

# **THE METROPOLITAN DISTRICT**

## **SANITARY AND STORM SEWER SERVICE CONNECTION MANUAL**

A manual of procedures and details for the installation of  
sanitary and storm sewer services in the District service area.

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# INTRODUCTION

This manual has been prepared by The Metropolitan District (MDC) to provide standards and procedures for the installation of sewer service house connections, storm sewers and drainage connections directly or indirectly connected to the MDC's sanitary and storm sewer collection system. It is created under the auspices of the Ordinances and Charter of the MDC.

The purpose of this manual is to develop an understanding of how a sanitary and/or storm drain connection is executed following MDC procedures. These procedures include MDC review and approval of plans and specifications, drain layer eligibility requirements, a sewer connection permit and the construction inspection.

The MDC's sanitary sewer system includes all of Bloomfield, East Hartford, Hartford, West Hartford, Newington, Rocky Hill, Wethersfield and Windsor. In addition the MDC has responsibility over certain storm drain systems within the City of Hartford.

MDC Sewer Ordinances require that a permit be obtained from the MDC before any person shall make any excavation for or construct, install, lay, repair, alter, replace, cap, abandon or remove any sewer, storm drain or drain connection or structure or other appurtenance in a public street or in private lands, which sewer or drain is in any way connected, or discharges directly or indirectly to any public sewer or drain of the MDC, or is intended at some future time to be so connected or so discharged.

This manual is comprised of four major parts: Part 1 - Standard Practices and Procedures; Part 2 –Design Standards; Part 3 – Sanitary Sewer and Storm Drain Installation Details; and Part 4 - Approved Materials for Sanitary Sewer Service Connection Installations. There are four Appendices: Appendix A – Application for Eligibility; Appendix B – MDC Bond Form; Appendix C – MDC Insurance Certificate; and Appendix D - MDC Sewer Connection Permit Form.

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# **PART 1**

## **STANDARD PRACTICES AND PROCEDURES**

### **Section 1 – SUBMISSION OF PLANS AND SPECIFICATIONS**

- a. Prior to the MDC issuance of a Sewer Connection Permit, plans and specifications must be submitted for review and approval to the MDC's Utility Services Department at 125 Maxim Road, Hartford, Connecticut 06114. The MDC will determine whether an existing main sewer needs to be extended or whether a sewer house connection as defined below is appropriate.
- b. A main sewer extension is a public sewer sometimes constructed by developers but turned over to the MDC upon completion. A sewer lateral is any branch extending from the main sewer to the street line fronting the property. Main sewer shall be installed under a Developer's Permit-Agreement (DPA) which is covered under a separate MDC manual entitled "Guidance Manual Developer's Permit-Agreement". All DPA's are managed through Engineering Services at 555 Main Street, Hartford, Connecticut 06142. The design standards to be used in sewer main extensions must utilize the MDC Project Manual. Both of these referenced manuals are available on the MDC website. The Developer's Permit-Agreement Guidance Manual is located at webpage <http://themdc.org/what-we-do/engineering-planning/developer-permit-agreements> and the MDC Project Manual is located at webpage <http://themdc.org/what-we-do/engineering-planning/technical-services>
- c. A sewer house connection is constructed by laying polyvinyl chloride (PVC) or ductile iron (DI) pipe from the sewer main or existing lateral at the street line to the building to be served. A sewer house connection shall be installed after applying for and issuance of a sewer house connection permit managed through the Utility Services Department, 125 Maxim Road, Hartford, Connecticut 06114. No connection shall be permitted for any land which has not been assessed or has not shared in an equitable manner in the expense thereof, unless prior to such connection, the owner of such land first signs a special agreement, and pays a sanitary sewer connection charge in full or arranges to pay said sanitary sewer connection charge in the manner provided for in section S7s of the MDC's Sewer Ordinances.
- d. When a sewer or drain connection is proposed from any new building, a suitable plot plan must be submitted to the MDC. Such plan should have complete dimensions, the location of the lot on the public street, the location of the building on the lot, the house number, or the lot number, metes and bounds of the lot and its location with respect to the nearest side street, the owner's (not builder's) name and address, the type of occupancy of the premises and number of family units to be served by the sewer connection. A copy of the deed to the property must be submitted with the plot plan.

In the case of a proposed sewer or drain connection from an industrial building, commercial building, apartment house or any building other than a normal residential building or for parking areas for more than five cars, the MDC must be provided with a suitable plan of drainage and the proposed method of connections of sanitary sewage and storm drainage to the public sewer or storm drain. Such plan must be submitted to the MDC prior to the time when the Sewer Connection Permit is needed in order to allow the MDC sufficient time to review the proposed installation. It should be noted that intensification of existing uses or a change in use may result in additional assessment charges based on the Real Estate department review of the original property assessment and the intensified or change in use.

Storm drainage plans in Hartford must (1) be submitted to and approved by the MDC for acceptance of proposed construction, (2) be submitted to and approved by the City of Hartford License and Inspection Department for approval and adequacy of drainage, and (3) be returned to the MDC for final approval of plan and issuance of necessary permits.

- e. Where the sewer may possibly be subjected to prohibited wastes, such as oil, grease, gasoline, sand, grit, etc., as shall be determined by the MDC, the plan must show the installation of an approved oil or grease separator and/or sand-grit trap on the sanitary plumbing. Plans and specifications of all industrial waste pretreatment facilities must be approved by the State of Connecticut Department of Energy & Environmental Protection prior to issuance of a Contractor's Sewer Connection permit from the MDC. A State Department of Energy & Environmental Protection discharge permit must be issued prior to discharge of wastewater to the sanitary sewer system.
- f. All plans must have the seal of a Connecticut licensed professional engineer or surveyor as appropriate.
- g. When making plans for new buildings or for parking areas for more than 5 cars in Hartford, or when making plans for intensification of existing uses or changing the use of a particular property, the Engineer is advised to check the latest planning and zoning ordinances of the City of Hartford regarding engineering design. Footing drains must go to a sump prior to the connection to the drain outside the building. Catch basins must be placed to adequately drain the area.
- h. The Table 1 checklist included herein at the end of Part 1 has been developed to aid engineers, consultants and property owners in the preparation of sewer - drainage plans. The MDC must approve the plans prior to issuance of a Sewer Connection Permit for a Sanitary Sewer – Storm Drain Connection to any new commercial or industrial building or residential apartment of more than three family units.

## **Section 2 – CONTRACTOR’S APPLICATION, BOND AND INSURANCE**

- a. In order to be permitted to install sewer connections to the MDC sanitary system, the Drain Layer Contractor shall submit a completed Application for Eligibility, Bond and Insurance, which information will be kept on file for future reference.
- b. The Application for Eligibility form must indicate that applicants possess proper state licensing. A valid state license (P-1, P-7 or W-9) is required prior to obtaining a sewer connection permit. Authorized individuals representing the licensee are required to sign permit forms. See Appendix A.
- c. Prior to the MDC approving and issuing any permit for sewer or drain work, the licensed Drain Layer Contractor shall present the required permit for street excavation from the proper local and state authority and the Call-Before-You-Dig ticket number.
- d. If the proposed sewer work is within the limits of any State Highway, the Drain Layer Contractor shall also present the required permit from the Connecticut State Department of Transportation before receiving the required sewer permit from the MDC.
- e. The Contractor's Bond shall be executed by the surety company's agent, including the name of the contractor, name of responsible state licensee, name of surety and proper signatures. See Appendix B.
- f. The Certificate of Insurance shall include coverage's for General Liability with The Metropolitan District and State of Connecticut added as additional insured, Automotive Liability, Protective Liability in the name of The Metropolitan District (with the policy) and Workers' Compensation and Employers' Liability. The amount of insurance coverage shall meet the prevailing minimum requirements and be presented on the MDC's Certificate of Insurance. See Appendix C.
- g. Sewer Connection Permits will only be issued once all forms are completed and approved by the MDC for eligibility, bond, insurance and after all assessment cost, if any, are paid or time payment plan and voluntary lien are completed by the property owner. See Appendix D.

## **Section 3 - SAFETY**

- a. The Drain Layer Contractor shall comply with all pertinent provisions of the Department of Labor, Occupational Safety and Health Administration, Title 29 Code of Federal Regulations Chapter XVII Parts 1910 – “General Industry Standards” and Parts 1926 – “Construction Industry Standards”. The Contractor shall also comply with Building Code requirements of the State of Connecticut.
- b. The Drain Layer Contractor alone shall be responsible for the safety, efficiency and adequacy of its plant, appliances and methods, and for any damage or injury which may result from their failure or the improper construction, maintenance or operation.
- c. The Drain Layer Contractor shall properly design and furnish all labor, materials, equipment, and tools necessary to completely construct the excavation support system, permanent or temporary, including sheet piling, trench shields (trench boxes), timber

trench shoring, pneumatic/hydraulic shoring, steel sheeting or sheeting using other materials, sloping and benching. All of the proper materials and all equipment necessary to protect employees in excavations against cave-ins shall be furnished and installed. Also, all employees and the general public shall be protected from hazards related to the construction. Adequate support systems shall also protect people from equipment which might fall or roll into an excavation, utilities within or adjacent to the excavation or which is impacted by operations under the construction.

- d. If, in the opinion of the MDC, the Contractor has failed to maintain a safe trench and work area, MDC forces shall refuse to enter the trench until safety concerns are satisfied. This requirement shall not in any way relieve the Contractor of complete responsibility and liability for maintaining a safe and adequate trench excavation at all times and at any depth.

#### **Section 4 – EXCAVATION**

- a. Capped sewer wyes and laterals laid since about 1950 are usually marked with wood markers left in the ground extending from a point directly in front of the capped wye, or lateral to a point about four feet below the ground. These markers were placed to aid the Drain Layer Contractor in locating the point of connection more closely and thus avoid damage to the public sewer from excavating procedure.
- b. The Drain Layer Contractor shall fully comply with the State of Connecticut Public Act No. 77-350 in regards to the proper notification to be given the Call-Before-You-Dig central clearinghouse prior to any excavation, discharging explosives or demolition and to all other actions concerning work near underground utility facilities. Proper notice may be given by calling 811, calling 1-800-922-4455, or applying online through the CBYD website. Excavators are reminded to read the previous section on safety.

#### **Section 5 – CONNECTION OF BUILDING PLUMBING**

The building plumbing pipe shall not be connected to the sewer house connection until the tight building plumbing is complete or until the length of building plumbing pipe under or through the foundation is tightly capped, or until the MDC is satisfied that the building plumbing, if not completed, is so constructed to prohibit the discharge of subsoil drainage, surface, or subsurface storm or muddy water from entering the sanitary sewer system. Note that the MDC does not inspect interior plumbing.

#### **Section 6 - INSPECTION**

- a. Upon substantial completion of the work but prior to connection, the Drain Layer Contractor shall contact the Command Center (860) 278-7850, ext 3600 to request an inspection. The drain Layer Contractor shall refrain from removing the cap or breaking into any existing pipe to make the connection or to commence laying pipe or building structures until the inspector gives his/her approval.
- b. In general, inspectors will be available between the hours of 7:30 a.m. to 3:30 p.m. on Monday through Friday inclusive. Inspection outside the hours of a normal 5-day work week for must be pre-approved and an inspection fee is required to be paid to the MDC



at its Utility Services office at 125 Maxim Road, Hartford Connecticut 06114. During the inspection, the Contractor shall have a transit on-site to demonstrate that the minimum grade as shown on the permit is met.

If an “emergency” condition exists, where a contractor must make repair immediately, the MDC Inspector will be dispatched. Under “emergency” conditions, the inspector must be at the work site prior to the sewer house connection pipe being opened. The Inspector will determine if the backup is an emergency situation. If it is determined that the repair must be made immediately, the MDC Inspector will inspect the repair. If the Drain Layer Contractor is relaying the entire sewer house connection on the owner’s part, the MDC Inspector will inspect the initial connection at the street line. The Drain Layer Contractor may continue to install the sewer house connection but must leave open the portion of the house connection that is connected to the house plumbing. The Drain Layer Contractor is to call the Command Center at (860) 278-7850, ext 3600 at the opening of the following business day and request a final inspection. If the MDC Inspector determines that an emergency situation does not exist, then an after-hours inspection fee must be paid for inspection services.

- c. In the case of repairs, the Drain Layer Contractor shall allow the District Inspector to observe the disrepair before the removal of any pipe. Before making repairs, the Drain Layer Contractor shall ensure that the remaining connection in both directions is in good condition and free from obstruction.
- d. After the cap is removed at the point of connection to the public sewer, the Drain Layer Contractor should make certain by probing, rodding, or by use of flashlight that the pipe from the capped end to the public sewer is in good condition and free from obstruction. If the lateral is found to be obstructed or in bad condition, the Drain layer Contractor should refrain from making any connection thereto until the MDC Inspector has advised further procedure.
- e. After the MDC Inspector has approved the initial construction of the house connection pipe, under this section, the Drain Layer Contractor may complete the house connection pipe construction, but shall not backfill the area of trench around the joint with the building plumbing pipe and shall leave the pipe uncovered until such time as this joint has been finally inspected and approved by the MDC. Arrangements should be made, on site, between the MDC Inspector and the Drain Layer Contractor for the final inspection. If the connection is not approved, the Drain Layer Contractor shall make the necessary corrections and request further inspection.
- f. Sewer connections serving buildings to be demolished or relocated shall be properly bulkheaded at the street line or other point approved by the MDC. This bulkheading must be done by a licensed Drain Layer Contractor under MDC permit and inspected by MDC prior to demolition of the building. A permit from MDC’s Utility Services Department at 125 Maxim Road, Hartford, Connecticut, is required for this work.

# **TABLE 1** **SEWER CONNECTION CHECKLIST**

Plan:

- \_\_\_\_\_ Drawn to scale using NAD83 datum for horizontal control and NAVD88 for vertical control.
  - \_\_\_\_\_ Size, type of pipe and grade of existing public main sanitary sewer and/or combined sewer and/or main storm drain.
  - \_\_\_\_\_ Type, location and elevation of wye, stub, lateral or other point of connection. Describe method of connection if opening not provided.
  - \_\_\_\_\_ Pipe type, size, grade and cover of sanitary sewer house connection. Minimum pipe size is 6-inch ductile iron or plastic and 12-inch for reinforced concrete. Minimum grade is 1%. Plastic pipe shall be used for the sanitary sewer connection to an industrial building, in an industrial zone or where there are industrial wastes.
  - \_\_\_\_\_ Size and flow line elevations of all cast iron or plastic plumbing pipes shown at point of connection with sanitary sewer house connection pipe (3 to 5 feet outside building foundation). All plumbing to a point 3 to 5 feet outside the foundation is under municipal jurisdiction.
  - \_\_\_\_\_ Top of frame and flow line elevations of all structures shall be shown.
  - \_\_\_\_\_ Pipe should be at an adequate depth and in a location which will clear other utility lines or structures.
- Note: Depth of cover over all pipes should be shown. In an area where existing ground surfaces will be altered, such as new paved or lawn areas, cover shall be no less than 4 feet to finished grade. In an area already developed, the cover shall be reduced to a minimum of 3 feet and if reinforced concrete or ductile iron pipe is used the cover may be reduced 1 additional foot.
- \_\_\_\_\_ Pipe should be a minimum distance of 25 feet from any water well.
  - \_\_\_\_\_ Trench restoration for possible rock, high ground water table or sheeting left in place in area of excavation?
  - \_\_\_\_\_ Is building at a low elevation requiring sewage to be pumped and have approved plans and specifications been submitted?
  - \_\_\_\_\_ No permanent structure encroachment on any MDC sewer, drain or water right-of-way.

- \_\_\_\_\_ Is existing sewer in right-of-way on land of others where notification to owner is necessary?
- \_\_\_\_\_ Does house connection cross private lands of others where right-of-way easement is required? If so, a legal agreement must be prepared and signed.
- \_\_\_\_\_ Number of family units for all residential buildings. Owner and mailing address of property. Type of occupancy for all other buildings.

For Condominiums:

- \_\_\_\_\_ Does each dwelling unit have separate sewer connection?
- \_\_\_\_\_ Are multiple dwelling units connected to one sewer connection?
- \_\_\_\_\_ Are dwelling units at various elevations?
- \_\_\_\_\_ Is an alarm system required to warn in the event of a sewer backup?

For Apartments:

- \_\_\_\_\_ Number of dwelling units noted for each building.
- \_\_\_\_\_ Adequate layout and clean outs on plumbing and/or sewer line to provide accessibility for rodding.
- \_\_\_\_\_ Is connection to be made to a swimming pool drain and/or pool filter backwash drain? If so, plans and specifications must be submitted to the MDC for approval.

For commercial, industrial or other buildings (such as automotive repair or washing, shops, gas stations, hospitals or convalescent homes, hotels, laundry facilities, machine shops, restaurants, schools, churches and club houses):

- \_\_\_\_\_ Are there petroleum, oil, gasoline and grease wastes and is an approved oil-grease separator to be installed on all floor drains for proper pre-treatment and separation?
- \_\_\_\_\_ Are there sand and grit wastes and is an approved sand trap to be installed on all floor drains for proper treatment and separation?
- \_\_\_\_\_ Are there chemical or metal wastes and are there approved pre-treatment and separation facilities to be installed? Has the State Department of Energy & Environmental Protection approved a pretreatment permit?

\_\_\_\_\_ Are there kitchen grease wastes from dishwashers, pot sinks and any other drains subjected to objectionable kitchen waste and is an approved grease separator to be installed at an approved location for proper pre-treatment and separation?

Note: The separator shall be of adequate size and at a sufficient distance (25 feet +/-) away from the dishwasher to trap the hot grease wastes. If determined necessary by the MDC, the grease separator, for restaurants, cafeterias, snack bars and buildings with similar facilities, shall be installed on a separate plumbing line to a point at least 5 feet outside the building so that any additional installation of protective devices may be made if necessary.

The make, model and capacity of the separator should be noted.

\_\_\_\_\_ Plastic pipe only for sanitary sewers should be noted on the plan.

\_\_\_\_\_ Number of patient rooms shown on floor plans for all hospitals and convalescent homes.

\_\_\_\_\_ If required, have plans been approved by the State Department of Energy & Environmental Protection and/or Health Department?

\_\_\_\_\_ Other utilities are required to be shown on sewer plans. It is assumed during design that the engineer has avoided any conflict with other utility lines or structures.

\_\_\_\_\_ The MDC will determine if there is a monetary charge due and agreement necessary.

\_\_\_\_\_ Is main sewer approved for connections? \_\_\_\_\_active; \_\_\_\_\_capped

\_\_\_\_\_ Are town street and/or State highway excavation permits required for work within public streets?

\_\_\_\_\_ Is Drain Layer Contractor eligible for permits (license, bond and insurance)?

\_\_\_\_\_ Plans and specifications approved by Town Building and Health Department and State Department of Energy & Environmental Protection?

#### In Hartford

Catch basins must be trapped in all instances where line drains to a combined sewer and in some instances where the line drains to a storm sewer

\_\_\_\_\_ Is there a footing drain connected to a sump?

- \_\_\_\_\_ A sump and trap with a 2 feet minimum depth must be constructed in the first catch basin upstream of the point of connection with the public sewer or drain.
- \_\_\_\_\_ Plan must be sealed by a Connecticut licensed professional engineer.
- \_\_\_\_\_ Storm drainage plan must have the stamped approval of the City Department of Licensing and Inspections.

## **PART 2**

### **DESIGN STANDARDS**

#### **Section 1 – CONSTRUCTION - GENERAL**

- a. The requirements established in this manual regulate the sizes, materials, methods, and workmanship be used in the construction of sewer drains, house connections and appurtenances connected or intended to be connected or to discharge, directly or indirectly, to any public sewer or drain of the MDC, as provided in Section S3d of the Sewer Ordinances of The Metropolitan District.
- b. These requirements are minimum requirements for the construction of sewer house connections but shall also apply to the construction of any sewer or portion of a sewer.
- c. The MDC's design standards for sewer main and service connections are included in several documents as follows:
  - The MDC Project Manual.
  - The MDC Sewer Standard Details (see Part 3).
  - The MDC Approved Materials for Sanitary Sewer and Storm Drain Installations (see Part 4).
- d. MDC Project Manual Specification Sections that may be relevant to the design of sewer service connections include, but are not necessarily limited to, the following:
  - 02053, Removal and Disposal of Existing Pipe, Manholes and Appurtenances
  - 02200, Earthwork
  - 02202, Trench Refill
  - 02317, Underground Warning Tape
  - 02610, Sewer Testing and Cleaning
  - 02615, Ductile Iron Pipe for Sanitary Sewer
  - 02622, Polyvinyl Chloride Sewer Pipe
  - 02628, Pipe Repair Couplings
  - 02677, Sewer Service Lateral Rehabilitation
  - 02721, Laying Sewer and Drain Pipe

All MDC Project Manual Specifications are available online at the following webpage:  
<http://themdc.org/what-we-do/engineering-planning/technical-services>

## **Section 2 – TRENCH EXCAVATION**

The licensed Contractor shall fully comply with the State of Connecticut Public Act No. 77-350 in regard to the proper notification to be given the Call-Before-You-Dig central clearinghouse 1-800-922-4455 or 811 prior to any excavation, discharging explosives or demolition and to all other actions concerning work near underground utility facilities.

Trenching in streets or highways shall conform to the requirements and specifications of the state, city or towns authorities having jurisdiction.

Excavations shall be made in such manner and to such width as required to give suitable room for laying the piping or for construction of structures; all sheeting, bracing, and supports shall be furnished and placed; all cofferdamming, pumping and drainage shall be done; and the bottoms of the excavations shall be rendered firm and dry and acceptable in all respects.

When excavating near structures attention is directed to the fact that there are pipes, manholes, drains and other utilities and structures in certain locations. The Contractor should exercise caution when excavating especially on private property, because the completeness of accuracy of the given information is not guaranteed.

Trenches in pavement shall have the traveled way surface cut in a straight line by a concrete saw or equivalent method to the full depth of pavement.

If pipe is to be laid in embankments or recently filled areas, the fill material shall first be placed to a height of at least three feet above the top of the pipe and compacted before excavation.

The trench for pipes shall be at least 18-inches beyond the outside of the barrel of the pipe on each side, the top of the barrel of the pipe shall be as shown on the approved drawings and the bottom of the trench shall be at the bottom of the pipe.

Pipe trenches shall be made as narrow as practicable and shall not be widened by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

In rock excavation there shall be no projecting rock within six (6) inches of the outside of the pipe on the sides, top and bottom. The bottom six (6) inches of trench shall be refilled with sand or gravel and properly tamped before the pipe is laid. All excavated rock shall be disposed of and the trench refilled with suitable sand or gravel.

## **Section 3 – LAYING PIPE FOR LATERALS AND HOUSE CONNECTIONS**

- a. Connection laterals shall be of 6-inch diameter or larger pipe, laid to grade and to the points ordered. Laterals will not be laid on a grade flatter than one percent, and will usually have 8-feet of cover at the curb or street line in most residential zones and 10-feet of covert at the curb in business zones.

- b. House connections shall be laid on an even-tamped foundation of  $\frac{3}{4}$ -inch crushed stone. The backfill shall be thoroughly compacted by tamping or other approved methods up to the spring line of the pipe (see also the relevant Project Manual Specifications).
- c. Pipes larger than 6-inch diameter or pipes conveying storm water only may be laid at a grade less than 1% only when specifically approved by Engineering & Planning.
- d. If house connection depth is not sufficient to clear under other utilities, varying gravity flow grades shall be designed (not less than 1%) to pass over or under without touching said other utilities. If, on excavating for the sewer or sewer connection, the natural soil foundation is found to be soft, the soft soil shall be removed and not less than 4-inches of approved stone, processed stone or concrete, as required by the Engineering & Planning Department of the MDC, shall be placed in an approved manner for the pipe foundation.
- e. In general, the Drain Layer Contractor shall maintain adequate cover to protect the pipe being installed from physical damage due to live loads or possible winter freezing. In an area where pavement and cultivated lawn already exist, such cover shall generally be no less than 3.5 feet; in an area not so developed or in an area where existing ground surfaces will be altered, such cover shall be no less than 4 feet in which case reinforced concrete or ductile iron pipe must be used as approved by the MDC.
- f. Whenever the Drain Layer Contractor temporarily terminates the sewer connection outside the building, the open end of the pipe shall be fitted with an approved cap to prevent any drainage, storm or muddy water and debris from entering the public sewer and the Drain Layer Contractor shall arrange for inspection.

#### **Section 4 –Backfill Standards and Materials**

After the subgrade has been prepared and the water service pipes laid, the fill material shall be placed and built up in successive layers. Backfill for the trench excavation within public streets shall be in compliance with the specifications of the city, town or State of Connecticut Department of Transportation.

In general, and unless other material is indicated on the drawings, bank gravel shall be suitable material for backfilling trenches. Bank gravel shall conform to the requirements of Article M.02.01-2, CTDOT Form 816. Sand shall conform to the requirements of Article M.03.01.0, CTDOT Form 816.

As soon as practicable after the pipes have been laid trenches shall be refilled in 12-inch layers at least to a level 24-inches above the top of the pipe with sand unless otherwise indicated and compacted in accord with the requirements below. Each layer shall be leveled and thoroughly compacted to the satisfaction of the MDC before the next layer is deposited. Special care shall be taken to consolidate the material under the pipes and the whole work of backfilling shall be done in a manner which will prevent subsequent settlement and injury to the pipe

Each layer of material shall be compacted by the use of vibratory compaction equipment or rollers or other means to achieve the required compaction. At such points as cannot be



reached by mobile mechanical equipment, the materials shall be thoroughly compacted by the use of suitable power-driven tampers.

The requirements for compaction of backfill shall conform to the following guidelines based on ASTM D1557 Method C:

<u>LOCATION</u>	<u>PERCENT MAXIMUM DENSITY</u>
Below pipe centerline	95
Above pipe centerline (below unpaved surface)	92
Above pipe centerline (below paved surface)	95
Embankments	92
Below pipe in embankments	95
Below Structures	

Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction. No compacting shall be done when the material is too wet, from either rain or too great an application of water, to compact it properly; at such times the Work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction. The water content of the soil shall be adjusted by wetting or drying as may be necessary to obtain proper compaction.

