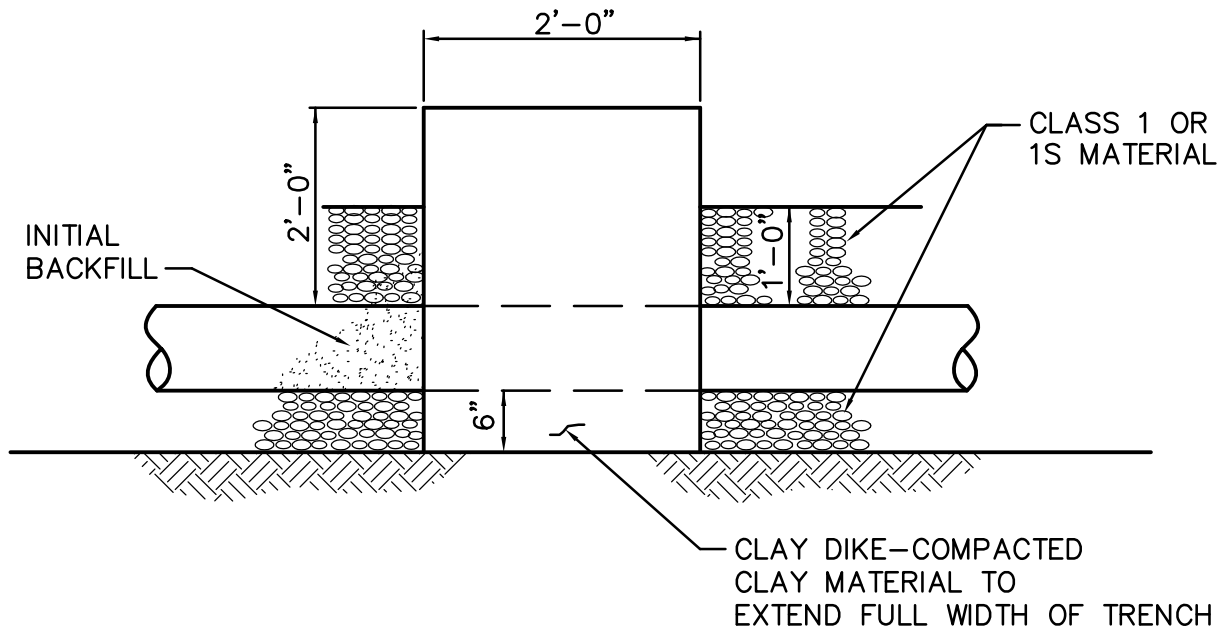
NOT TO SCALE





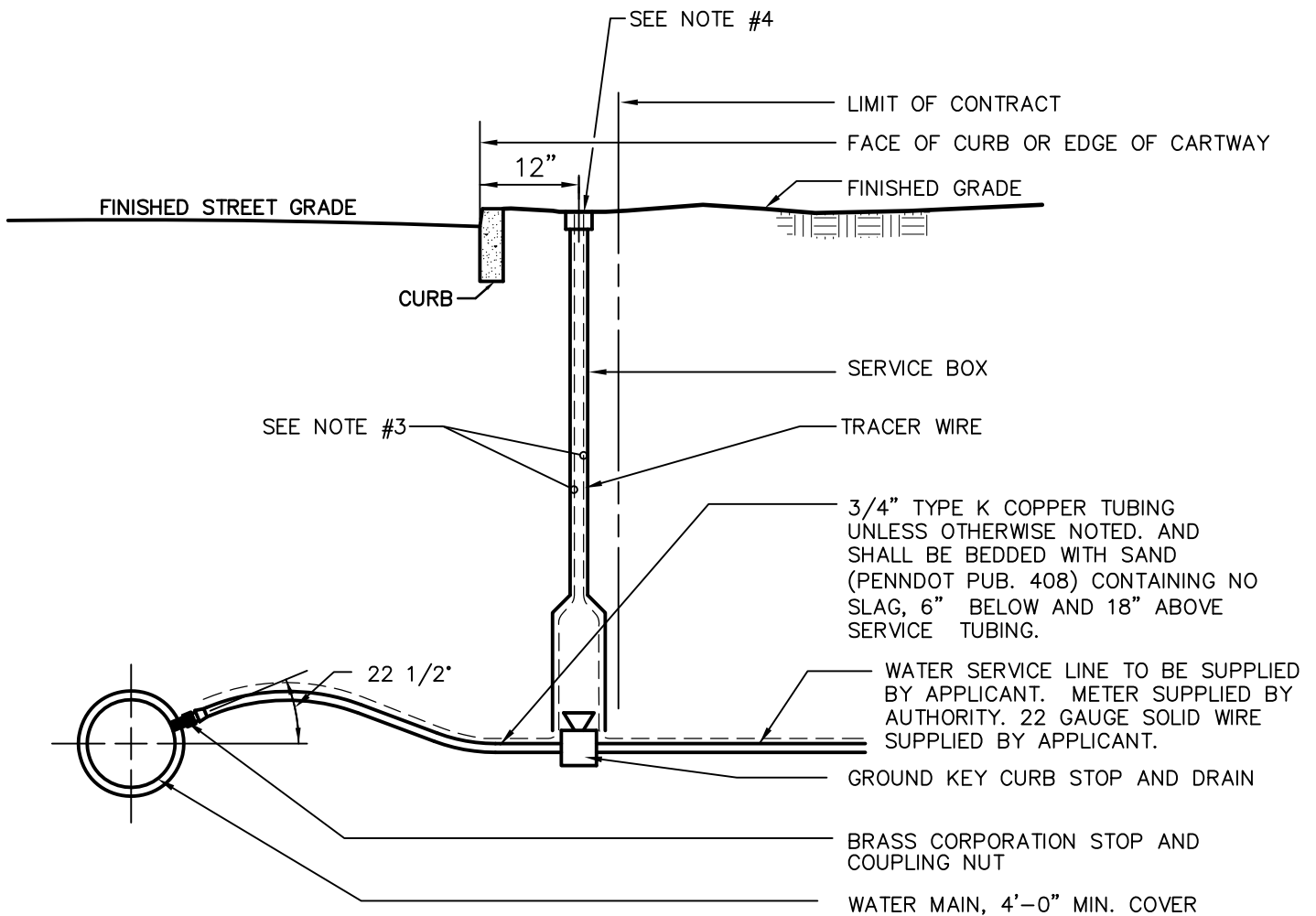
NOTES:

1. CLAY DIKE SHALL CONSIST OF CLAY CONTAINING NO MORE THAN 15% (BY VOLUME) STONE NO LARGER THAN TWO (2) INCHES IN DIAMETER. CLAY SHALL BE PLACED IN SIX (6) INCH LIFTS AND COMPACTED BY A MECHANICAL TAMPER TO NOT LESS THAN 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT.
2. INSTALL (1) CLAY DIKE EVERY 200' (MINIMUM ONE (1) CLAY DIKE PER MANHOLE RUN).



## CLAY DIKE DETAIL

NOT TO SCALE

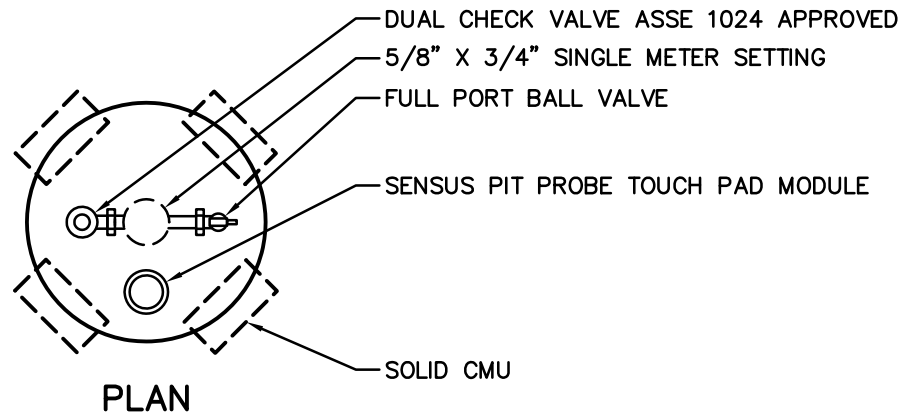


**NOTES:**

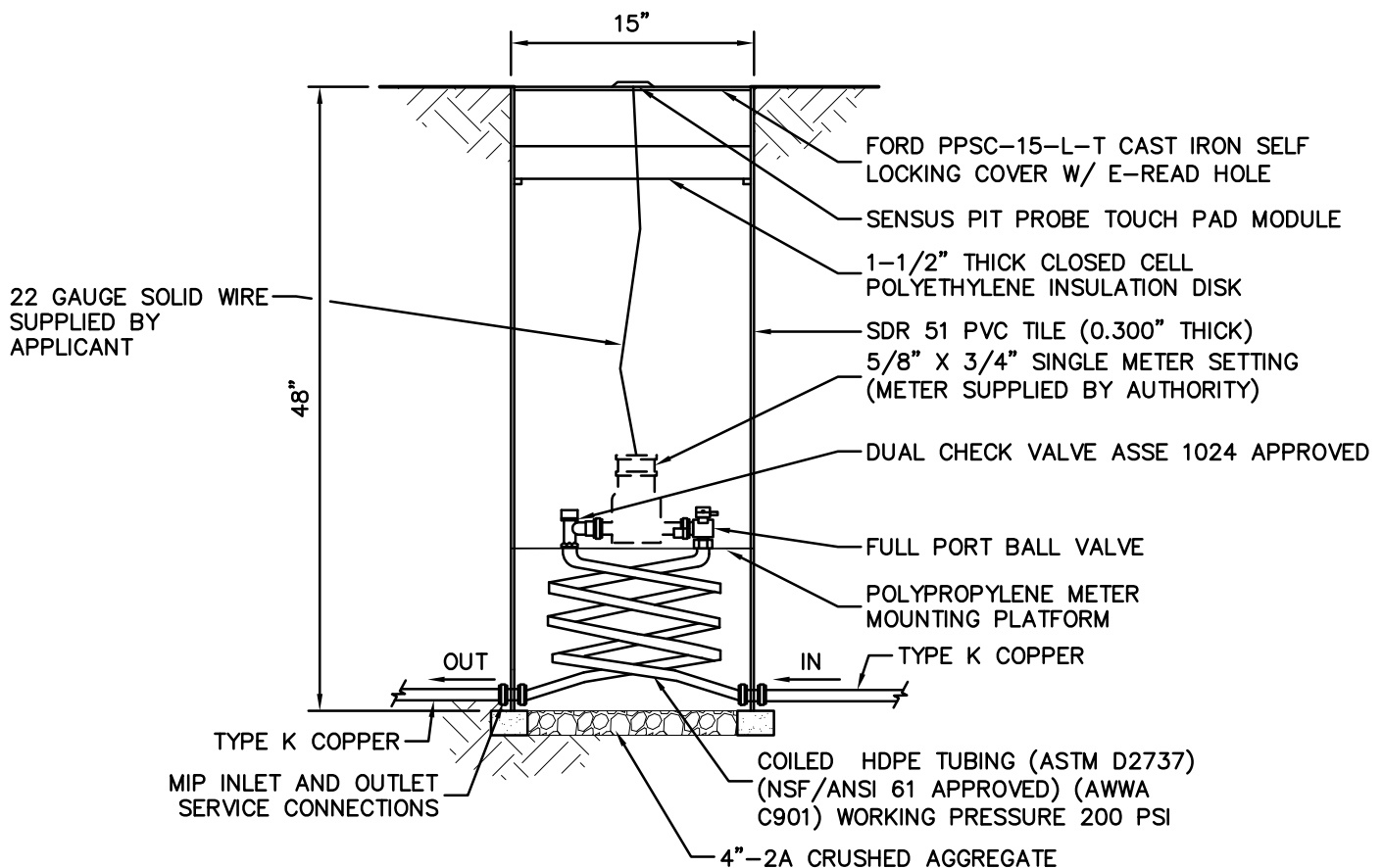
1. THE AUTHORITY REQUIRES THAT A WATER METERING CHAMBER BE INSTALLED FOR ALL WATER SERVICE LINES GREATER THAN 100 FEET MEASURED FROM PUBLIC RIGHT-OF-WAY TO FACE OF BUILDING ALONG THE WATER SERVICE LINE. THIS APPLIES TO BOTH RESIDENTIAL AND COMMERCIAL INSTALLATIONS. THE WATER METERING CHAMBER SHALL BE INSTALLED AT THE RIGHT-OF-WAY LINE OR ALTERNATE LOCATION APPROVED BY THE AUTHORITY.
2. WATER METERING CHAMBERS SHALL BE REVIEWED AND APPROVED BY THE AUTHORITY.