The Drain Layer Contractor and/or the plumber shall seal the opening under the footing with concrete suitably compacted between the cast iron soil pipe and the concrete footing and earth around the opening to prevent the backflow or seepage of subsoil or surface water into the building.

## **Section 5 –JOINT BETWEEN HOUSE CONNECTION AND HOUSE PLUMBING**

Connection of the sewer pipe with the cast iron soil pipe or PVC plastic schedule 40 plumbing pipe at the normal point just outside the building foundation shall be made with an approved “O” ring gasket or “FERNCO” fitting. The MDC may limit the size and rate of grade of pipe, or limit the discharge in some other manner, if the proposed amount of said discharge from the individual house connection or lot drain may cause overloading of any part of the public sewer drainage system per Section S2e and S2f of the MDC Ordinances.

## **Section 6 – IMPROPER DISCHARGE TO SEWER**

- a. Until proper fixtures have been completed and tightly joined to a sewer house connection, no one shall allow, pump or discharge any water, wastes or other drainage to the sewer house connection or public sewer.
- b. Any water in a trench or excavation shall be pumped or discharged to a gutter, catch basin or other proper drainage facility.
- c. In the MDC towns, except in portions of Hartford, the public sewers are sanitary sewers for SANITARY SEWAGE only, and the construction, regulation and use of storm drains are generally within the jurisdiction of the town or State of Connecticut. Subsoil drainage and other clean waters may generally be disposed of in accordance with such

town or state regulations. Connections to public storm drains in the towns require permission from the proper town authority and connections to any storm drain of the Connecticut State Department of Transportation, Bureau of Highways may be made only after permission from the proper State of Connecticut authority.

- d. In Hartford, even though some MDC sewers are still combined sanitary and storm sewers, new connections shall be constructed in accordance with Section S3r of Sewer Ordinances as follows:

“When any new building is erected in an area served by combined sewers or by separate sanitary and storm sewers under the jurisdiction of the MDC, separate connections shall be made from said building to said combined sewer, or to said separate storm and sanitary sewers; one such connection shall be limited to such wastes as are permitted in sanitary sewers, and the second connection shall be used to convey such other flows as are permitted in storm drains.”

## **Section 7 – GROUND WATER SEEPAGE AND INFILTRATION**

- a. Prevention of infiltration of subsurface and subsoil waters to the sanitary sewer system is always of great concern to the MDC. Many of the requirements of the MDC for pipe laying and jointing are intended to cause the construction of sewers that are reasonably watertight so as to minimize infiltration through joints or pipe defects, into the sewer.
- b. The MDC may, when it deems it advisable, require a leakage test of the pipe and structures after the construction of any sewer or house connection regulated herein. This can be achieved using the hydraulic or air test method. Whether or not any leakage in the sewer or house connection constructed is in excess of the latest maximum rate called for in the MDC’s Project Manual Specifications, the Drain Layer Contractor shall repair or correct the construction, and stop the leakage, to the satisfaction of the MDC.

## **Section 8 – SEWER HOUSE CONNECTION IN PROXIMITY TO WATER SERVICE, STORM DRAIN OR OTHER UTILITY**

- a. The sanitary sewer connection or storm drain connection and water service should generally be laid in separate trenches about 5 feet apart. If the Drain Layer Contractor requests that such pipes be constructed in the same trench because of special conditions, the sanitary sewer connection or storm drain connection may be constructed in one excavated trench in accordance with the appropriate Sewer Standard Detail (see Part 3) or as may be approved by the MDC.
- b. The sanitary sewer connection shall be constructed not less than 5 feet from any underground gas, electric or telephone service or as may be approved by the appropriate Public Utility Company.
- c. Separate sanitary sewer and storm drain connections, in Hartford, may be constructed in the same trench provided a spacing of not less than 3 feet is maintained between the two pipes.

## **Section 9 – OIL/GREASE WATER SEPARATOR TANK SPECIFICATIONS**

- a. Each oil/water separator tank shall be constructed of:
  - Precast concrete or precast polymer concrete;
  - Other material(s) must be designed, constructed, installed and maintained in conformance with the Regulations of Connecticut State Agencies, Section 22a-44(d)-1(e);
  - Other material(s) resistant to corrosion and degradation for the concentrations of chemicals involved, and approved by the Department of Engineering and Planning.
- b. Tank shall have a minimum capacity sufficient to pretreat the maximum daily flow proposed and no less than 1000 gallons.
- c. The inlet extension to grade shall be provided with a vent line which extends 8 feet above finished grade and is properly secured to the building. The size of the vent shall be at least half the size of the outlet discharge line from the tank.
- d. The inlet piping shall not include any sources of domestic sewage wastewater or stormwater.
- e. The outlet pipe shall be at least the size of the inlet pipe or greater and at a minimum shall be 6-inches in diameter. Schedule 40 pipe or approved equal shall be used to bridge disturbed trench.
- f. The outlet pipe shall be connected to the sanitary sewer.
- g. If heavy piping, such as cast iron, is used, all piping must be structurally secured.

### **FOR CONCRETE TANKS ONLY**

- h. Interior of the tank shall be coated with an epoxy petroleum resistant sealant (ensure that the epoxy vendor states that the product will be resistant to gasoline, oil, and solvents). Exterior of the tank shall be coated with a waterproof foundation sealant, including the exterior top and bottom. Interior and exterior of the extensions to grade shall also be waterproofed.

### **FOR CONCRETE AND CONCRETE POLYMER TANKS ONLY**

- i. The tank shall have manholes with extensions to grade above the inlet and outlet piping. The extensions shall have steel frames and manhole covers. The manhole extensions and accesses to the tank shall be at least 36 inches in diameter.
- j. The outlet piping shall utilize a tee-pipe on the interior of the tank. The tee-pipe shall be equipped with a stand pipe riser extending up to the extension to grade but no closer than 8-inches from the manhole cover. The tee-pipe shall extend 6 to 15-inches from the bottom of the tank.

- k. If there is a structural seam, it must be located above the static liquid level of the tank, filled in with non-shrinking cement or water plug and coated with a waterproof sealant.
- l. Voids between inlet and outlet piping of the tank and the tank itself shall be grouted with non-shrinking cement and coated with a waterproof sealant.
- m. The concrete covers provided by the oil separator manufacturer must be permanently removed.

## **Section 10 – BACKWATER VALVE REQUIREMENTS**

- a. Sewage backups into homes, buildings or other facilities are caused by a variety of conditions, ranging from heavy rainfall runoff especially in combined sewer systems, to collapsed sewer house connections, and plugged main sewers.

One method of preventing such occurrences is to, depending on the situation, install backwater valves on basement fixtures, or directly inline with house connections. Foundation and gutter drains should be disconnected from cellar sumps and capped off. A sump pump should be installed and its discharge directed to the outside ground surface. Backwater valves will minimize or completely stop sewer backups. Annual valve inspection and maintenance is vital to ensure proper operation of the valve for many years.

- b. There are three documents which deal with the problem of surcharging of sewers and flooding of basements.
  - The Public Health Code of the State of Connecticut
  - The State of Connecticut Basic Building Code.
  - The Building Officials and Code Administrators, (BOCA) National Building Code.

Each of these publications deals with the sewer back-up problem. The authorities require that the property owner provide adequate protection against the possibility of backflow or cellar flooding.

- c. The State of Connecticut Public Health Code, Section 19-13-B45(s) states “Where a house drainage system may be subjected to backflow of sewage, suitable provisions shall be made to prevent its overflow in the building.”
- d. The State Building Code, Section 1701.0 states “Backwater traps: when there is a possibility that a plumbing drainage system will be subject to backflow of sewage, suitable provisions shall be made to prevent overflow into the building”. The installation of the trap is the responsibility of the home owner.
- e. The BOCA National Building Code, Section 1701.0 states “A backwater valve shall be installed where plumbing fixtures are subject to backflow from the public sewer”. Section P-1003.3 Location of backwater valves states “Backwater valves shall be installed so their working parts will be readily accessible for service and repairs”.

## **Section 11 – GUIDE TO PLANS FOR SWIMMING POOL FILTER BACKWASH DRAINS TO THE SANITARY SEWER**

The following information will be required, in plan form, for review prior to the issuance of a permit:

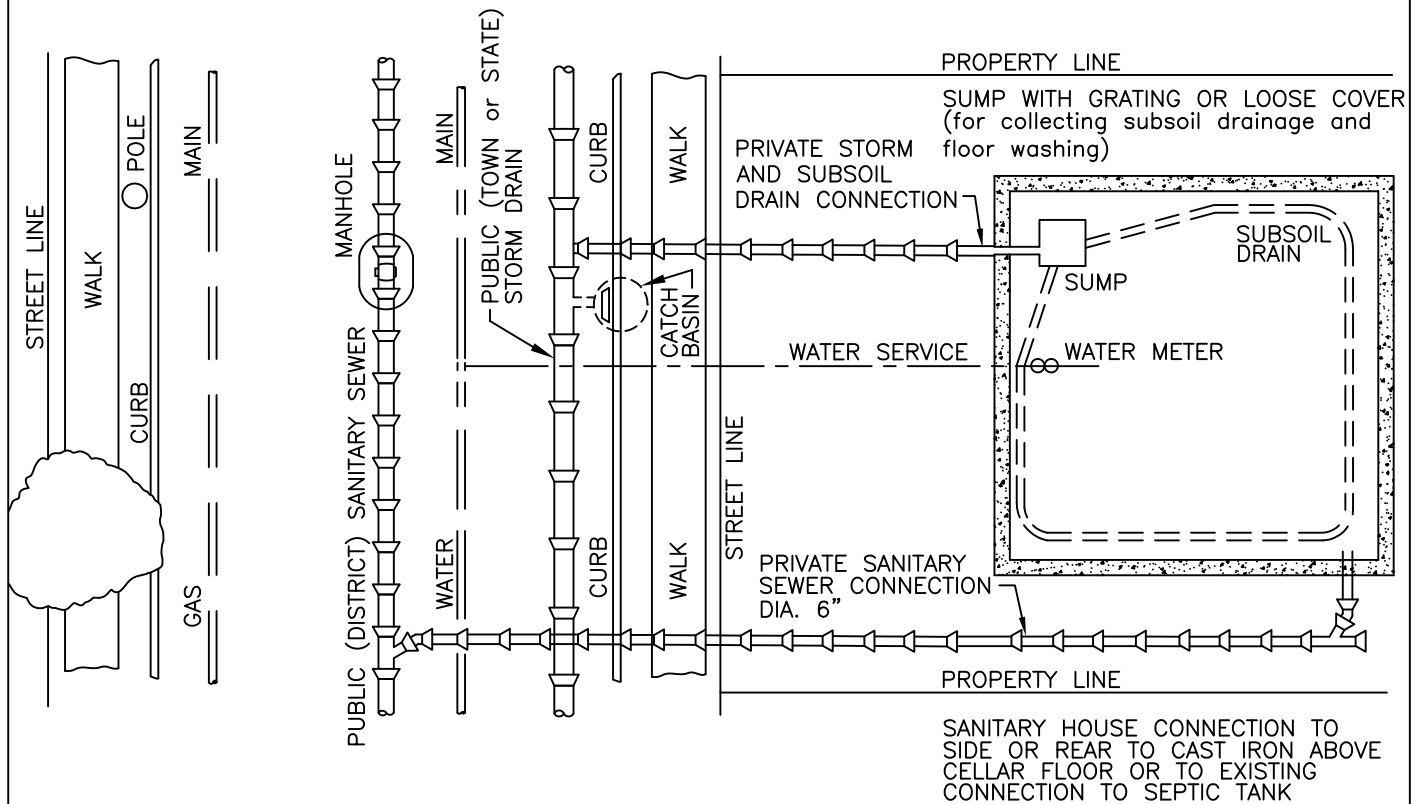
- a. Type of filter
  - Pressure Sand Filter or
  - Diatomaceous Earth Filter – A separator must be provided to prevent diatomaceous earth from entering the sewer system. Trash barrels must be provided in the pump room to dispose of this waste.
- b. Filter size (capacity in sq. ft.).
- c. Pump size (rate in cfs).
- d. Sump and/or holding tank size (capacity in cu. ft.).
- e. Size of outlet pipe or orifice from sump to sanitary sewer of plumbing shall be a maximum of 2-inch dia.
- f. Size of drain pipe from pool main-drain to sump pit (normally 2-inch dia.).
- g. 3-inch minimum air gap required between top of sump and inlet drain pipe.
- h. Backwash rate (maximum 100 gpm).
- i. Duration of backwash discharge.

## **PART 3**

### **FIGURES**

# THE METROPOLITAN DISTRICT

## SANITARY SEWER – STORM DRAIN



PLAN

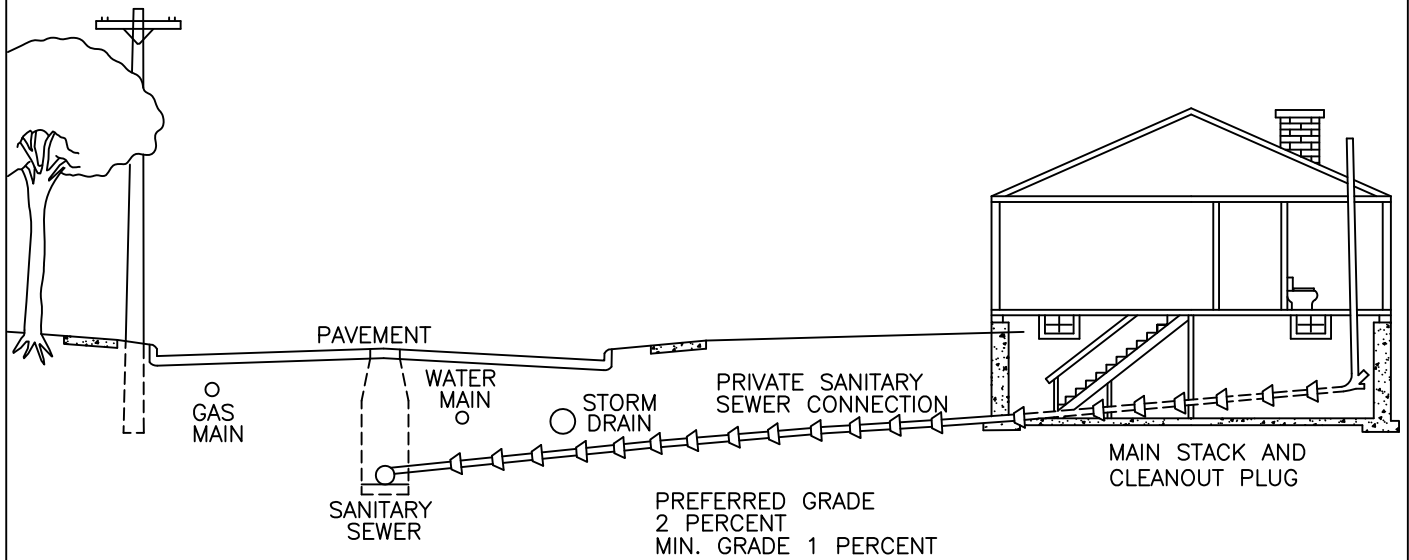
AN ILLUSTRATION OF THE PREFERRED METHOD OF  
CONSTRUCTING SEPARATE SEWER HOUSE CONNECTIONS

## SANITARY HOUSE STORM AND DRAIN CONNECTION

FIGURE-1

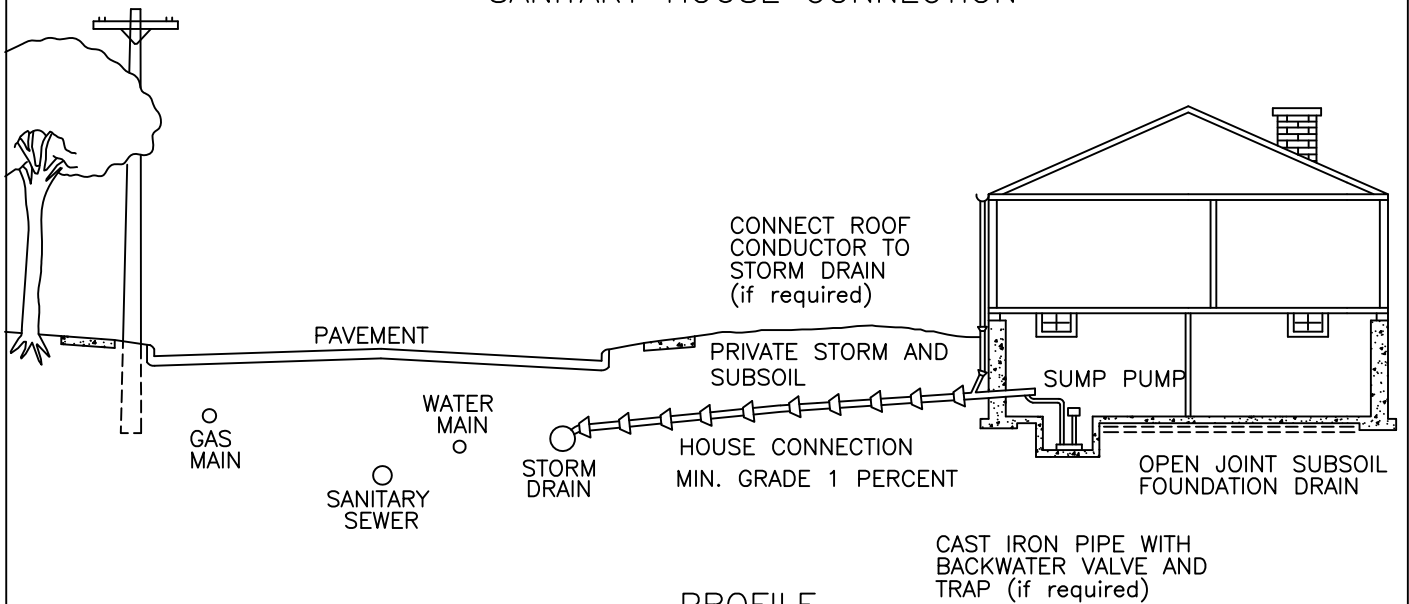
# THE METROPOLITAN DISTRICT

## SANITARY SEWER – STORM DRAIN



### PROFILE

### SANITARY HOUSE CONNECTION



### PROFILE

### STORM AND SUBSOIL DRAIN CONNECTION

AN ILLUSTRATION OF THE PREFERRED METHOD OF  
CONSTRUCTING SEPARATE SEWER HOUSE CONNECTIONS

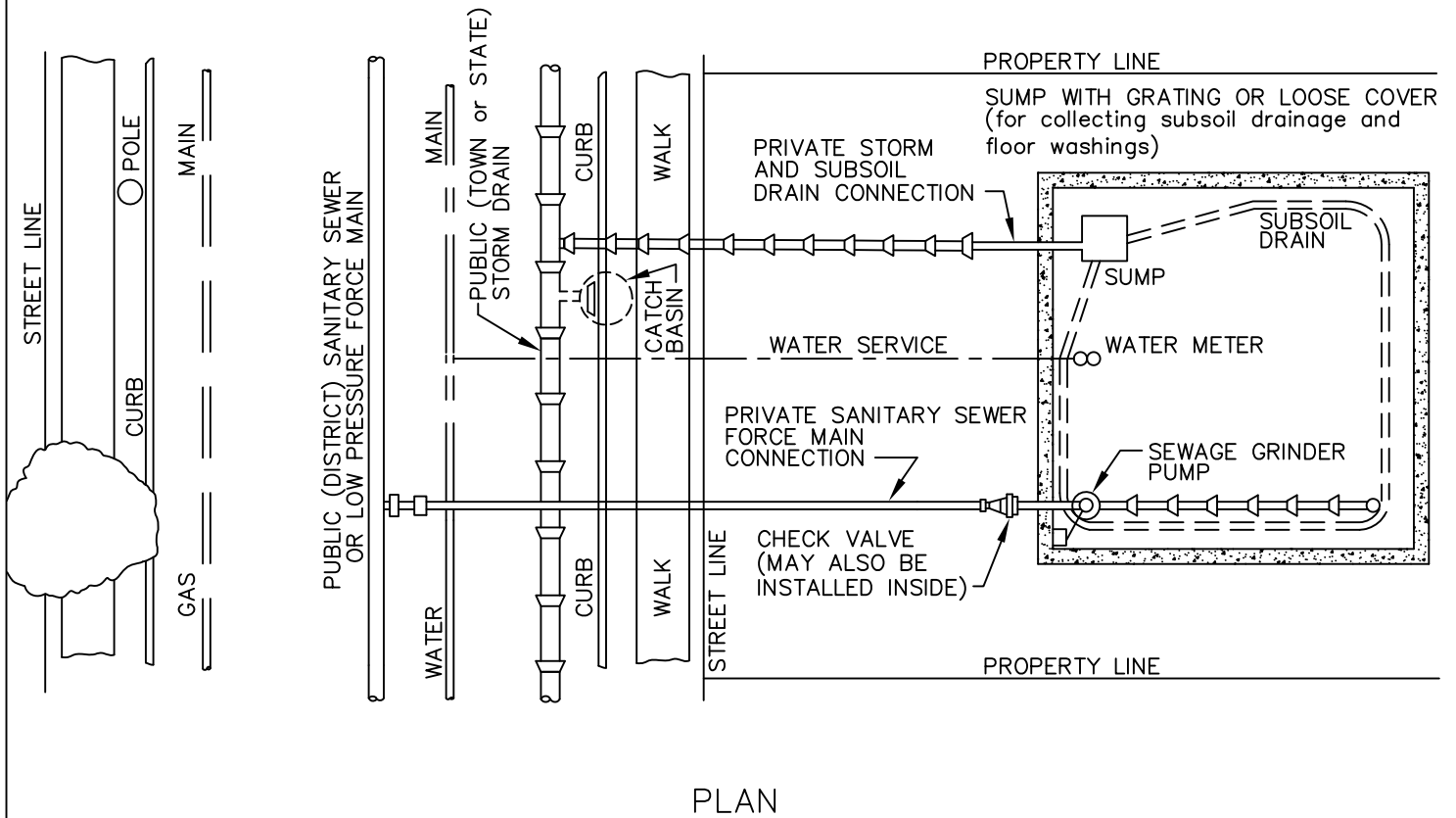
## SANITARY HOUSE STORM AND DRAIN CONNECTION

FIGURE-2



# THE METROPOLITAN DISTRICT

## SANITARY SEWER – STORM DRAIN



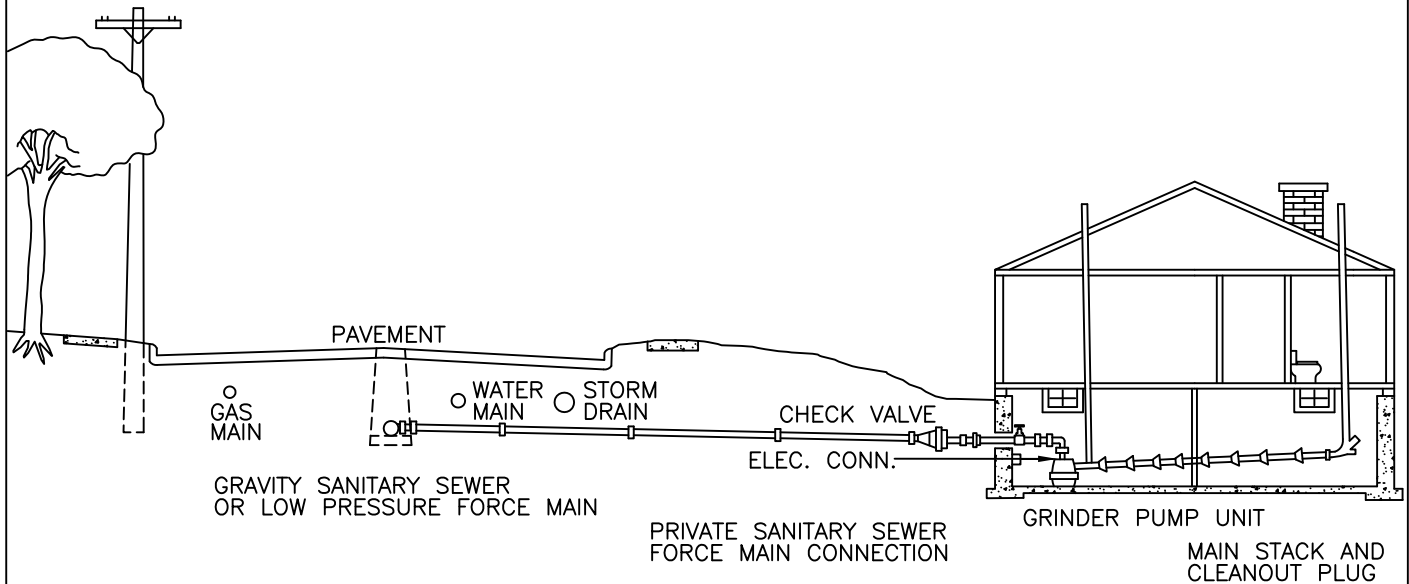
AN ILLUSTRATION OF THE PREFERRED METHOD OF CONSTRUCTING  
SEPERATE SEWER HOUSE CONNECTIONS