3. TRACER WIRE TO BE INSTALLED FROM WATER MAIN TO TOP OF VALVE BOX. TRACER WIRE TO BE INSTALLED FROM TOP OF VALVE BOX TO BUILDING.
4. LOOP 24" (MIN.) TRACER WIRE IN VALVE BOX.

## STANDARD DOMESTIC SERVICE INSTALLATION

NOT TO SCALE

**NOTES:**

1. FORD COIL PIT SETTER OR APPROVED EQUAL.
2. BRASS CONNECTIONS CONFORM TO ASTM C800.
3. BRASS VALVES & FITTINGS NSF/ANSI 61 APPROVED.

**SECTION****NOTES:**

1. THE AUTHORITY REQUIRES THAT A WATER METERING CHAMBER BE INSTALLED FOR ALL WATER SERVICE LINES GREATER THAN 100 FEET MEASURED FROM PUBLIC RIGHT-OF-WAY TO FACE OF BUILDING ALONG THE WATER SERVICE LINE. THIS APPLIES TO BOTH RESIDENTIAL AND COMMERCIAL INSTALLATIONS. THE WATER METERING CHAMBER SHALL BE INSTALLED AT THE RIGHT-OF-WAY LINE OR ALTERNATED LOCATION APPROVED BY THE AUTHORITY.
2. WATER METERING CHAMBERS SHALL BE REVIEWED AND APPROVED BY THE AUTHORITY.
3. OTHER SIZES SHALL BE REVIEWED ON A CASE BY CASE BASIS.

## STANDARD 3/4" METERING CHAMBER

NO SCALE

DATE: APRIL 2019