### SANITARY HOUSE STORM AND DRAIN CONNECTION (SANITARY FORCE MAIN)

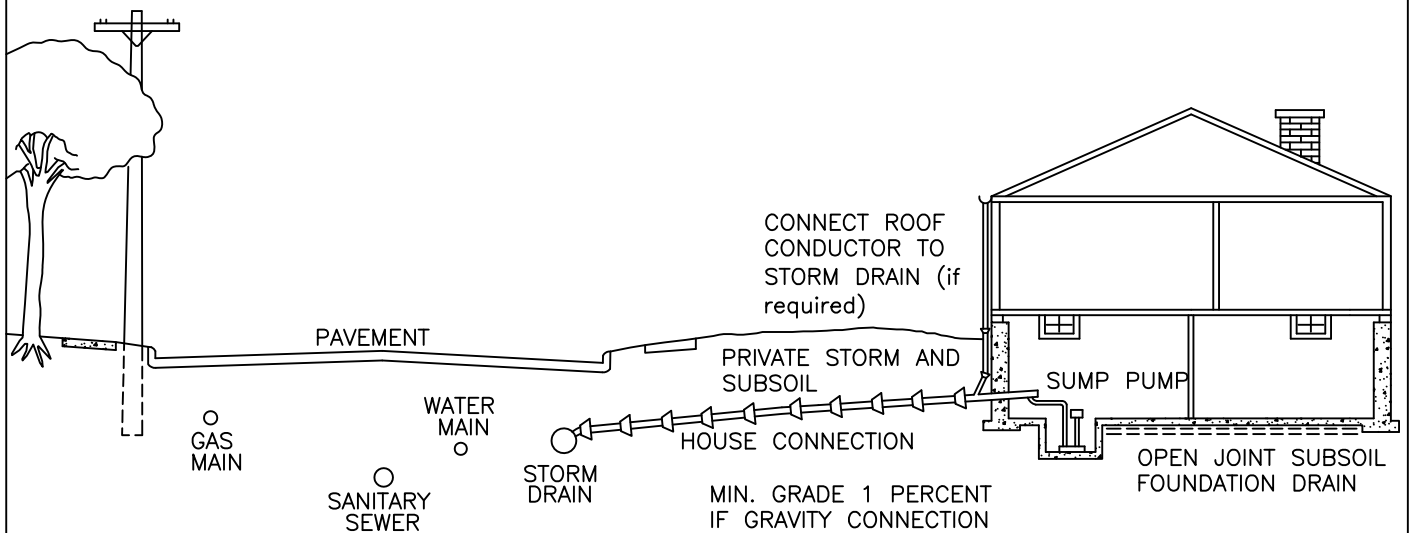
FIGURE-3

# THE METROPOLITAN DISTRICT

## SANITARY SEWER – STORM DRAIN



PROFILE



PROFILE

CAST IRON PIPE WITH BACKWATER VALVE AND TRAP INSTALLED BELOW CELLAR FLOOR OR UNDERGROUND OUTSIDE HOUSE IN CHAMBER

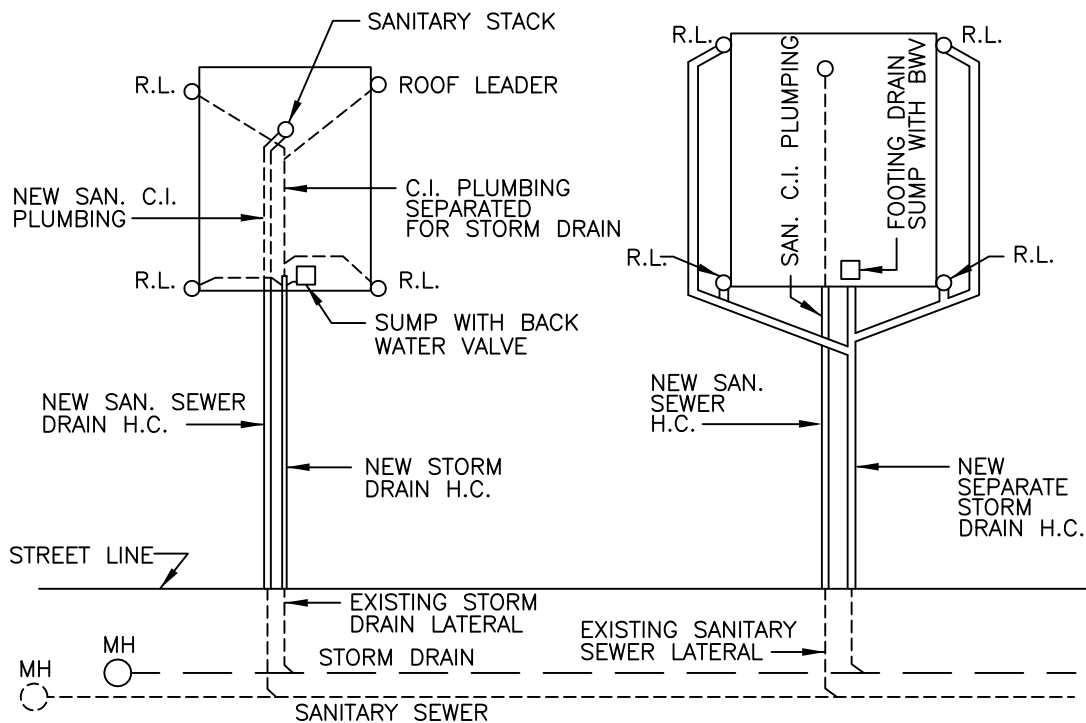
AN ILLUSTRATION OF THE PREFERRED METHOD OF CONSTRUCTING  
SEPARATE SEWER HOUSE CONNECTIONS

## SANITARY HOUSE STORM AND DRAIN CONNECTION (SANITARY FORCE MAIN)

FIGURE-4

# THE METROPOLITAN DISTRICT

## SANITARY SEWER – STORM DRAIN

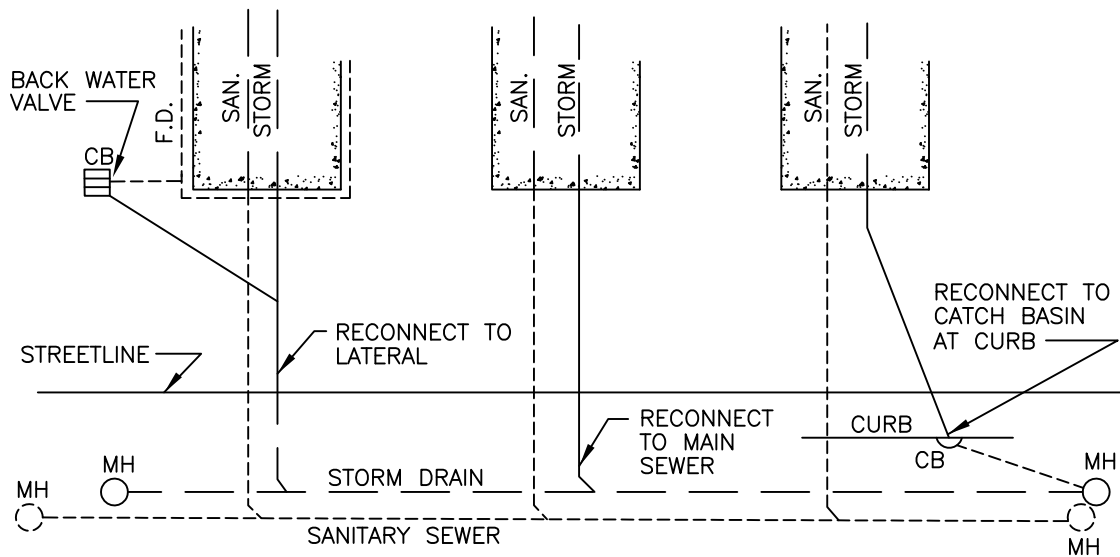


NOTE: BWV – BACK WATER VALVE  
H.C. – HOUSE CONNECTION  
R.L. – ROOF LEADER  
C.I. – CAST IRON  
MH – MANHOLE  
CB – CATCH BASIN

METHODS OF RECONNECTING SEPARATED PLUMBING  
IN RENOVATED BUILDINGS SERVED BY A SEPARATED  
SANITARY AND STORM SEWER

FIGURE-5

THE METROPOLITAN DISTRICT  
SANITARY SEWER – STORM DRAIN

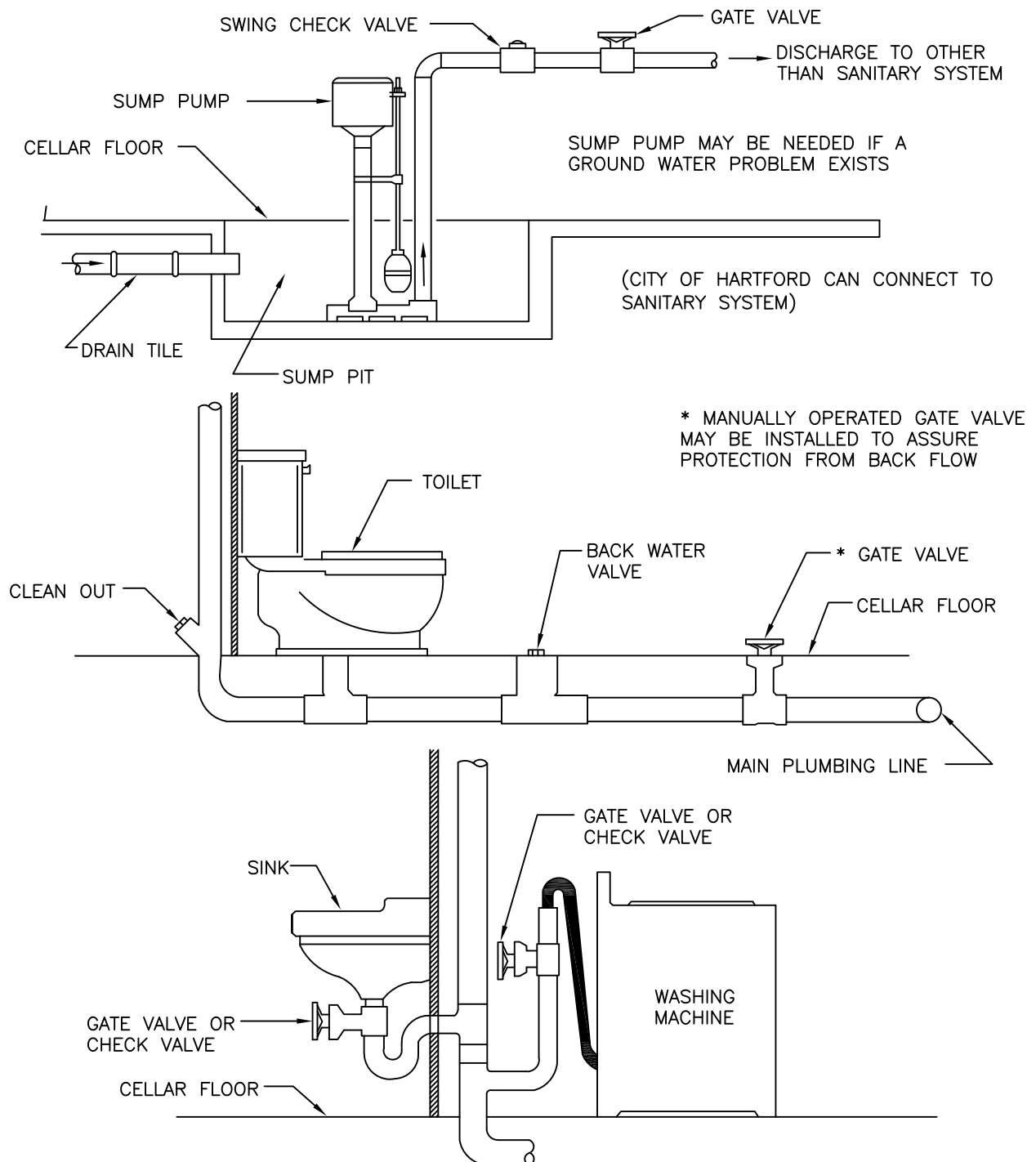


METHODS OF RECONNECTING SEPARATED PLUMBING  
IN RENOVATED BUILDINGS SERVED BY A SEPARATED  
SANITARY AND STORM SEWER

FIGURE-6

# THE METROPOLITAN DISTRICT

## SANITARY SEWER – STORM DRAIN



PROTECTIVE DEVICES TO PREVENT  
CELLAR FLOODING FROM OVER-LOADED  
SEWERS DURING INTENSE RAIN STORMS

FIGURE-7

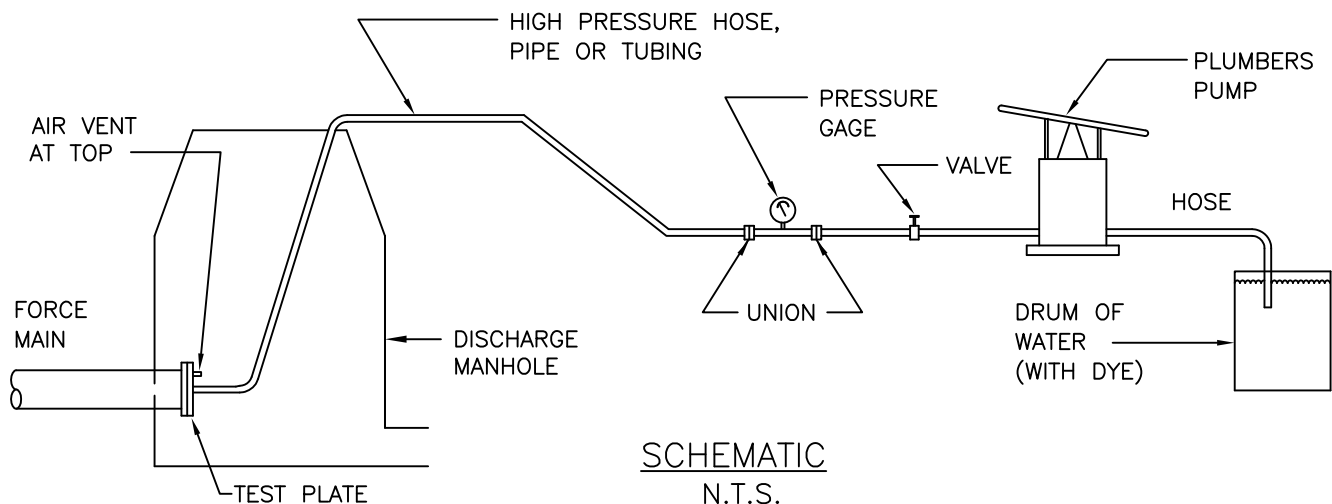
# THE METROPOLITAN DISTRICT

## SANITARY SEWER – STORM DRAIN



1. On all but very short lines, it will prove helpful to put dye in water as line is filled – this will save time locating a leak.
2. Fill line to be tested a day or two before test if possible – this will give air in line a chance to reach high points.
3. Before you start test, bleed all air from line at cleanouts, standpipes, etc. (Loosen bolts until water starts to come out then tighten and check for leaks)

### SUGGESTED SETUP FOR TEST



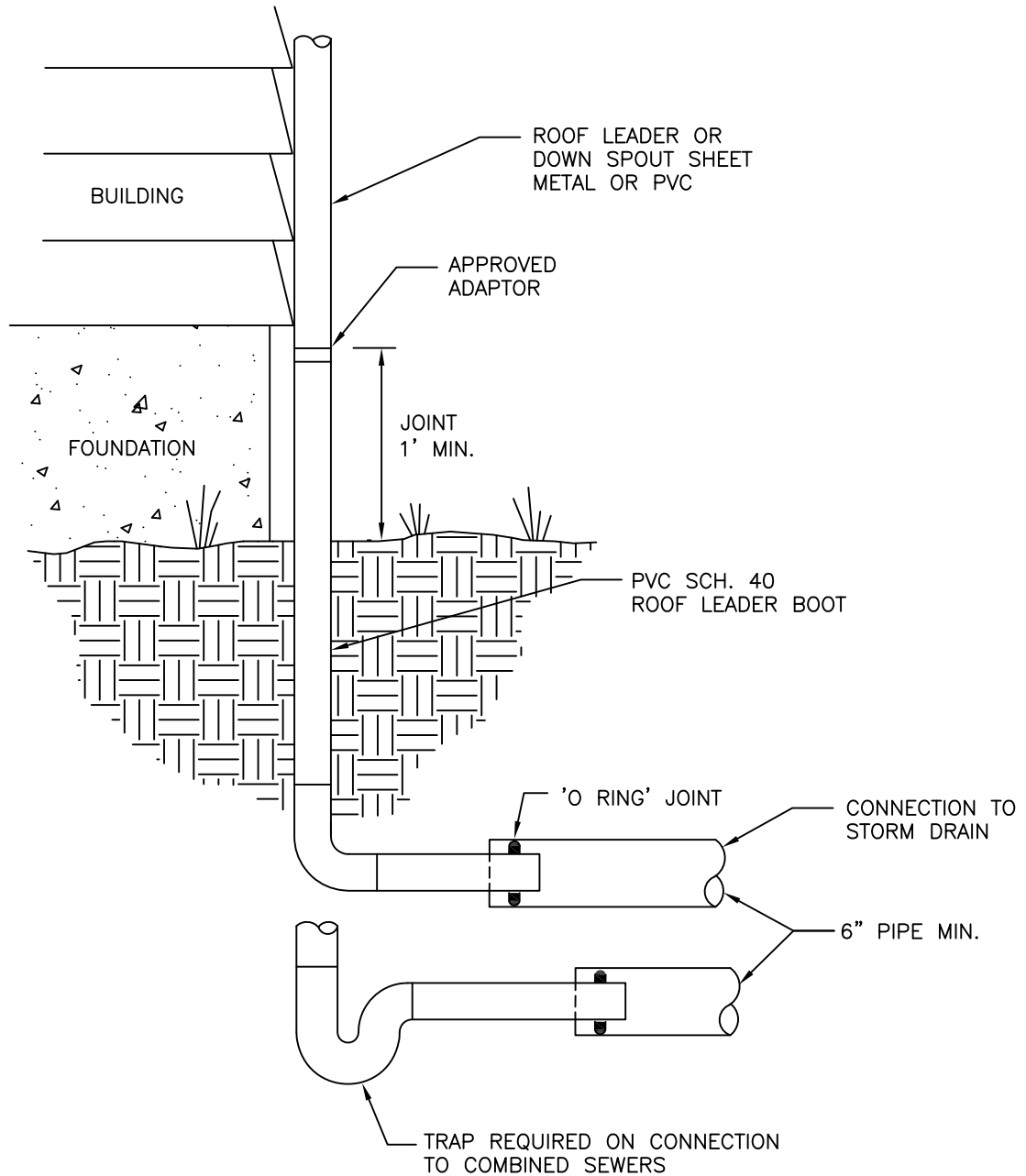
4. Be sure all fittings are tight.
5. Open air vent and pump water in until it comes out vent.
6. Close air vent and pump up to test pressure. (This should be at least twice the normal operating pressure of the installed pumps.)
7. Close valve.
8. If pressure holds, run test for length of time to be determined by the engineer.
9. If pressure drops, the following procedure should be followed:
  - (a) With some pressure on line, check all places visible for leaks.
  - (b) Bring up to test pressure and log drop in pressure in five or ten minute intervals. Do this at least three times. If the pressure drops less each time, you most likely have air in the line so check again at cleanout etc. as in item 3. If you cannot remove trapped air, continue pumping up to test pressure each time pressure drops. While this may be slow, eventually the air will be dissolved in the water and you can complete the test.
  - (c) If the pressure drops at the same rate each time, or drops faster, you have a leak or leaks. Dig up and check for leaks (look for dye). Fix leaks and start test over.

#### NOTE:

BE SURE ALL TEST PIPE, HOSE AND FITTINGS ARE TIGHT AT THE JOINTS. CHECK JOINTS WITH SOAP SOLUTION. BE SURE THE VALVE BETWEEN PRESSURE GAGE AND PUMP IS TIGHT: IF NOT DISCONNECT AT PUMP AND CAP OR PLUG.

## SANITARY SEWER FORCE MAIN LATERAL TESTING

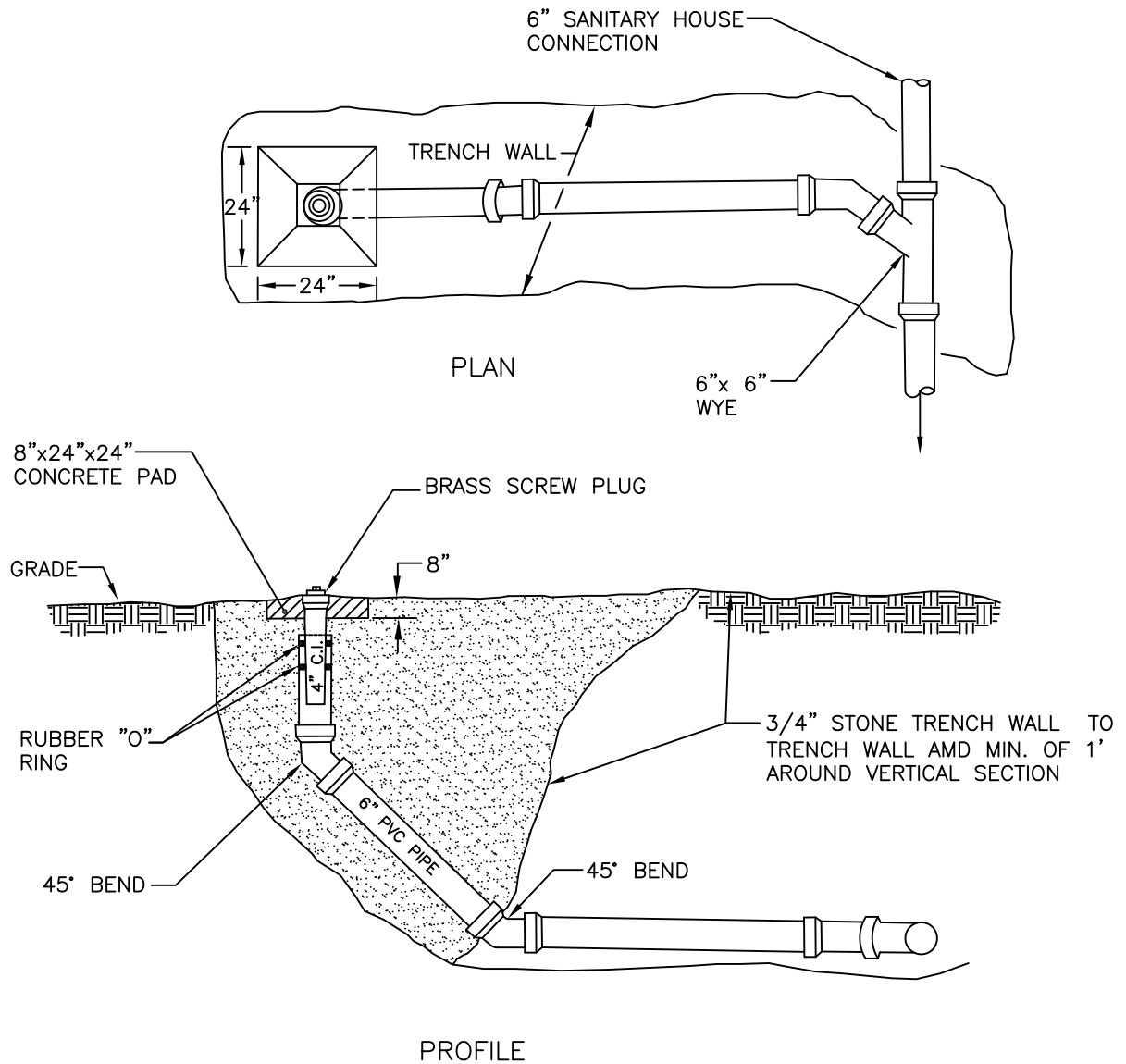
THE METROPOLITAN DISTRICT  
SANITARY SEWER – STORM DRAIN



TYPICAL ROOF LEADER CONNECTION  
IN THE CITY OF HARTFORD

FIGURE-9

THE METROPOLITAN DISTRICT  
SANITARY SEWER – STORM DRAIN



DETAIL OF SANITARY SEWER FACILITY FOR  
RECREATIONAL VEHICLES AND MOBILE HOMES



# THE METROPOLITAN DISTRICT

## SANITARY SEWER – STORM DRAIN

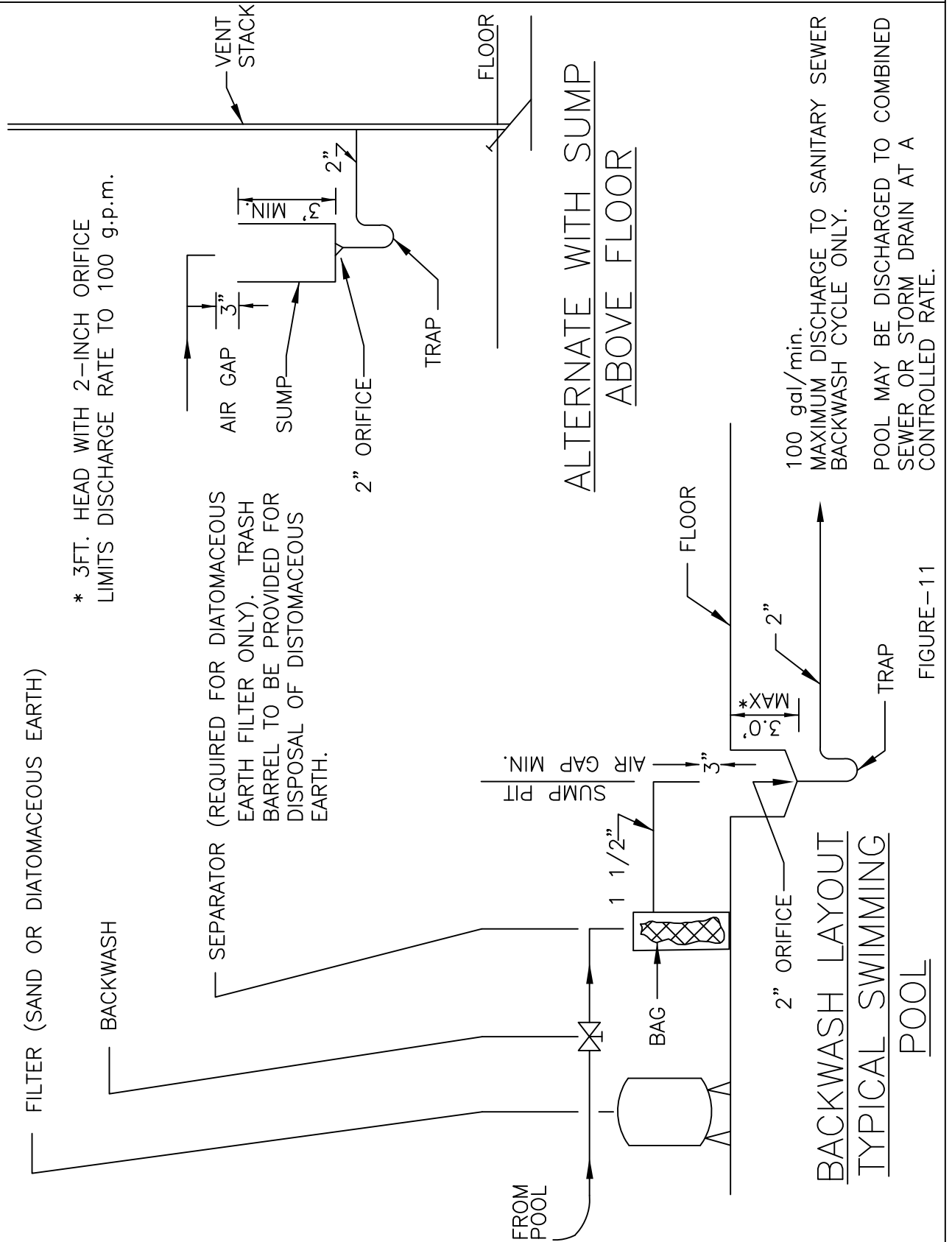


FIGURE-11

**PART 4**

**THE METROPOLITAN DISTRICT**

**SEWER AND STORM DRAIN STANDARD DETAILS**

The latest revision of the sanitary sewer and storm drain standard details are located on the MDC website at the following webpage <http://themdc.org/what-we-do/engineering-planning/technical-services> in the Standard Details Manual and are intended to exhibit MDC approved installation for sewer service connections and their appurtenances. If deviations from the prescribed installation are necessary, approval must be obtained from the MDC prior to the installation. The following details are intended to supplement and amplify the MDC Material Standards. See MDC website for latest revision of the Standard Details Manual for revised or additional details.

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S-2	SEWER TRENCH
S-3	SEWER TRENCH WITH STEEL SHEETING LEFT-IN-PLACE
S-4	SEWER FORCE MAIN TRENCH
S-5	PIPE TRENCH DAM
S-6	SEWER SERVICE AND WATER SERVICE IN COMMON TRENCH
S-7	FOUNDATION SECTIONS IN LOWLANDS
S-8	PVC OR DI WYE BRANCH
S-9	SEWER SERVICE REPLACEMENT
S-10	SERVICE LATERAL INSERTA TEE CONNECTION
S-11	SERVICE LATERAL SADDLE CONNECTION
S-12	SEWER SERVICE PRECAST CONCRETE CHIMNEY
S-13	SEWER SERVICE CHIMNEY CONNECTION
S-14	TEE INSERT CONNECTIONS
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S-16	WYE SADDLE CONNECTION TO EXISTING PIPE
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SD-2	CTDOT DOUBLE GRATE PRECAST CONCRETE CATCH BASIN TYPE I
SD-3	CTDOT DOUBLE GRATE PRECAST CONCRETE CATCH BASIN TYPE II
SD-4	CTDOT PRECAST CONCRETE CATCH BASIN TOPS AND SUMPS
SD-5	ELBOW TRAP FOR CATCH BASIN
SD-6	CATCH BASIN TRAP HOODS

# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



PIPE AND FITTINGS DESIGNATION	MINIMUM COVER
ASTM D3034 POLYVINYL CHLORIDE (PVC) (SDR-35) (TYPE PSM) 6" THROUGH 15"	3.5'
ASTM F679 PVC (LARGE DIAMETER) (TYPE PS-46) 18" THROUGH 27"	
ASTM F949 CORRUGATED PVC (SMOOTH INTERIOR) 6" THROUGH 36"	
ASTM F1803 CLOSED PROFILE PVC 30" THROUGH 48"	
ASTM F794 CLOSED PROFILE PVC (CONTROLLED I.D.) 30" THROUGH 48"	3.0'
ASTM F714, AWWA C906 HIGH DENSITY POLYETHYLENE (HDPE) (SOLID WALL)	
ASTM C76 REINFORCED CONCRETE PIPE (RCP) (CLASS IV) 12" AND LARGER	
ASTM C76 REINFORCED CONCRETE PIPE (RCP) (CLASS V) 12" AND LARGER	2.5'
ASTM A476, AWWA/ANSI DUCTILE IRON (DI) CLASS 52 8" THROUGH 24"	2.0'
ASTM D1794, AWWA C900 C900/C905 PVC (SDR-18) 6" THROUGH 12" (C900), 18" AND 24" (C905)	

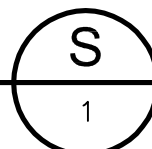
### NOTE:

1. THE CONTRACTOR SHALL LOCATE PIPELINES SUBSTANTIALLY AT THE DEPTHS SHOWN ON THE CONTRACT DRAWINGS. THE ENGINEER RESERVES THE RIGHT TO MAKE MODIFICATIONS TO THE PIPELINE LOCATIONS OR DEPTHS TO AVOID INTERFERENCE WITH EXISTING STRUCTURES, UTILITIES OR FOR ANY OTHER APPROVED REASONS.

### MINIMUM DEPTH OF COVER OVER PIPE

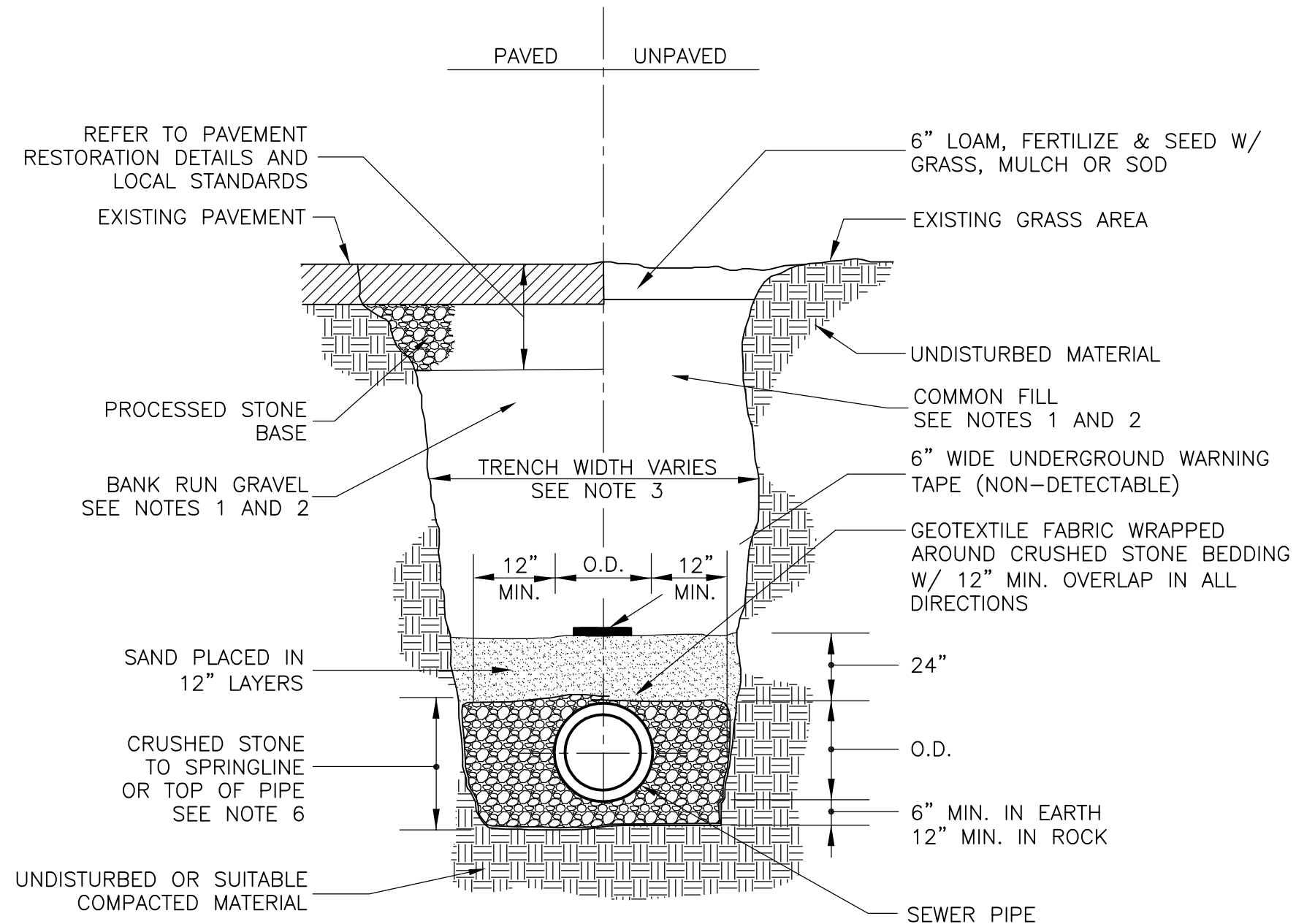
DETAIL

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# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



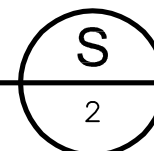
### NOTES:

1. ALL EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED.
2. BACKFILL MATERIAL SHALL BE APPROVED BANK RUN GRAVEL IN PAVED AREAS (INCLUDING DRIVEWAYS AND SIDEWALKS) OR COMMON FILL IN UNPAVED AREAS.
3. TRENCH WIDTH VARIES BASED ON PIPE SIZE AND DEPTH.
4. TRENCHES LOCATED IN THE ROAD SHOULDER SHALL BE TREATED THE SAME AS TRENCHES IN THE PAVED ROADWAY EXCEPT FOR PAVEMENT AND SURFACE RESTORATION WORK.
5. PROVIDE IMPERVIOUS TRENCH DAM(S) IN STONE BEDDING AS DIRECTED BY THE ENGINEER. SEE PIPE TRENCH DAM DETAIL.
6. CRUSHED STONE SHALL BE INSTALLED TO TOP OF PIPE FOR PVC AND DI PIPE AND TO SPRINGLINE FOR RC PIPE.

### SEWER TRENCH

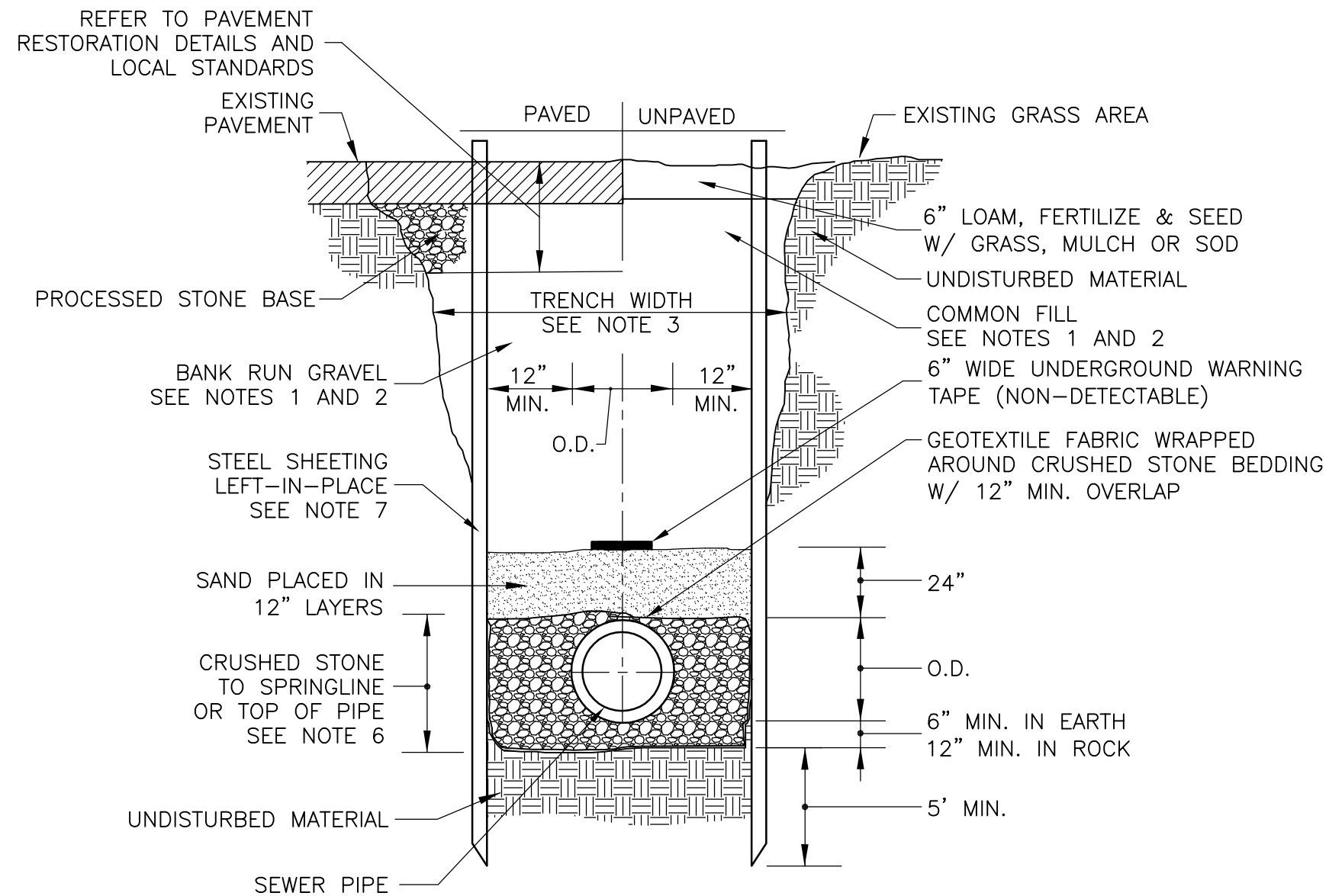
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# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



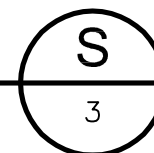
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5. PROVIDE IMPERVIOUS TRENCH DAM(S) IN STONE BEDDING AS DIRECTED BY ENGINEER. SEE PIPE TRENCH DAM DETAIL.
6. CRUSHED STONE SHALL BE INSTALLED TO TOP OF PIPE FOR PVC AND DI PIPE PIPE. CRUSHED STONE SHALL BE INSTALLED TO SPRINGLINE FOR RC PIPE.
7. CUT OFF DEPTH FOR STEEL SHEETING LEFT-IN-PLACE SHALL BE 4 FEET BELOW FINISHED GRADE.

### SEWER TRENCH WITH STEEL SHEETING LEFT-IN-PLACE

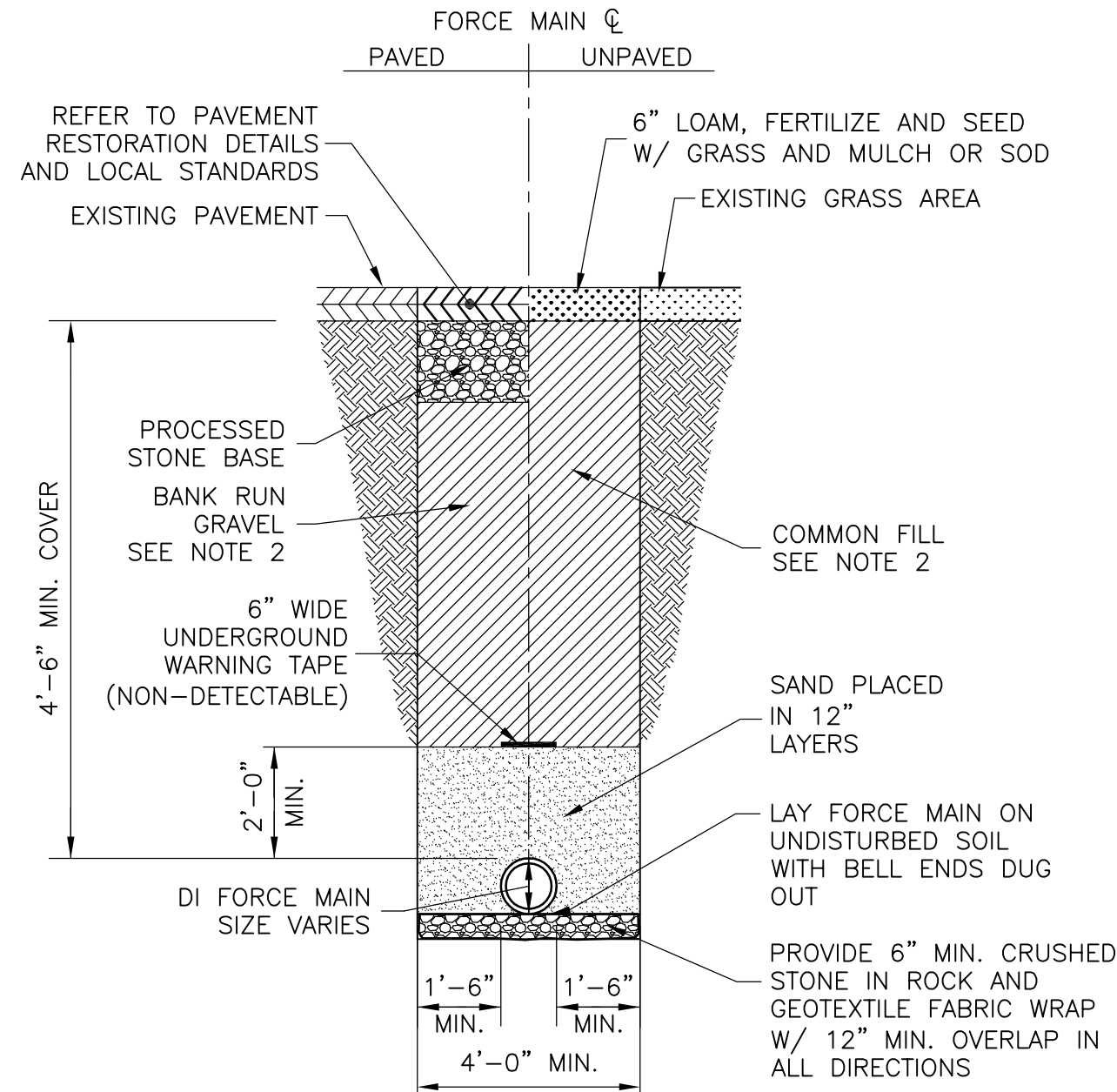
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# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



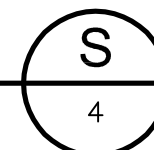
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5. PROVIDE IMPERVIOUS TRENCH DAM(S) IN STONE BEDDING AS DIRECTED BY THE ENGINEER. SEE PIPE TRENCH DAM DETAIL.
6. MAINTAIN MIN. 18" HORIZONTAL SEPARATION BETWEEN FORCE MAIN AND EXISTING PARALLEL UTILITIES (OUTSIDE WALL TO OUTSIDE WALL).

## SEWER FORCE MAIN TRENCH

DETAIL

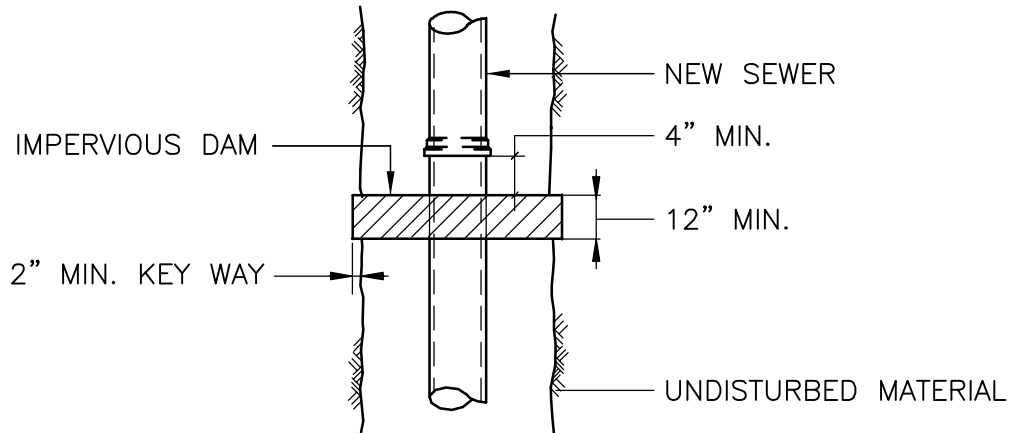
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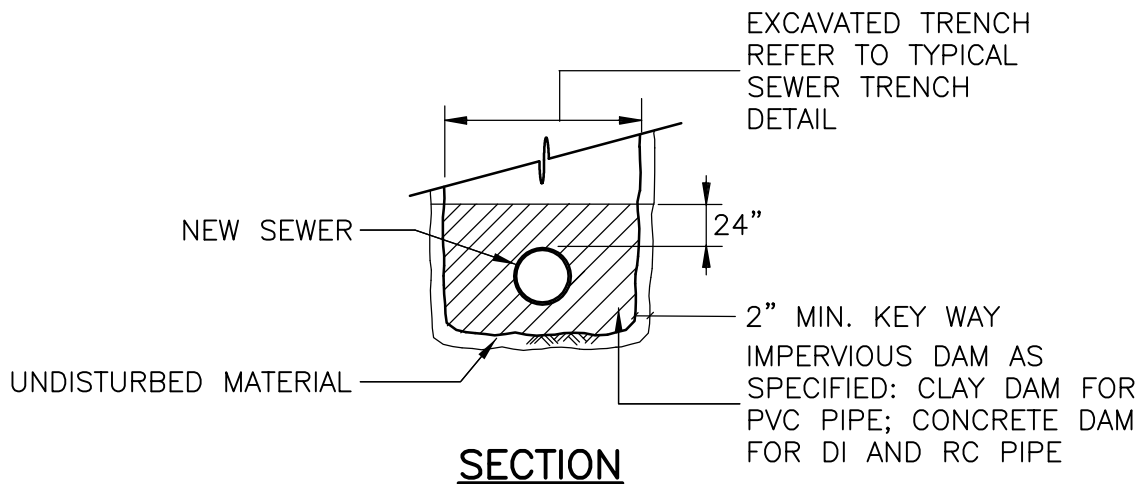


# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



PLAN

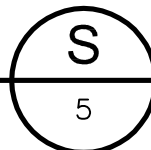


SECTION

### PIPE TRENCH DAM

DETAIL

NTS



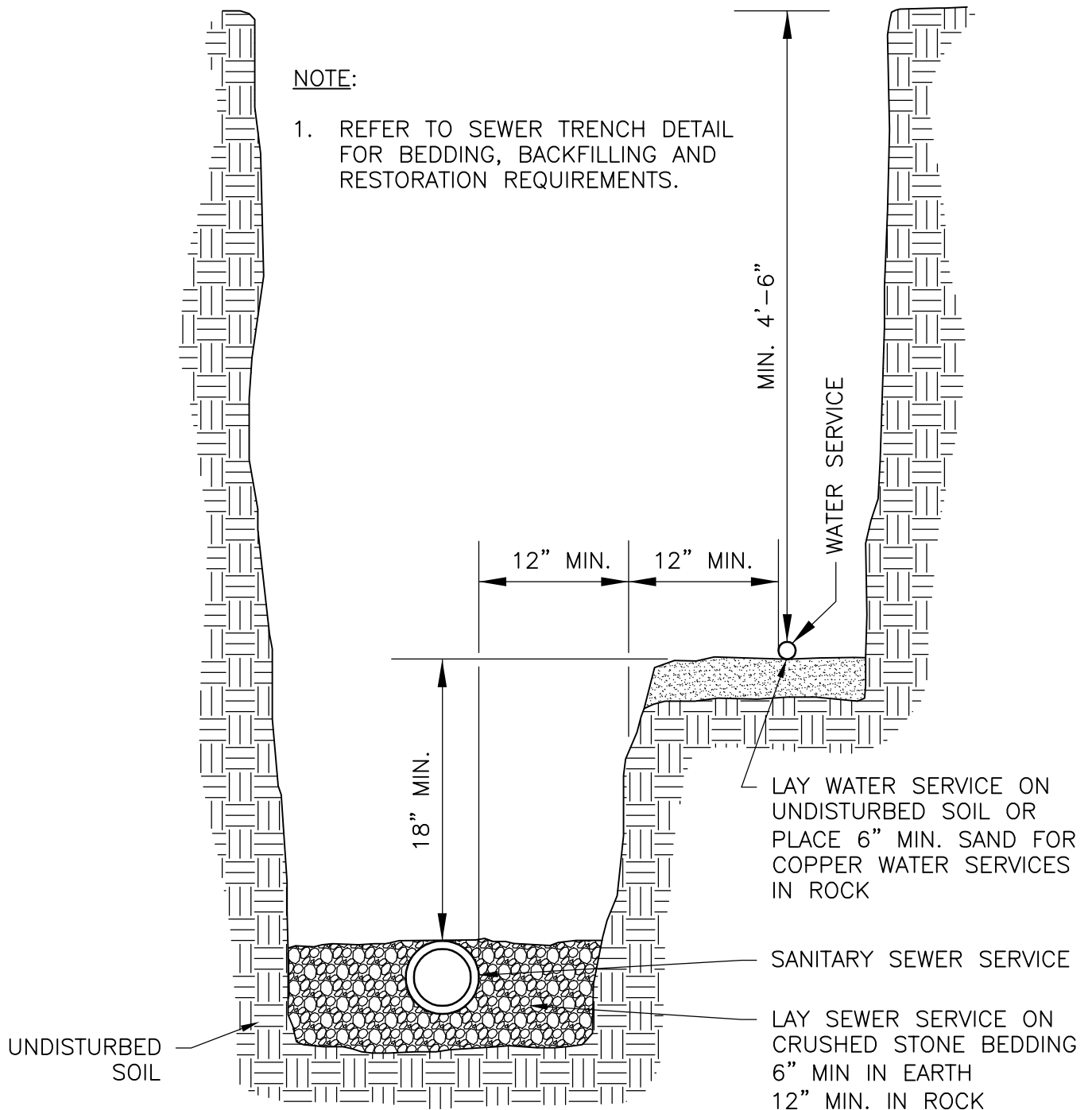
# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



### NOTE:

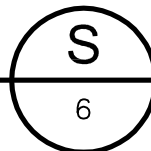
1. REFER TO SEWER TRENCH DETAIL FOR BEDDING, BACKFILLING AND RESTORATION REQUIREMENTS.



## SEWER SERVICE AND WATER SERVICE IN COMMON TRENCH

DETAIL

NTS



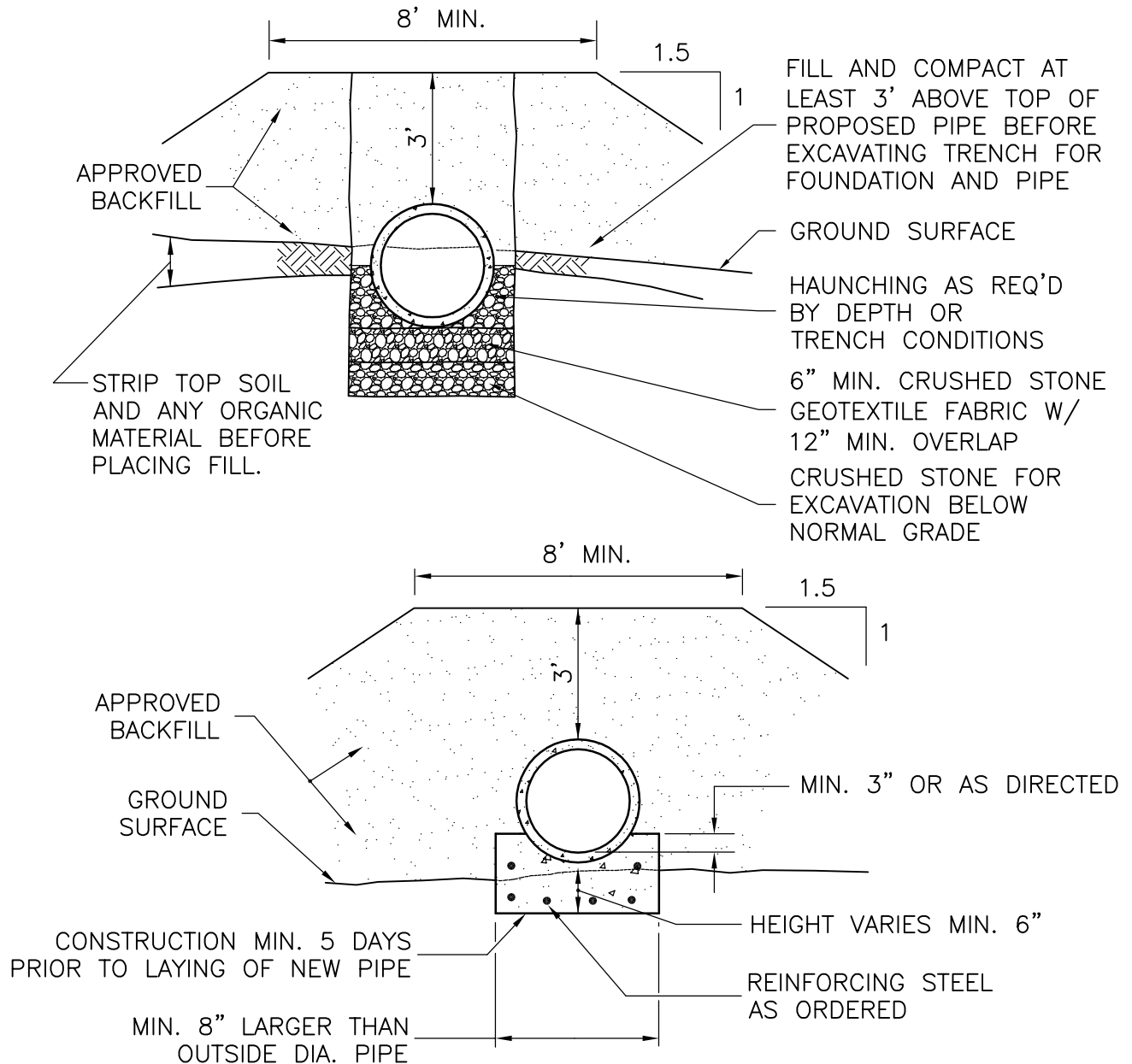
# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



### NOTE:

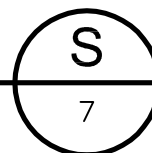
1. REFER TO SEWER TRENCH DETAIL FOR BACKFILLING AND RESTORATION REQUIREMENTS.



### FOUNDATION SECTIONS IN LOWLANDS

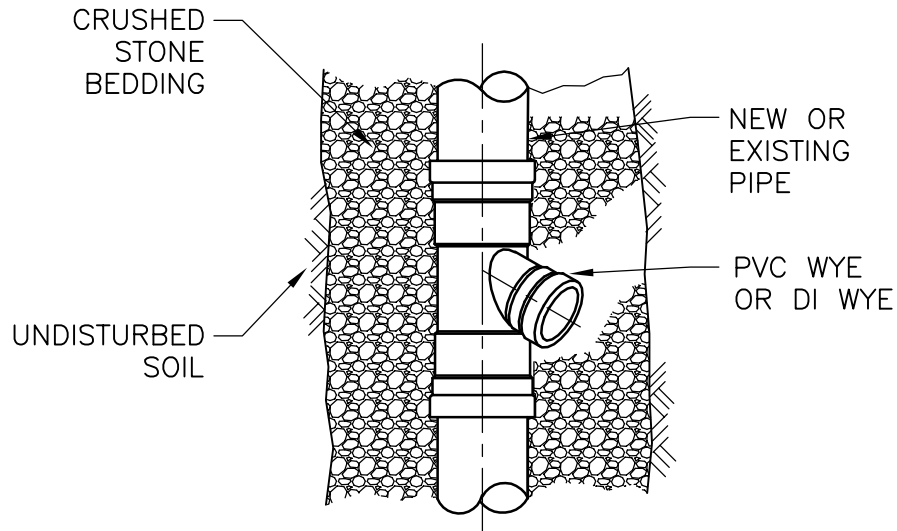
DETAIL

NTS

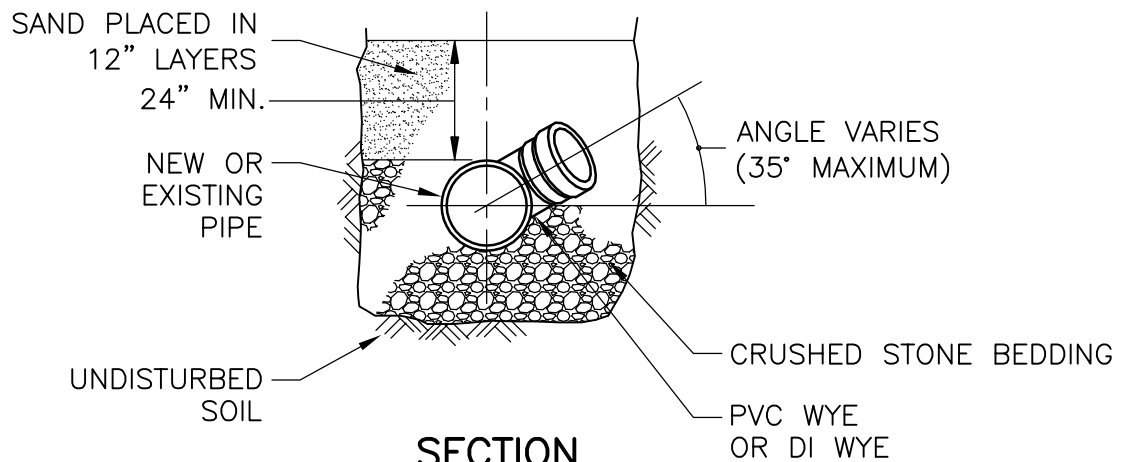


# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



PLAN



SECTION

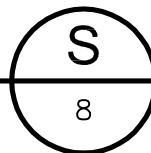
NOTE:

1. REFER TO SEWER TRENCH DETAIL FOR BEDDING, BACKFILLING AND RESTORATION REQUIRMENTS.

PVC OR DI WYE BRANCH

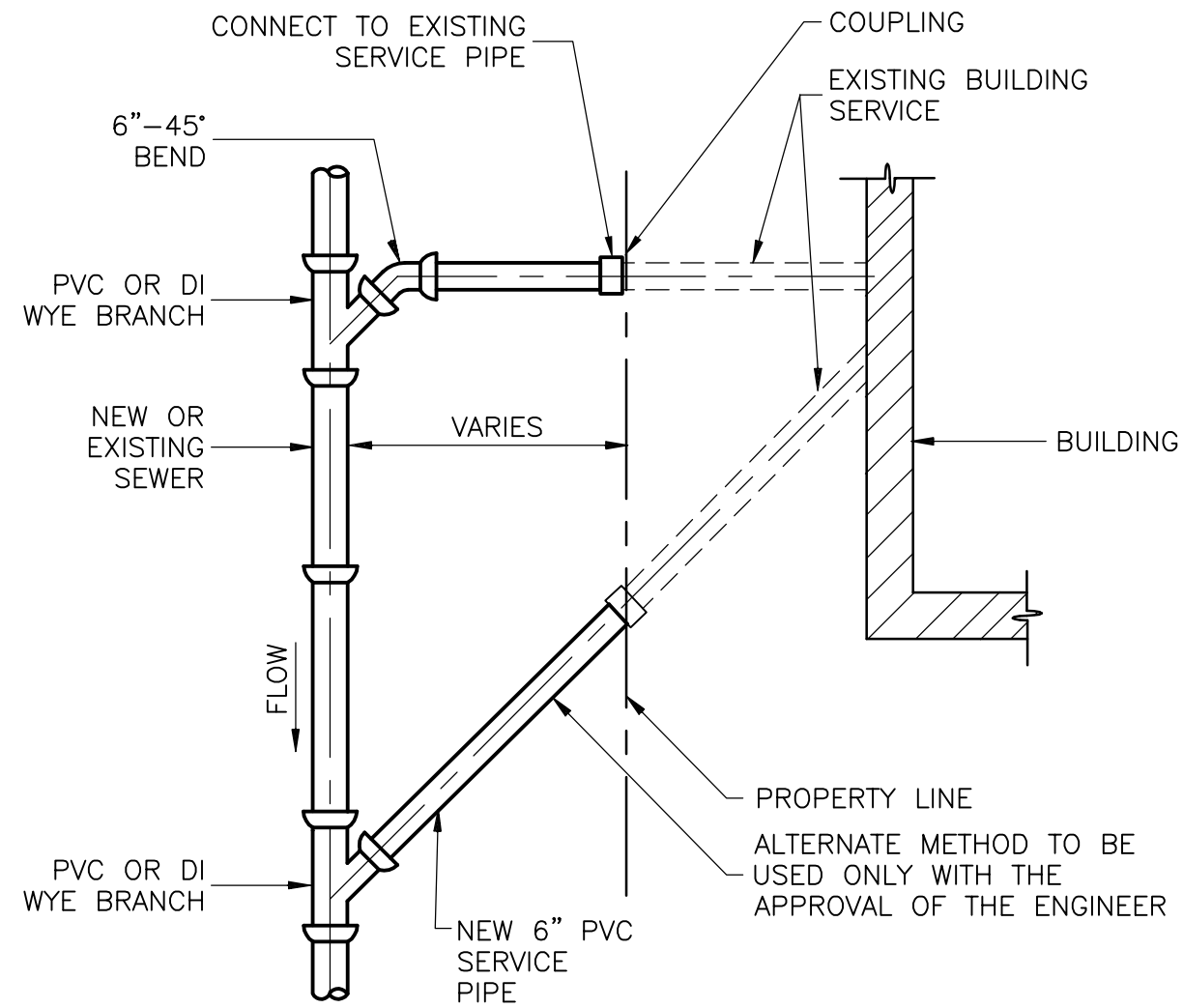
DETAIL

NTS

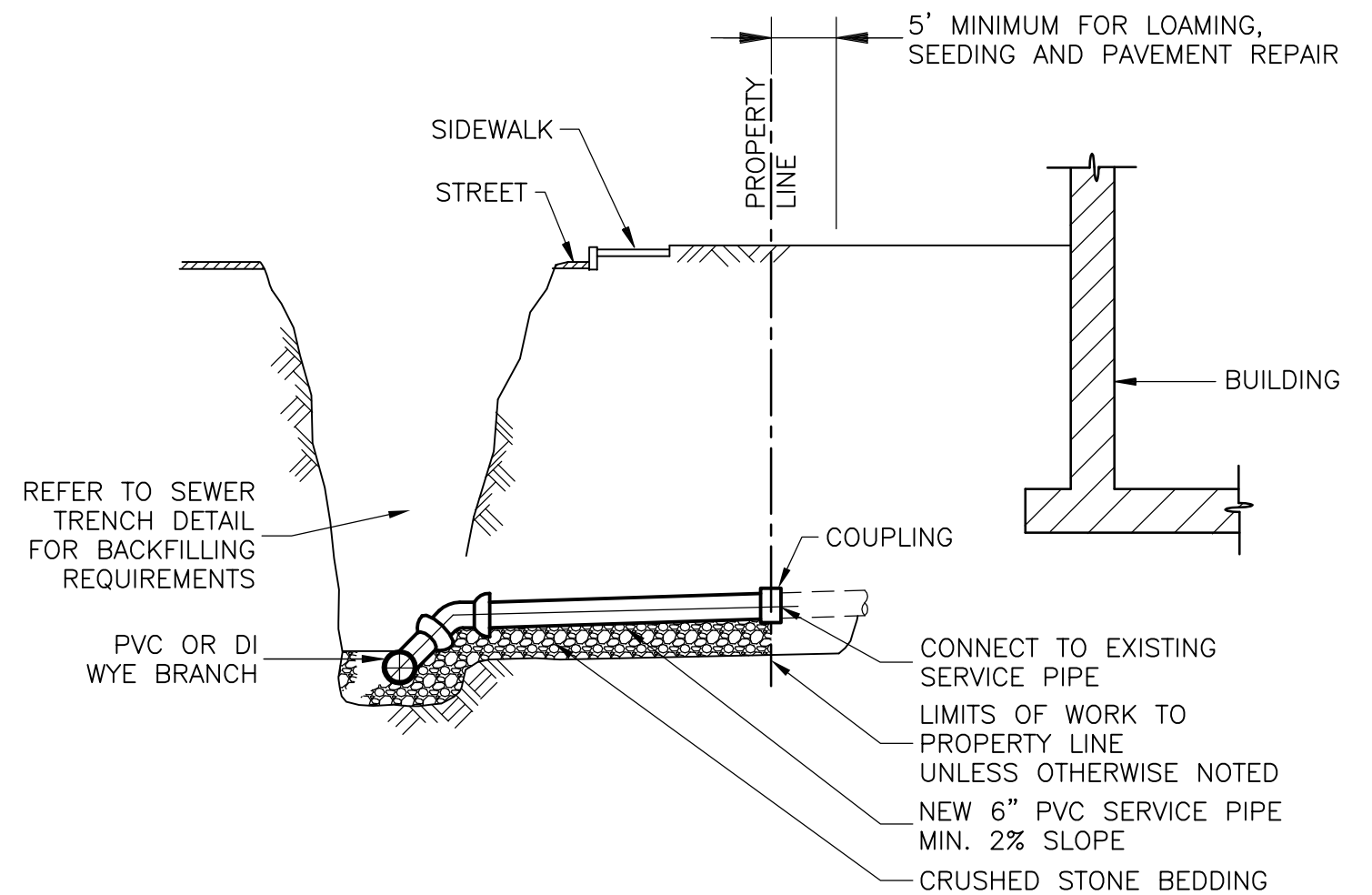


# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



**PLAN**

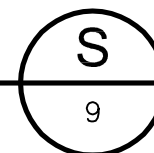


**SECTION**

### SEWER SERVICE REPLACEMENT

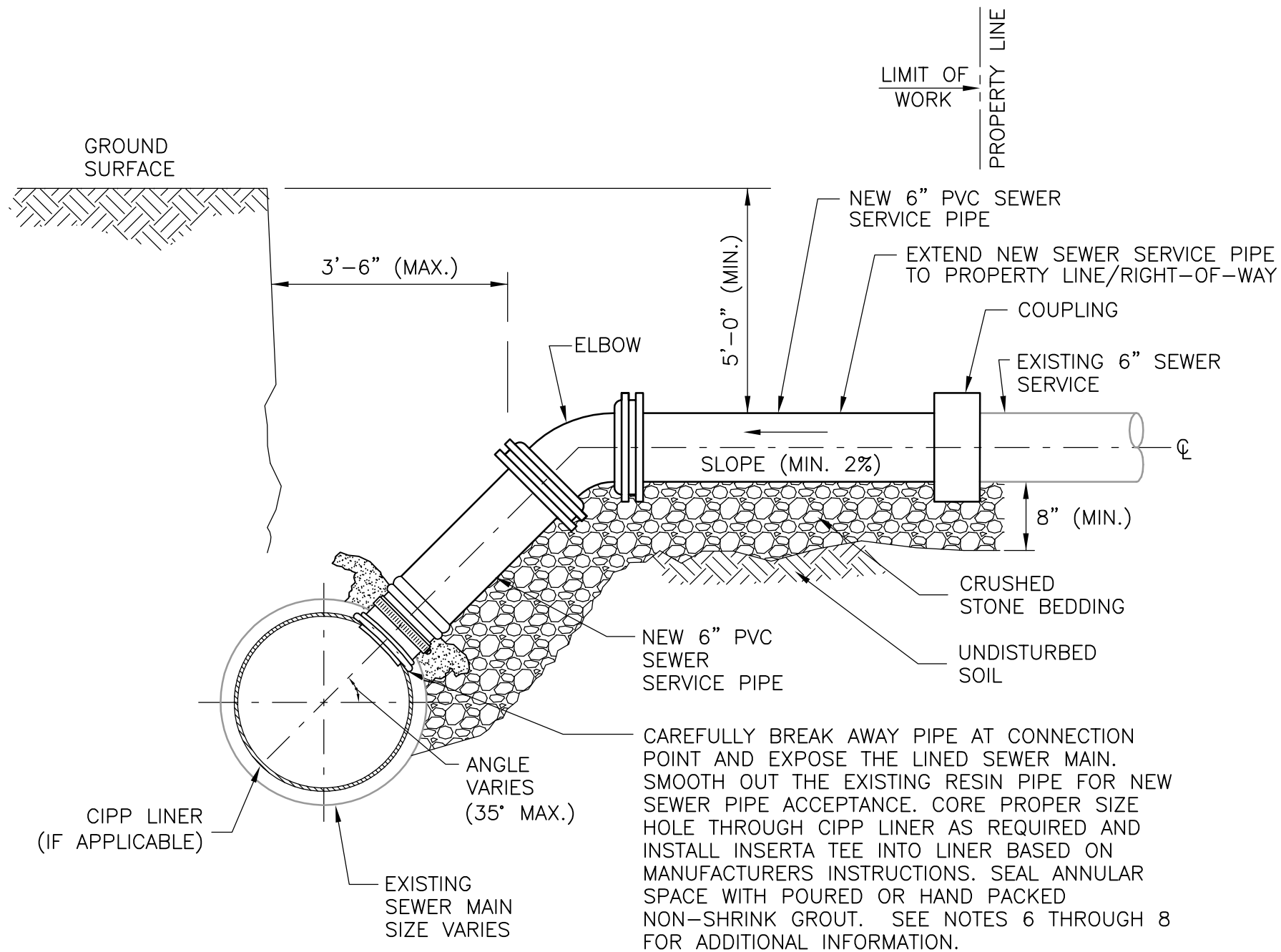
**DETAIL**

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



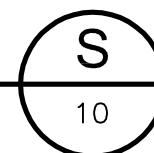
### NOTES:

1. THIS DETAIL SHALL APPLY TO EXISTING OR NEW SERVICE LATERALS THAT WILL BE CONNECTED TO A CIPP LINED SEWER MAIN AT THE EXISTING WYE OR AT A RELOCATED LOCATION AS SHOWN ON THE DRAWINGS. MAINLINE SEWER CIPP LINING WORK SHALL BE COMPLETED PRIOR TO SERVICE LATERAL REPLACEMENT.
2. CONNECTIONS FOR SERVICES THAT ARE SCHEDULED FOR RELOCATION SHALL BE MADE AT A 5' MIN. DISTANCE AWAY FROM THE EXISTING SERVICE CONNECTION. THE EXISTING SERVICE PIPE THAT REMAINS SHALL BE FILLED AND ABANDONED USING GROUT, SAND OR FLOWABLE FILL, OR ABANDONED IN PLACE AS DIRECTED BY THE ENGINEER. THE EXISTING CONNECTION TO THE MAIN SHALL BE PLUGGED, SEALED AND ABANDONED AS REQUIRED.
3. CONNECT NEW PVC SERVICE LATERAL PIPE DIRECTLY TO THE EXISTING SERVICE LATERAL PIPE AT THE PROPERTY LINE AS SHOWN ON THE PLANS.
4. WHEN BREAKING AWAY EXISTING PIPE, DO NOT ALLOW DEBRIS TO ENTER SEWER.
5. REFER TO SEWER TRENCH DETAIL FOR BACKFILLING AND RESTORATION REQUIREMENTS.
6. CONTRACTOR TO PROVIDE ALL FITTINGS FOR NEW SERVICE CONNECTIONS AS REQUIRED.
7. FOR CURED-IN-PLACE LINER, VERIFY THAT THE LINER IS COMPLETELY CURED AND ALLOW THE LINER TO NORMALIZE TO AMBIENT TEMPERATURE AND RECOVER FROM IMPOSED STRETCH PRIOR TO NEW SERVICE LATERAL CONNECTION WORK.
8. IMMEDIATELY FOLLOWING LINER INSTALLATION AND CURING, THE CONTRACTOR SHALL CUT A RELIEF HOLE AT EACH SERVICE LATERAL. THE RELIEF HOLE SHALL BE CUT AS REQUIRED TO ALLOW FOR A 6-INCH INSERTA TEE PER MANUFACTURER'S RECOMMENDATIONS.
9. THE CONTRACTOR SHALL PROVIDE SUFFICIENT WORKING SPACE TO INSTALL A 6-INCH INSERTA TEE PER MANUFACTURER'S RECOMMENDATIONS.
10. NOT TO BE USED FOR HOUSE CONNECTION PERMIT WORK.

### SERVICE LATERAL INSERTA TEE CONNECTION

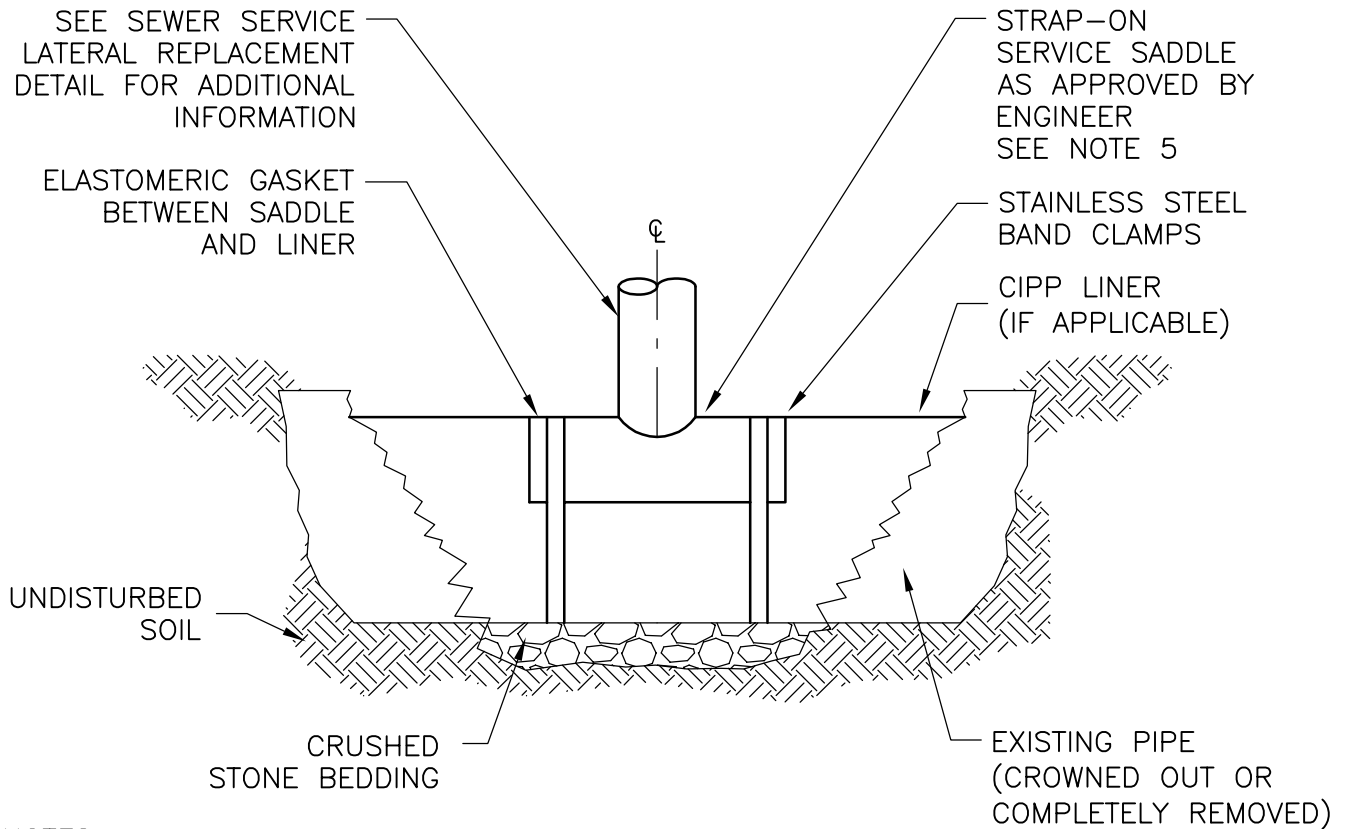
DETAIL

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



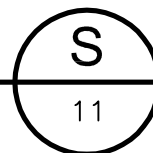
### NOTES:

1. THIS DETAIL APPLIES WHENEVER AN EXISTING SERVICE LATERAL MUST BE CONNECTED TO A CIPP LINED SEWER MAIN AND SERVICE LATERAL INSERTA TEE CONNECTION CANNOT BE INSTALLED.
2. WHEN BREAKING OUT EXISTING PIPE CROWN, DO NOT ALLOW DEBRIS TO ENTER SEWER. INSTALL AND COMPACT CRUSHED STONE TO 1-FOOT ABOVE TOP OF PIPE AND/OR SERVICE.
3. REFER TO SEWER TRENCH DETAIL FOR BEDDING, BACKFILLING AND RESTORATION REQUIREMENTS.
4. INSTALL FITTINGS, ADAPTERS, AND RUBBER SLEEVE COUPLINGS AS NECESSARY, TO MAKE CONNECTION BETWEEN NEW AND EXISTING SERVICE LATERAL PIPING.
5. NOT ALL LATERAL SIZES ARE KNOWN. CONTRACTOR TO FIELD VERIFY THE SIZE AND TYPE OF THE EXISTING SERVICE LATERAL. EXISTING LATERALS ARE ASSUMED TO BE 6" DIAMETER.

## SERVICE LATERAL SADDLE CONNECTION

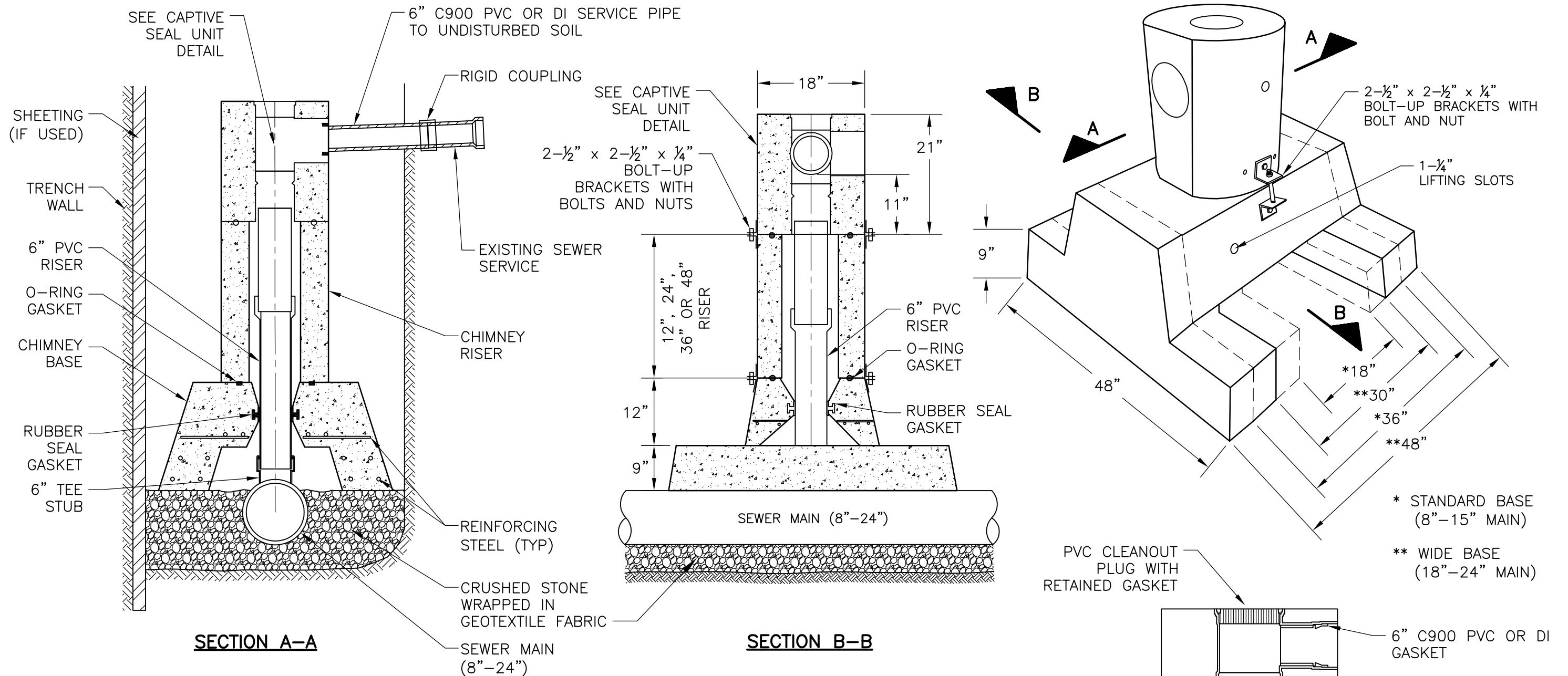
DETAIL

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# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



### NOTE:

1. REFER TO SEWER TRENCH DETAIL FOR BACKFILL AND SURFACE RESTORATION REQUIREMENTS.

## SEWER SERVICE PRECAST CONCRETE CHIMNEY

DETAIL

NTS

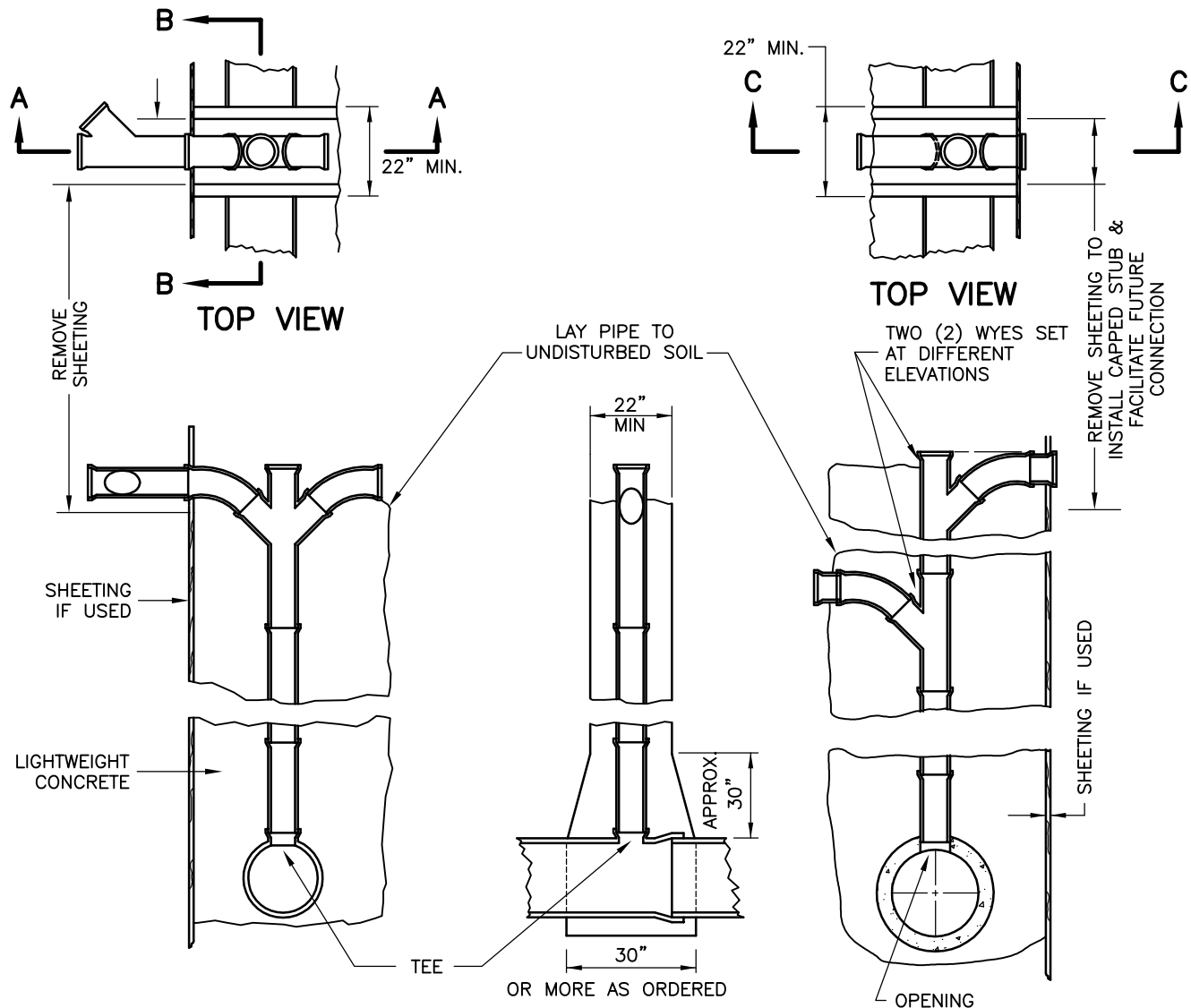
S

12



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



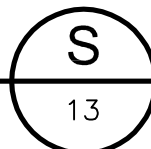
### NOTES:

1. WHERE SHEETING IS NOT USED CONCRETE FULL WIDTH OF TRENCH TO SOLID GROUND. WHERE SO ORDERED OR INDICATED SET WYE HORIZONTALLY TO SERVE TWO CONNECTIONS.
2. ALL OPENINGS AT TOP OF CHIMNEYS TO BE CAPPED AT TIME OF CONSTRUCTION.
3. TO BE USED WHEN PRECAST CONCRETE CHIMNEYS ARE NOT APPLICABLE OR AS DIRECTED BY ENGINEER.

## SEWER SERVICE CHIMNEY CONNECTION

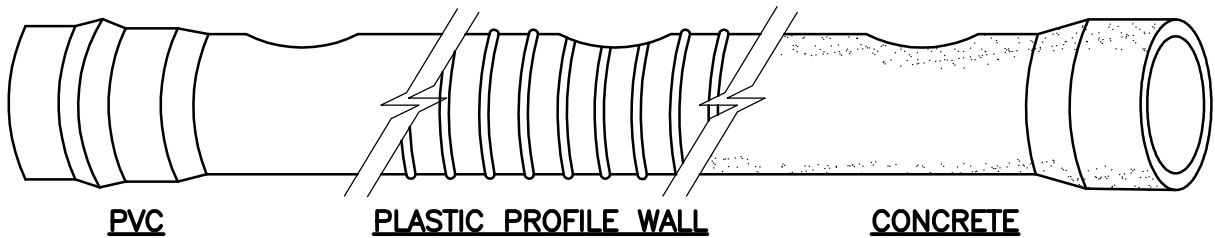
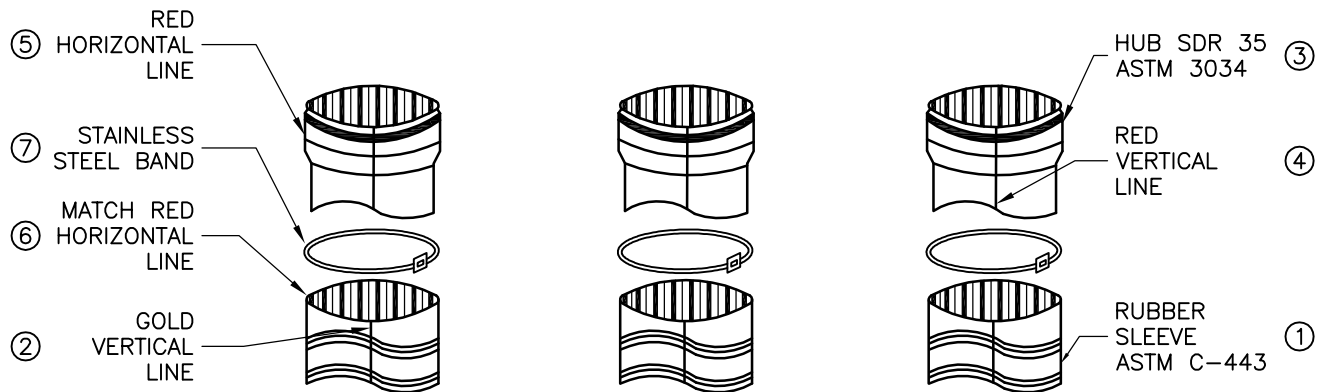
DETAIL

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



TEE SIZE	4"	6"	8"	10"	12"	15"
BIT SIZE	4- $\frac{1}{2}$ "	6- $\frac{1}{2}$ "	8- $\frac{3}{4}$ "	10- $\frac{7}{8}$ "	12- $\frac{7}{8}$ "	15- $\frac{13}{16}$ "

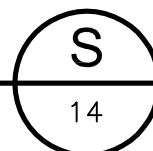
### INSTALLATION PROCEDURE:

- ① CORE THE PROPER SIZED HOLE.
- ② INSERT THE RUBBER SLEEVE IN THE CORED HOLE WITH THE GOLD VERTICAL LINE ON THE RUBBER SLEEVE FACING THE SIDE OF THE MAIN LINE. THE UPPER SEGMENT SHOULD BE ON TOP OF THE WALL/RIB AND THE LOWER SEGMENT SHOULD BE ON THE INSIDE OF THE PIPE (PLASTIC PIPE ONLY).
- ③ APPLY THE MANUFACTURER SPECIFIED TEE INSERT SOLUTION TO THE INSIDE OF THE RUBBER SLEEVE AND TO THE OUTSIDE OF THE PVC HUB ADAPTER. DO NOT USE AN OIL-BASED LUBRICANT.
- ④ PLACE THE PVC HUB ADAPTER INTO THE RUBBER SLEEVE. MAKE SURE THAT THE RED VERTICAL LINE ON THE PVC HUB ADAPTER IS IN LINE WITH THE GOLD VERTICAL LINE ON THE RUBBER SLEEVE.
- ⑤ PLACE A 2"x4" BOARD ONTO THE TOP OF THE PVC HUB ADAPTOR.
- ⑥ THE RED HORIZONTAL LINE AT THE TOP OF THE HUB ADAPTER IS A DEPTH MARK TO INDICATE HOW FAR TO DRIVE THE ADAPTER INTO THE RUBBER SLEEVE. DRIVE THE PVC HUB ADAPTER INTO THE RUBBER SLEEVE TO WHERE THE HORIZONTAL RED LINE ON THE PVC HUB ADAPTER MEETS THE TOP OF THE RUBBER SLEEVE.
- ⑦ PLACE THE STAINLESS STEEL BAND AROUND THE TOP OF THE RUBBER SLEEVE AND TIGHTEN DOWN. INSTALL PIPE IN NORMAL MANNER.

### TEE INSERT CONNECTIONS

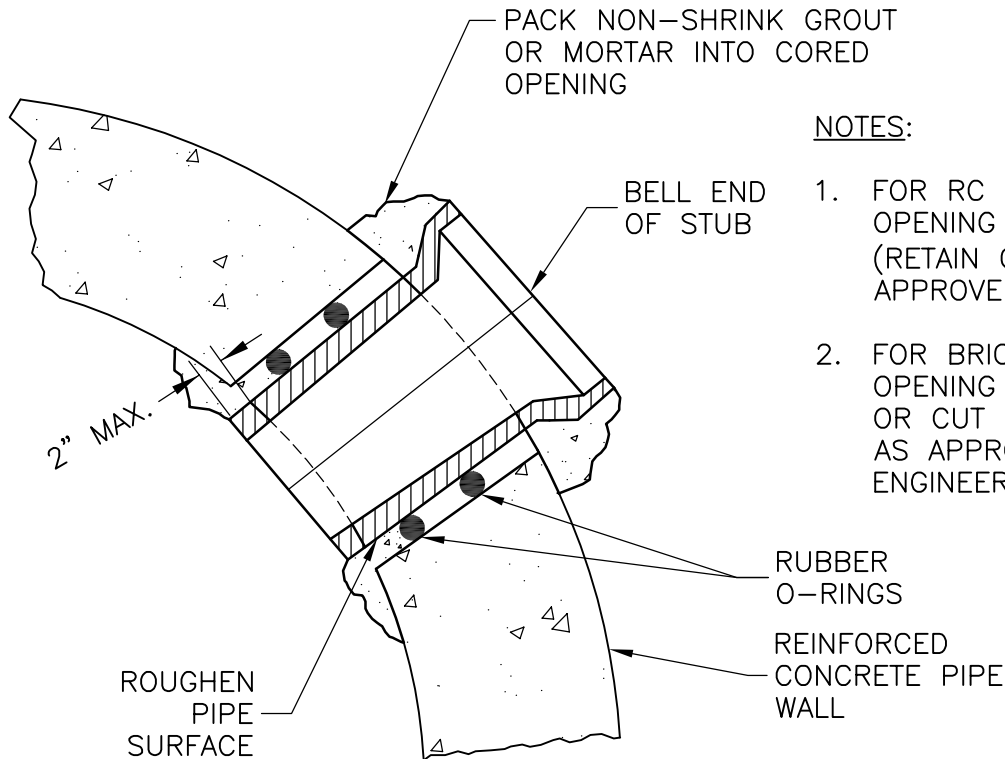
DETAIL

NTS



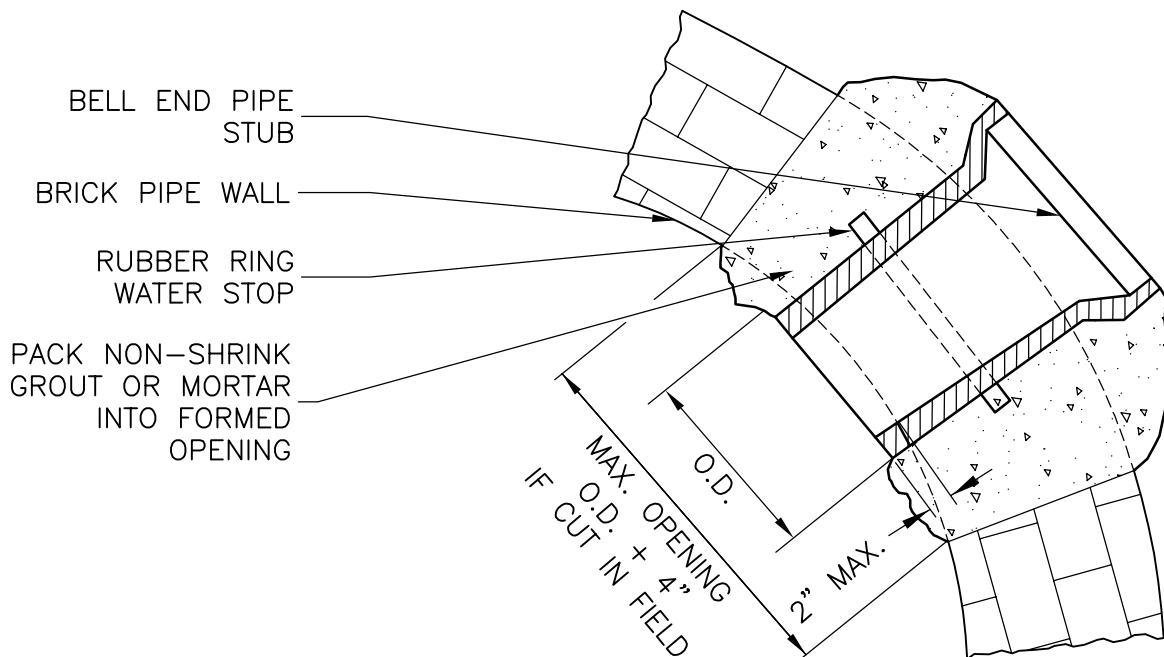
# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



### NOTES:

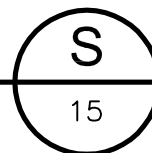
1. FOR RC PIPE, FORM OPENING USING CORE DRILL (RETAIN CORE) OR OTHER APPROVED METHOD.
2. FOR BRICK PIPE, FORM OPENING USING CORE DRILL OR CUT OPENING IN FIELD AS APPROVED BY THE ENGINEER.



### STUB CONNECTION IN PIPE

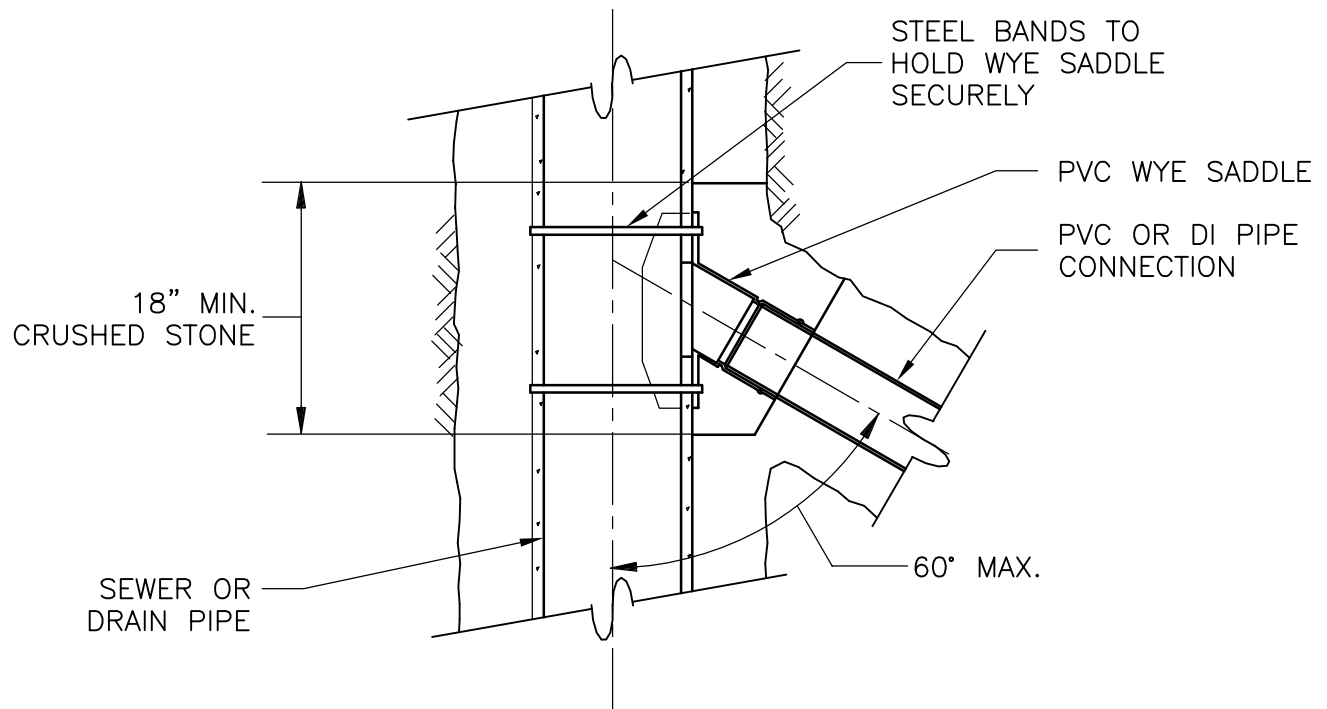
DETAIL

NTS

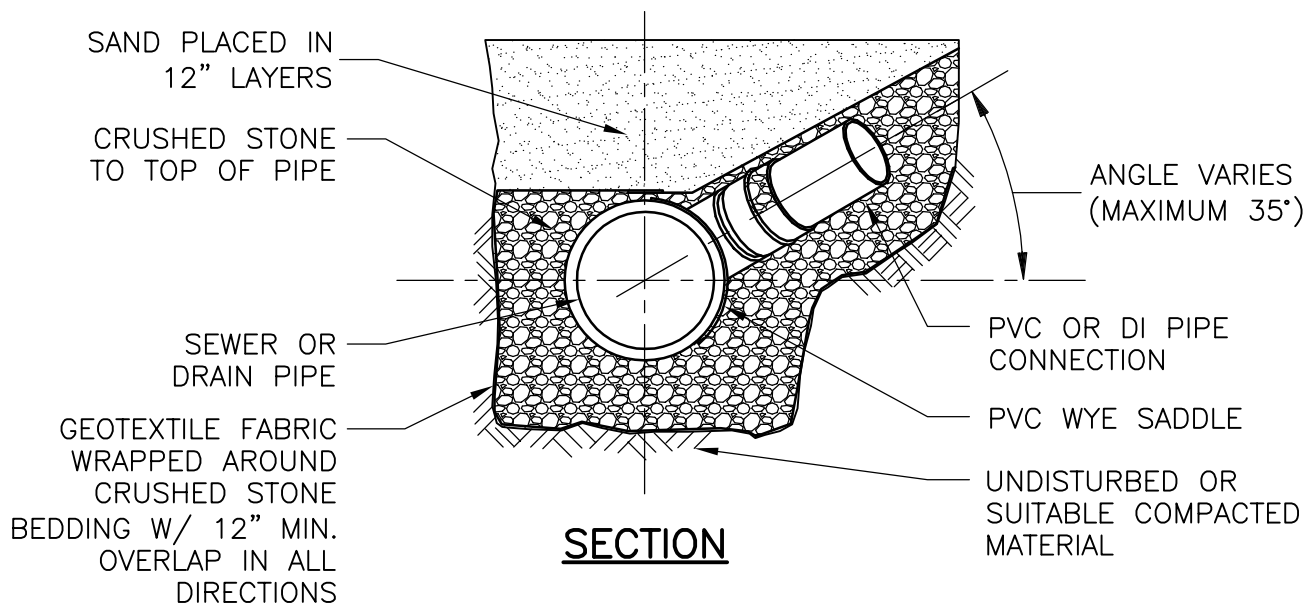


# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



**PLAN**

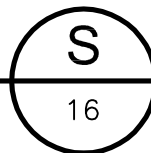


**SECTION**

### WYE SADDLE CONNECTION TO EXISTING PIPE

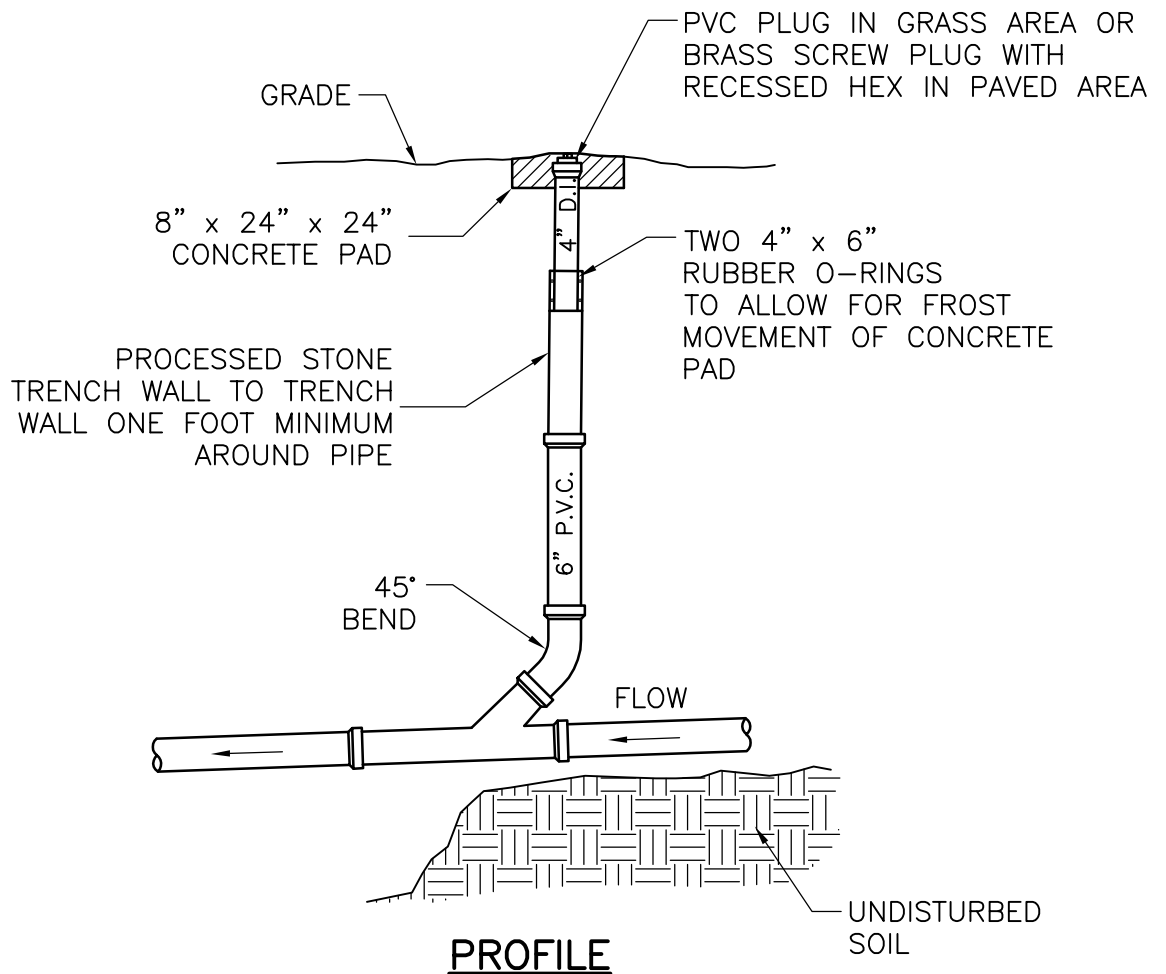
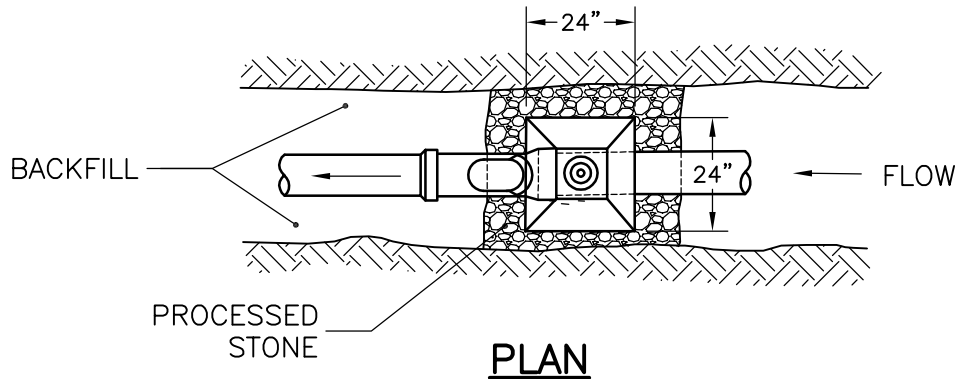
**DETAIL**

NTS



# THE METROPOLITAN DISTRICT

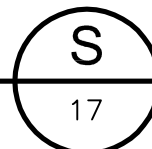
## SEWER STANDARD DETAILS



### CLEANOUT AT GRADE

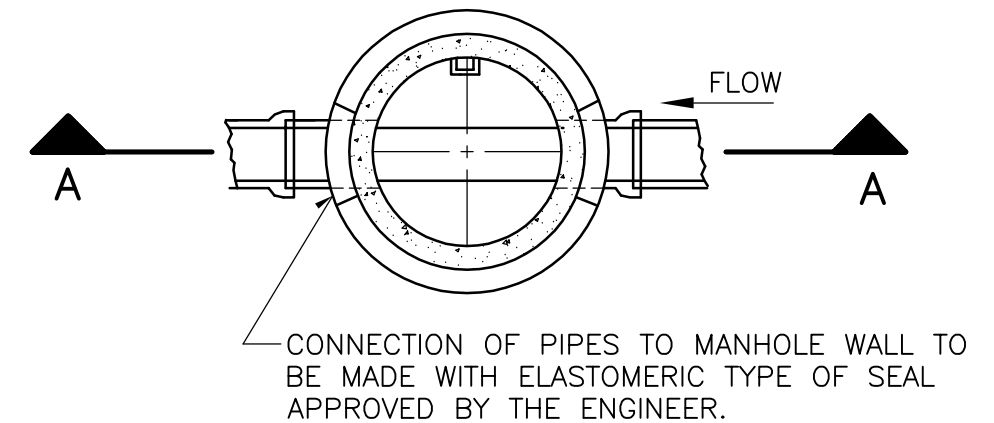
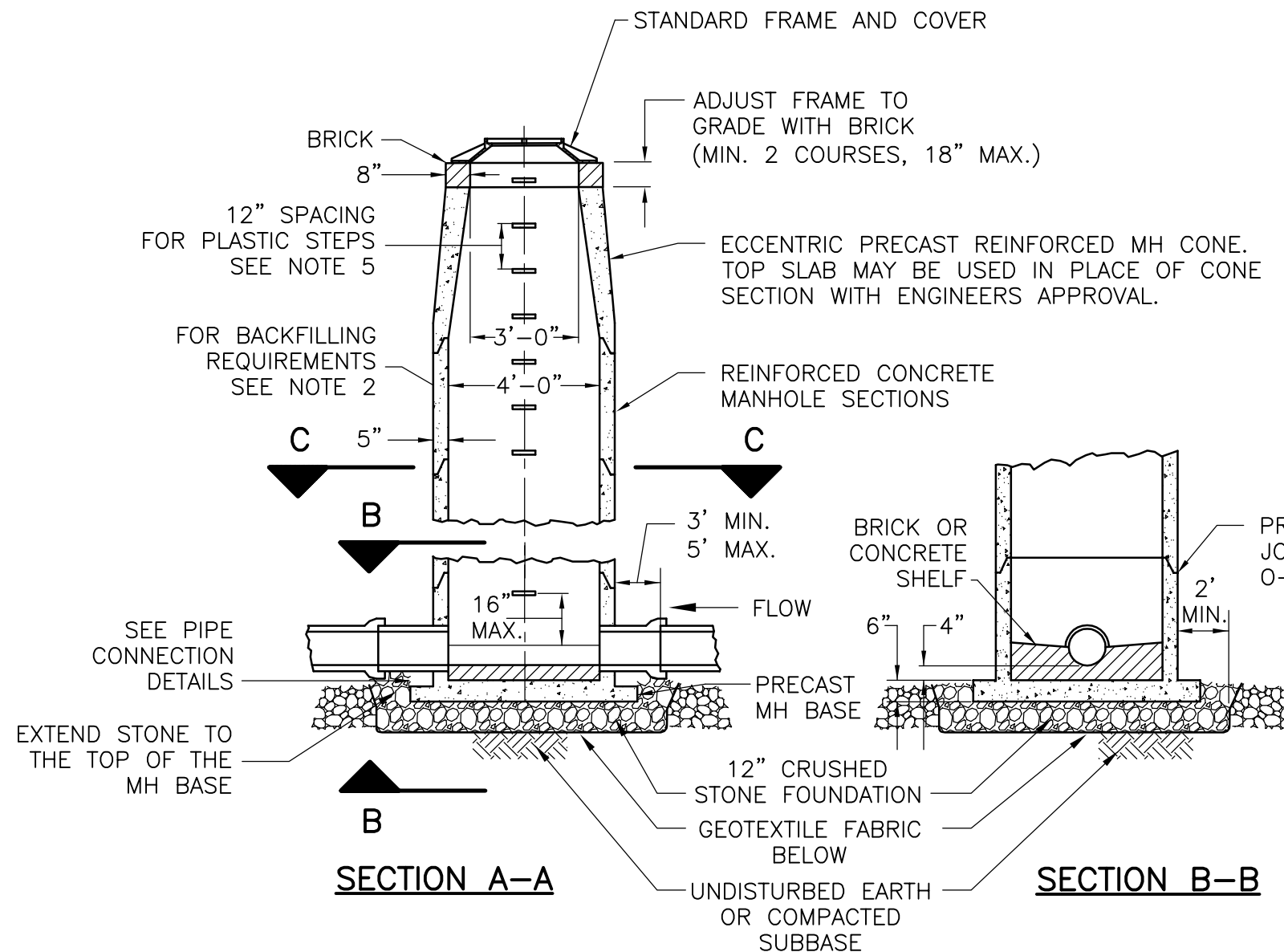
**DETAIL**

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



**SECTION C-C**

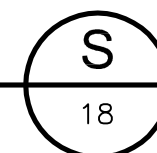
### NOTES:

1. MAXIMUM PIPE SIZE TO BE INSTALLED IN 48" MANHOLE BASE SHALL BE 18".
2. REFER TO SEWER TRENCH DETAIL FOR BACKFILLING AND COMPACTION REQUIREMENTS AROUND SEWER MANHOLES.
3. INVERT THROUGH THE MANHOLE SHALL HAVE A UNIFORM GRADE OF MINIMUM 0.10 FEET BETWEEN THE INVERTS OF THE INLET AND OUTLET PIPES. INVERTS SHALL BE FIELD FORMED AND NOT FORMED IN SHOP/YARD.
4. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN THE INVERT OF THE TRIBUTARY INLET AND THE MANHOLE INVERT SHALL BE 18 INCHES. ELEVATION DIFFERENCES GREATER THAN 18 INCHES WILL REQUIRE A DROP CONNECTION.
5. DISTANCE FROM TOP OF MANHOLE COVER TO FIRST PLASTIC STEP SHALL BE BETWEEN 12" AND 16".

## TYPE II PRECAST CONCRETE MANHOLE

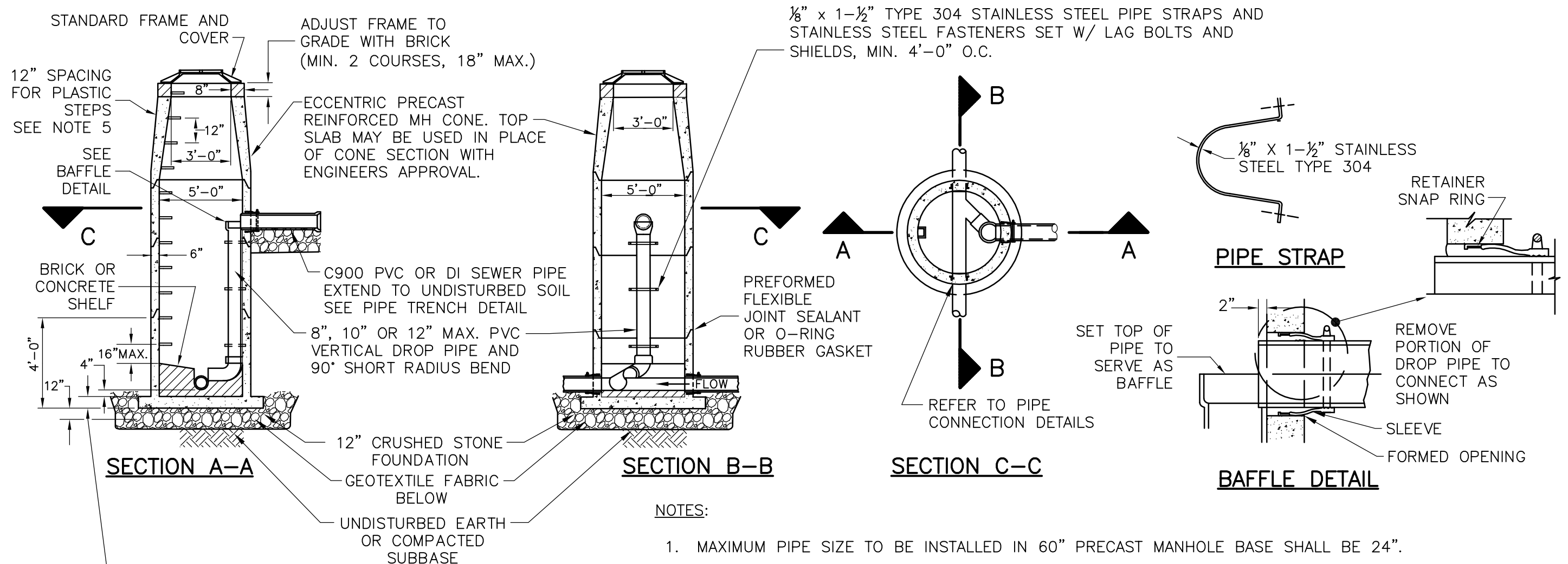
DETAIL

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



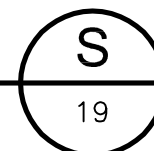
### NOTES:

1. MAXIMUM PIPE SIZE TO BE INSTALLED IN 60" PRECAST MANHOLE BASE SHALL BE 24".
2. REFER TO SEWER TRENCH DETAIL FOR BACKFILLING AND COMPACTION REQUIREMENTS AROUND SEWER MANHOLES.
3. INVERT THROUGH THE MANHOLE SHALL HAVE A UNIFORM GRADE OF MINIMUM 0.10 FEET BETWEEN THE INVERTS OF THE INLET AND OUTLET PIPES. INVERTS SHALL BE FIELD FORMED AND NOT FORMED IN SHOP/YARD.
4. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN THE INVERT OF THE TRIBUTARY INLET AND THE MANHOLE INVERT SHALL BE 18 INCHES. ELEVATION DIFFERENCES GREATER THAN 18 INCHES WILL REQUIRE A DROP CONNECTION.
5. DISTANCE FROM TOP OF MANHOLE COVER TO FIRST PLASTIC STEP SHALL BE BETWEEN 12" AND 16".

## TYPE IV PRECAST CONCRETE DROP MANHOLE

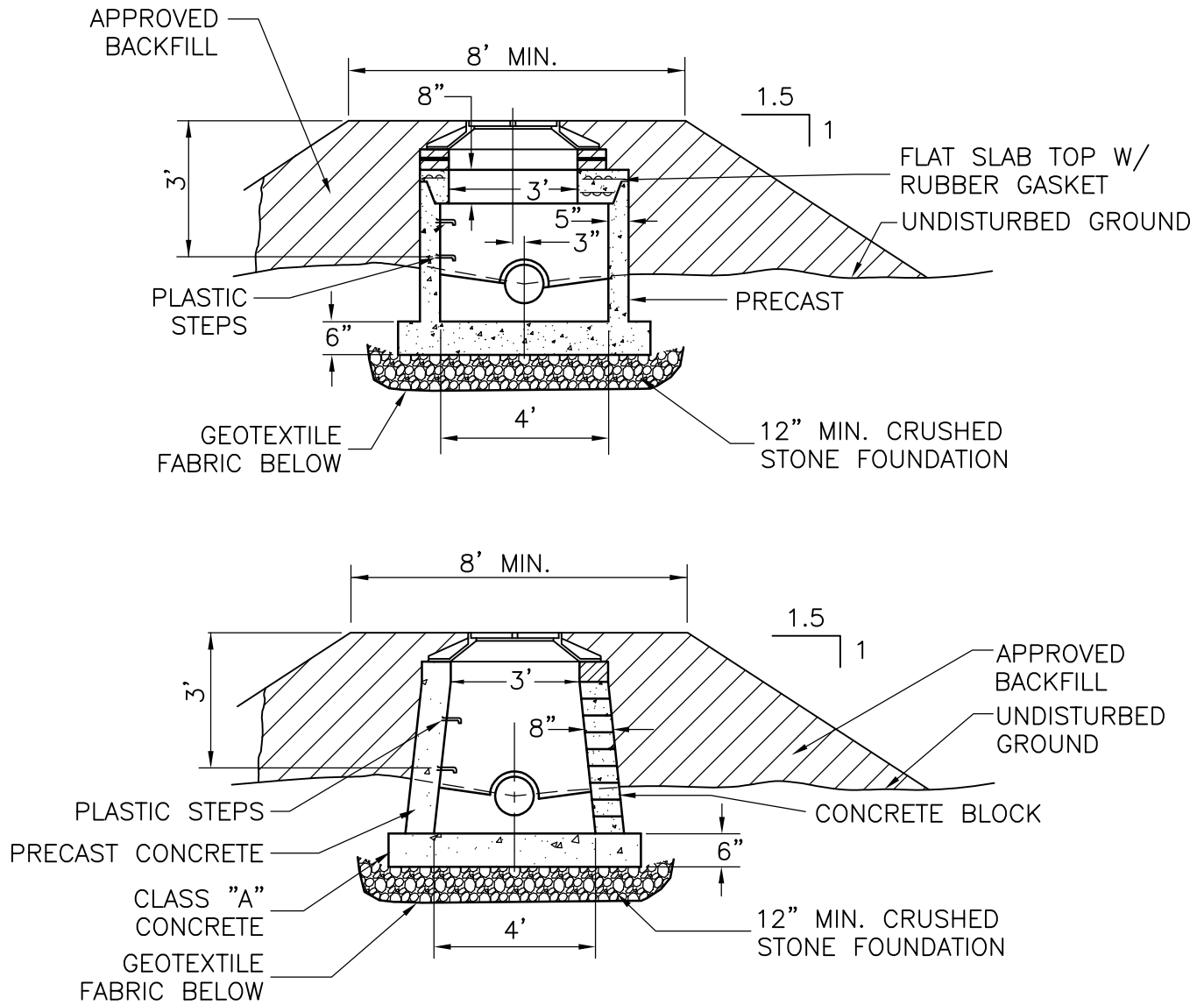
DETAIL

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



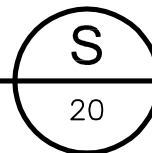
### NOTES:

1. STANDARD FRAME AND COVER UNLESS OTHERWISE SPECIFIED.
2. MANHOLE SHELF TO BE CONCRETE OR BRICK MASONRY. OUTSIDE OF BLOCK MH TO BE PARGED WITH  $\frac{1}{4}$ " MORTAR. ADJUST FRAME TO GRADE WITH BRICK (MIN. 2 COURSES, 18" MAX.).

## TYPE V SHALLOW MANHOLE WITH OR WITHOUT EMBANKMENT

DETAIL

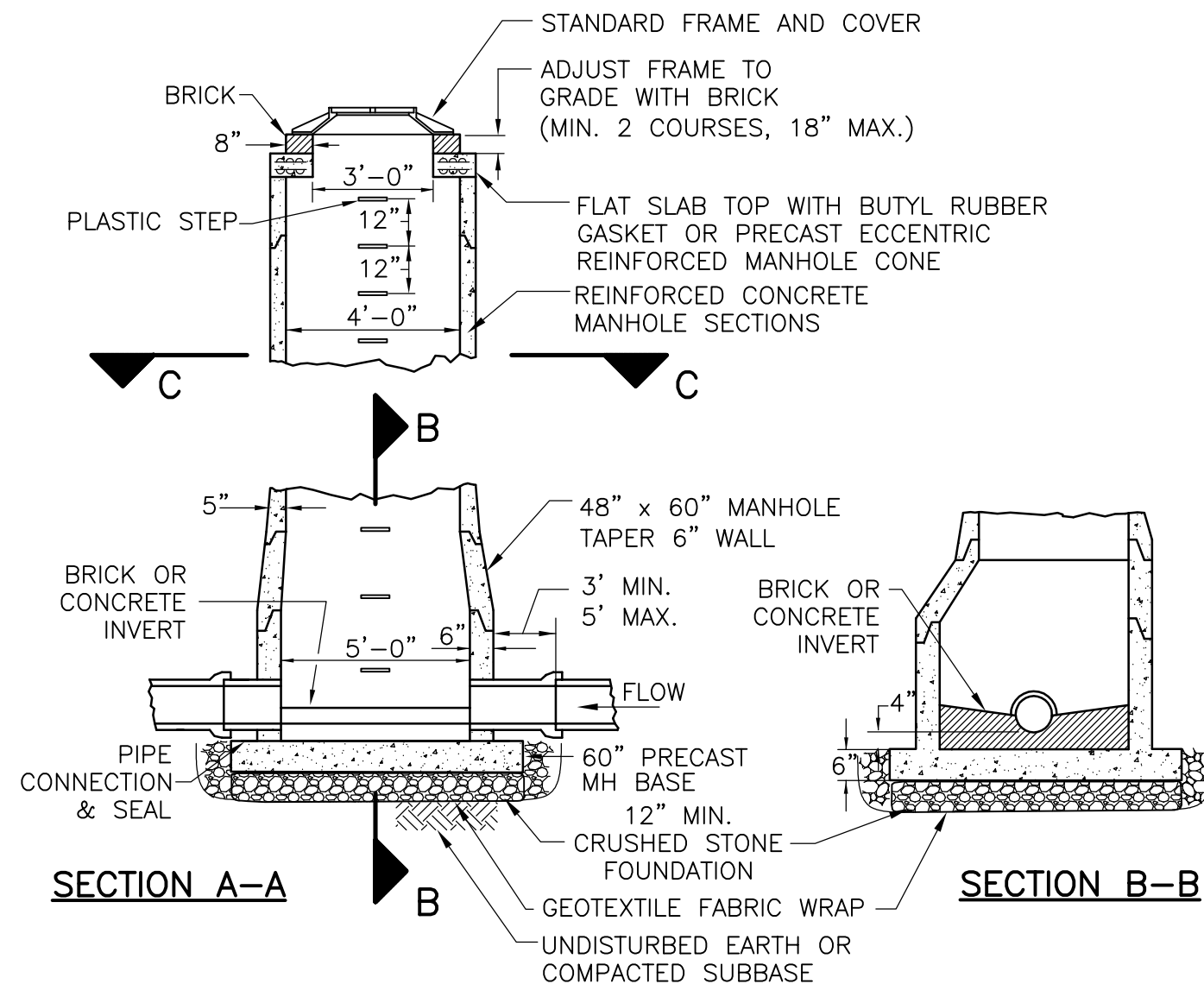
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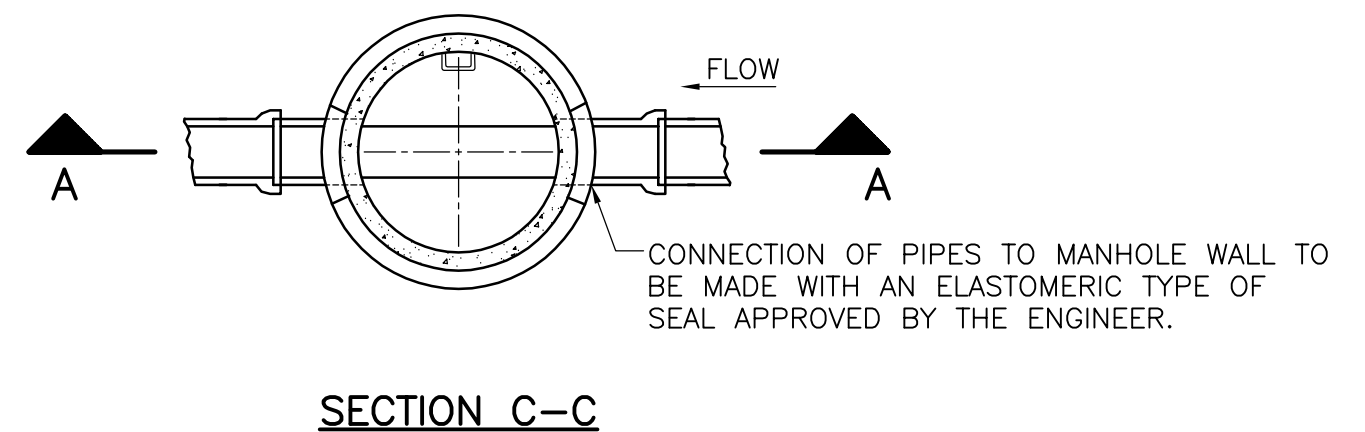
# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



### NOTES:

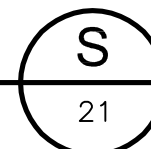
1. MAXIMUM PIPE SIZE TO BE INSTALLED IN 60" PRECAST MANHOLE BASE SHALL BE 24".
2. REFER TO SEWER TRENCH DETAIL FOR BACKFILLING AND COMPACTION REQUIREMENTS AROUND SEWER MANHOLES.
3. INVERT THROUGH THE MANHOLE SHALL HAVE A UNIFORM GRADE OF MINIMUM 0.10 FEET BETWEEN THE INVERTS OF THE INLET AND OUTLET PIPES. INVERTS SHALL BE FIELD FORMED AND NOT FORMED IN SHOP/YARD.
4. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN THE INVERT OF THE TRIBUTARY INLET AND THE MANHOLE INVERT SHALL BE 18 INCHES. ELEVATION DIFFERENCES GREATER THAN 18 INCHES WILL REQUIRE A DROP CONNECTION.
5. DISTANCE FROM TOP OF MANHOLE COVER TO FIRST PLASTIC STEP SHALL BE BETWEEN 12" AND 16".



### TYPE VI PRECAST CONCRETE MANHOLE

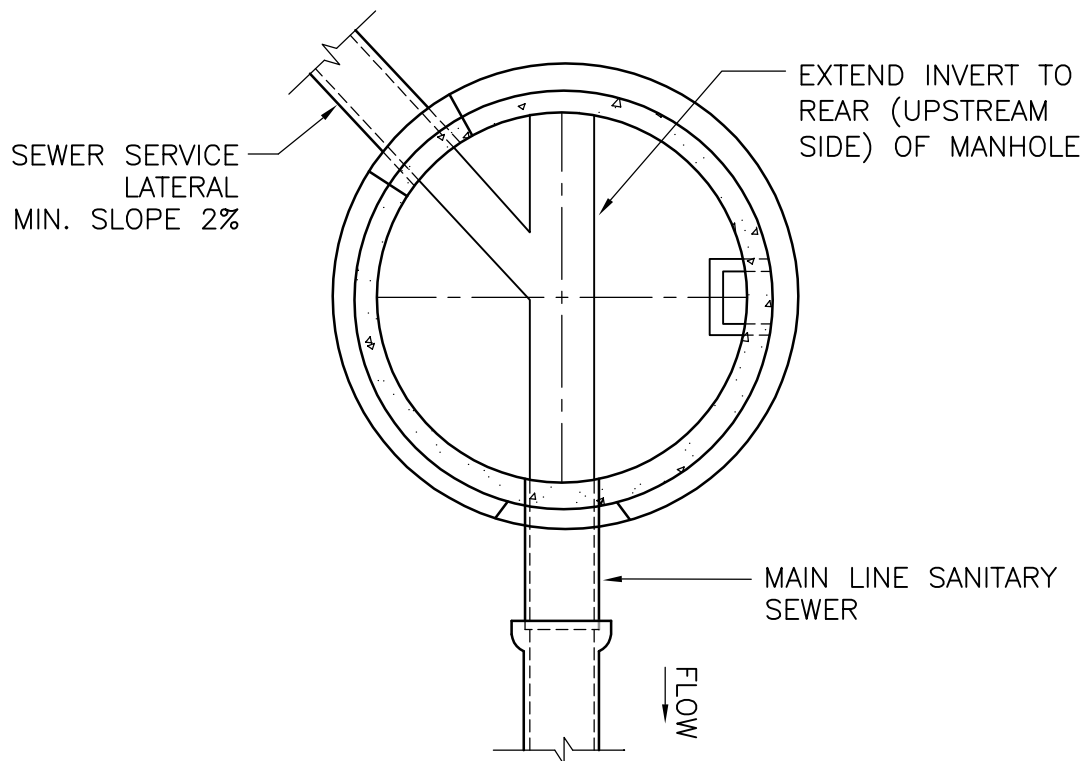
DETAIL

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



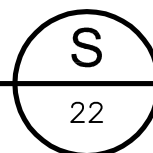
### NOTE:

1. CONNECTION OF SEWER SERVICE LATERAL TO MANHOLE SHALL BE MADE WITH AN ELASTOMERIC TYPE OF SEAL.

END MANHOLE

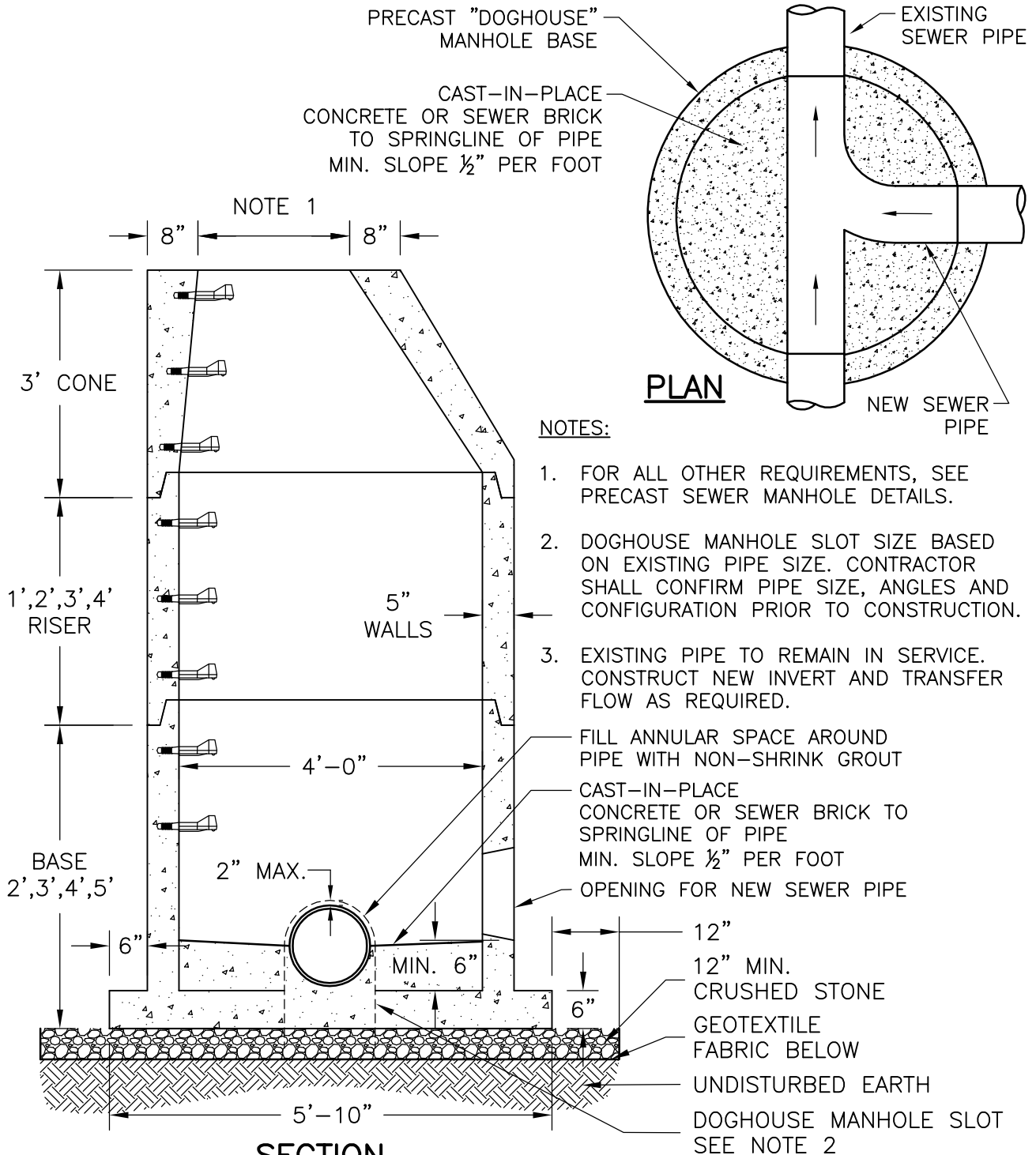
DETAIL

NTS



# THE METROPOLITAN DISTRICT

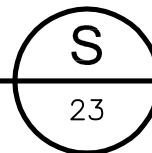
## SEWER STANDARD DETAILS



PRECAST DOGHOUSE MANHOLE (48-INCH  $\phi$  EXTENDED BASE)

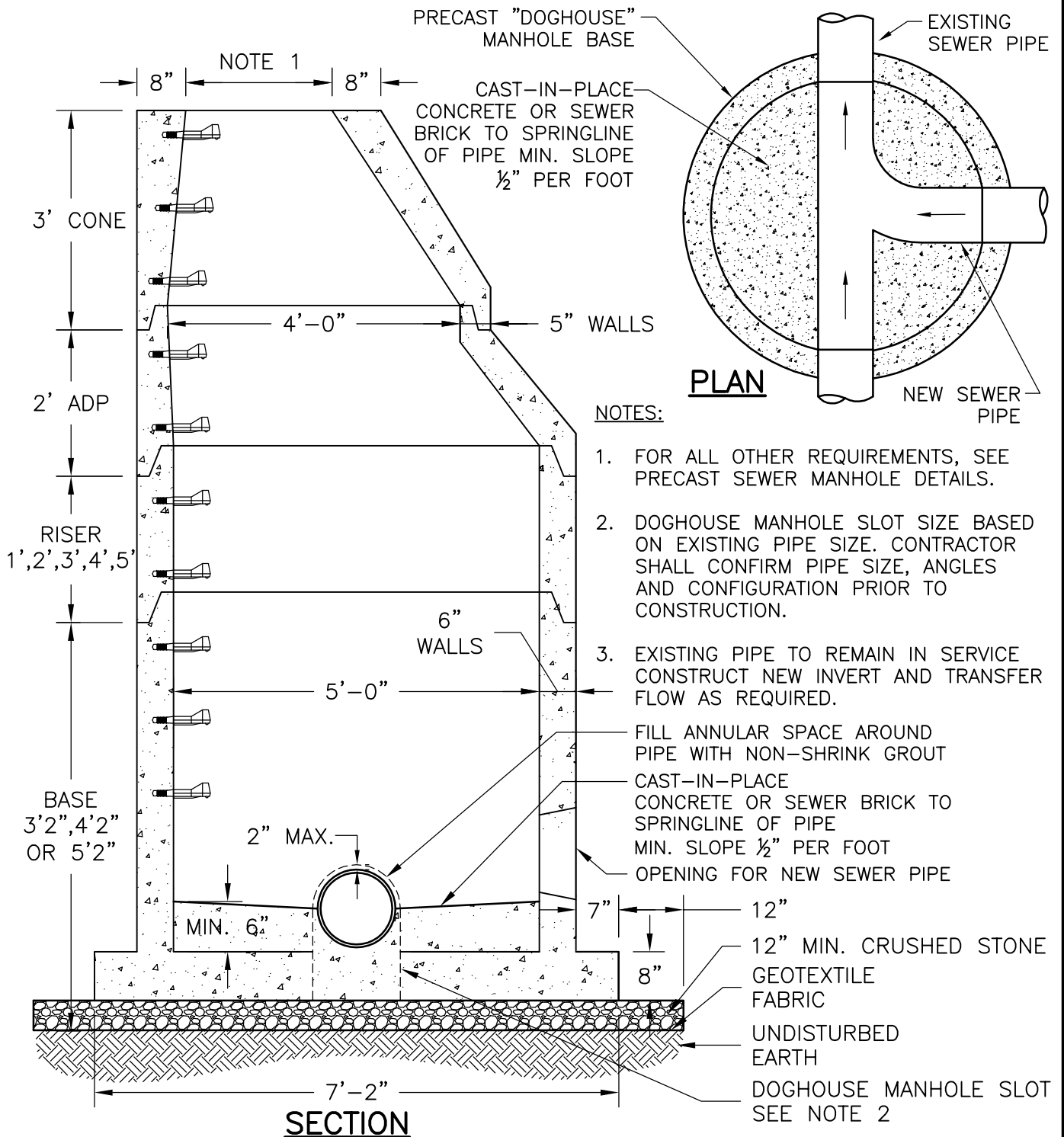
DETAIL

NTS



# THE METROPOLITAN DISTRICT

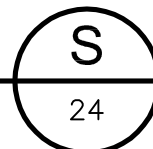
## SEWER STANDARD DETAILS



### PRECAST DOGHOUSE MANHOLE (60-INCH $\phi$ EXTENDED BASE)

DETAIL

NTS



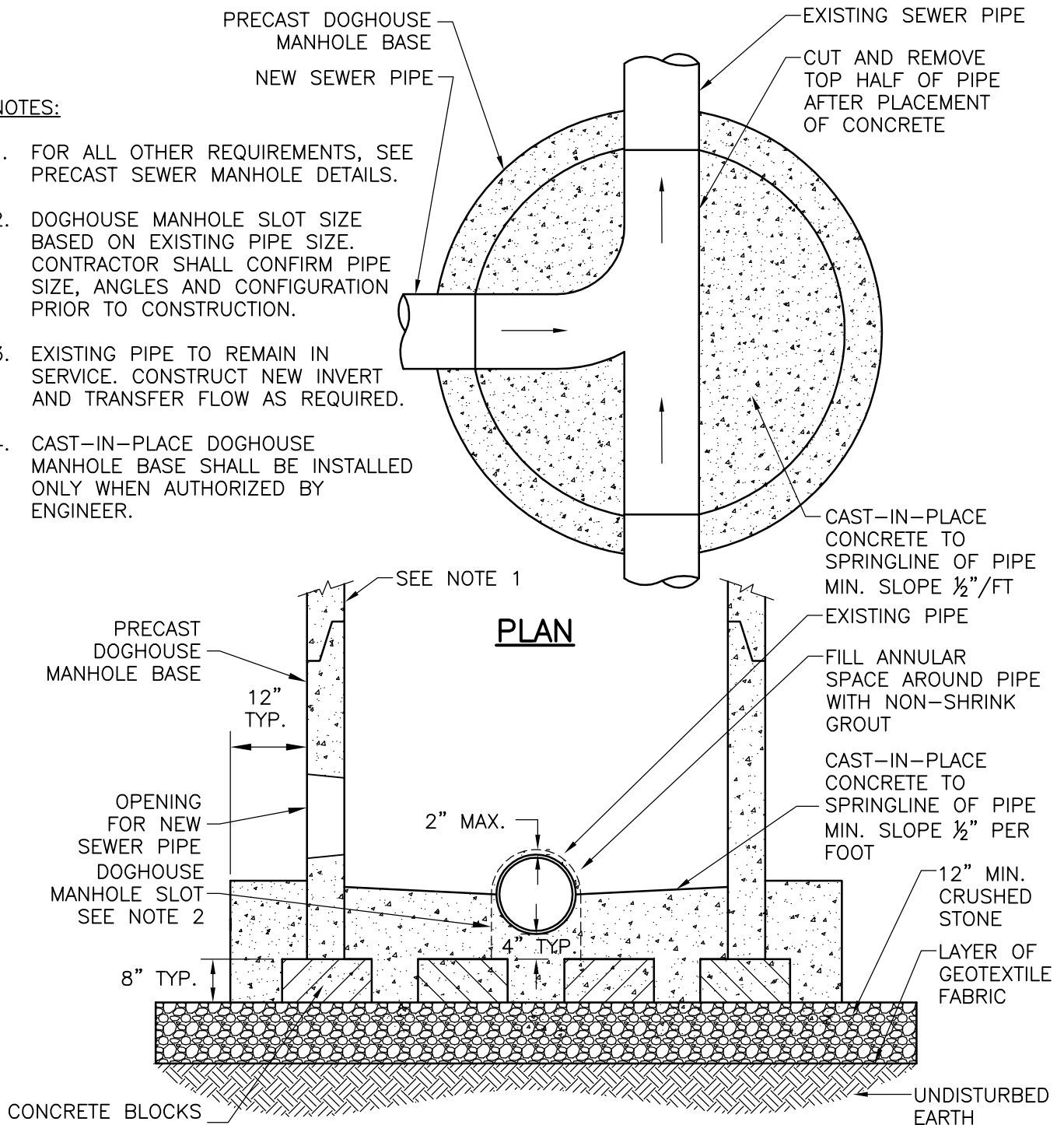
# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



### NOTES:

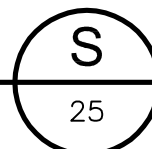
1. FOR ALL OTHER REQUIREMENTS, SEE PRECAST SEWER MANHOLE DETAILS.
2. DOGHOUSE MANHOLE SLOT SIZE BASED ON EXISTING PIPE SIZE. CONTRACTOR SHALL CONFIRM PIPE SIZE, ANGLES AND CONFIGURATION PRIOR TO CONSTRUCTION.
3. EXISTING PIPE TO REMAIN IN SERVICE. CONSTRUCT NEW INVERT AND TRANSFER FLOW AS REQUIRED.
4. CAST-IN-PLACE DOGHOUSE MANHOLE BASE SHALL BE INSTALLED ONLY WHEN AUTHORIZED BY ENGINEER.



### DOGHOUSE MANHOLE WITH CAST-IN-PLACE BASE

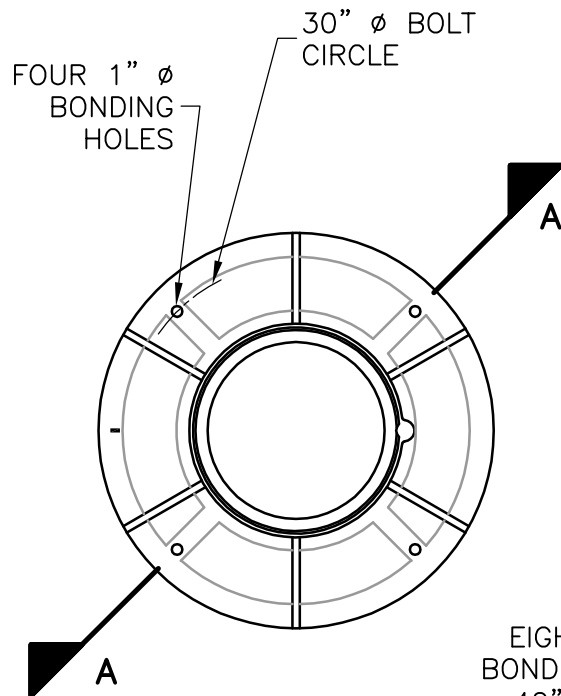
DETAIL

NTS

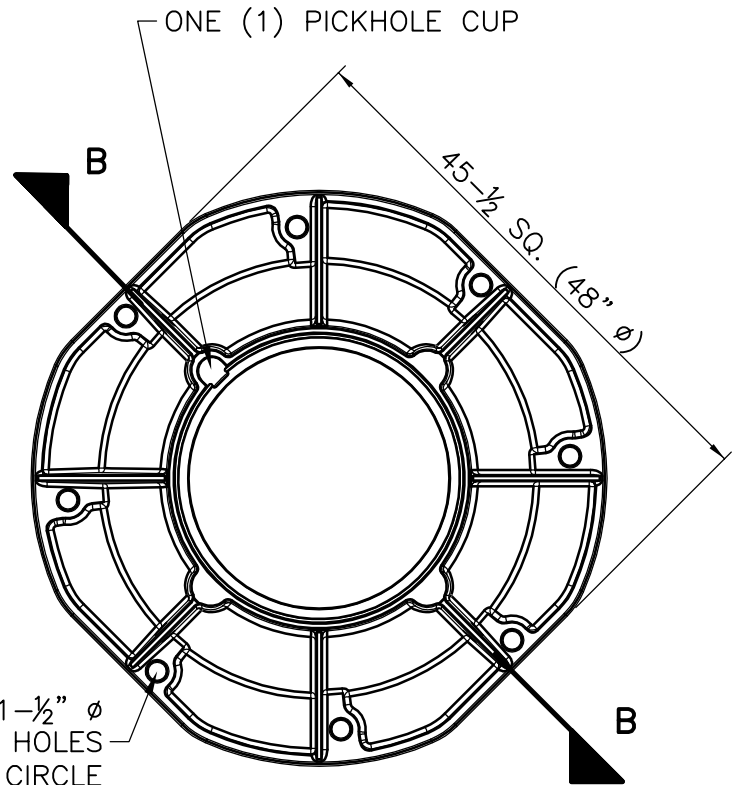


# THE METROPOLITAN DISTRICT

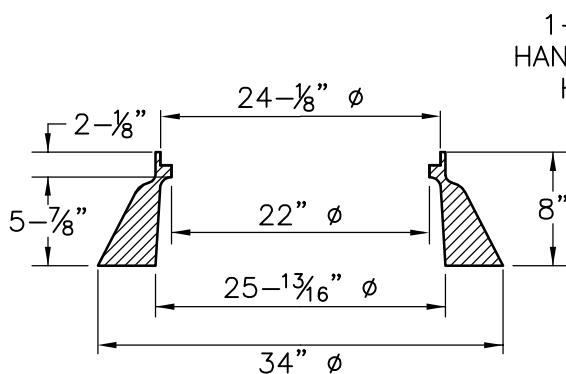
## SEWER STANDARD DETAILS



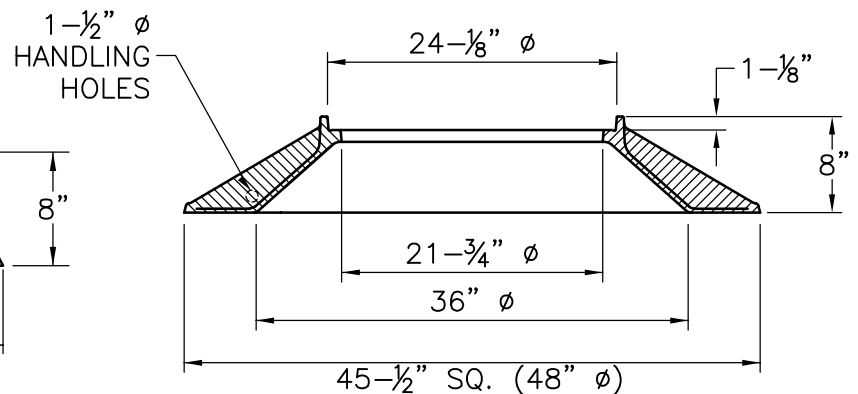
**STANDARD FRAME FOR  
EXISTING MANHOLES**



**STANDARD FRAME  
FOR NEW MANHOLES**



**SECTION A-A**

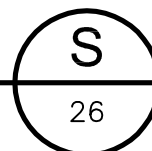


**SECTION B-B**

### STANDARD MANHOLE FRAMES

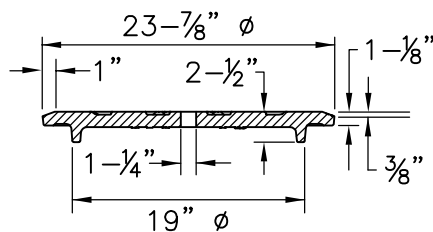
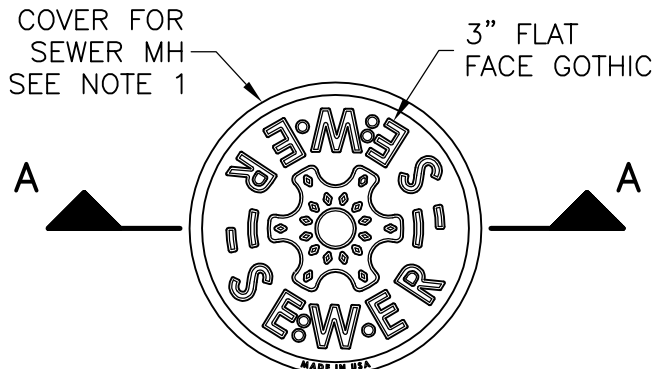
**DETAIL**

NTS

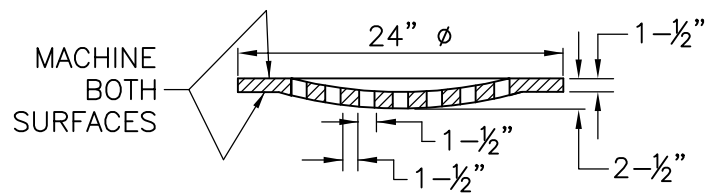
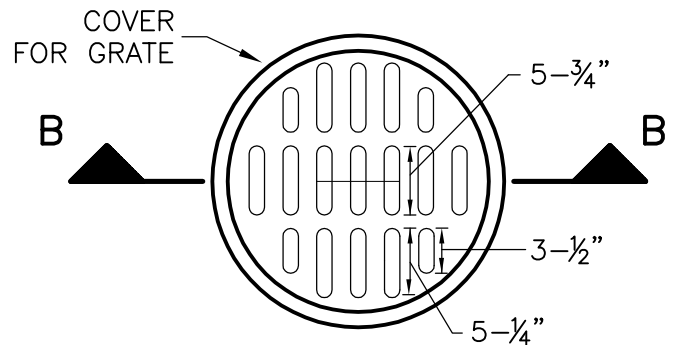


# THE METROPOLITAN DISTRICT

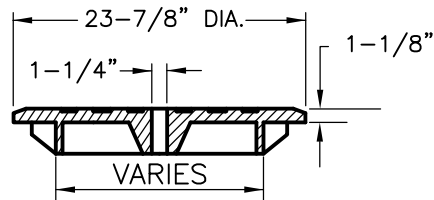
## SEWER STANDARD DETAILS



**SECTION A-A  
(PLATEN COVER)**



**SECTION B-B**



**SECTION A-A  
(RIBBED COVER)**

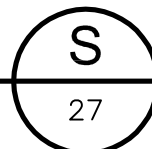
### NOTES:

1. MANHOLES COVERS MAY BE DESIGN WITH OR WITHOUT RIBS. THE TOP SURFACE OF THE MANHOLE COVER SHALL BE FLAT. THE BOTTOM SURFACE MAY OR MAY NOT BE FLAT.
2. PROVIDE ALTERNATIVE INSCRIPTION 'STORM DRAIN' WHEN SPECIFIED.
3. THE LOWER SURFACE OF THE COVER AND THE CORRESPONDING UPPER SURFACE OF THE FRAME SHALL BE MACHINE FINISHED TO PROVIDE A SMOOTH FLAT CONTACT OR FIT WITHOUT ANY TENDENCY FOR THE COVER OR GRATE TO ROCK OR RATTLE. THE GAP BETWEEN THE COVER/GRATE AND FRAME SHALL BE NO MORE THAN  $\frac{1}{8}$ " ALL AROUND.

## STANDARD MANHOLE COVERS

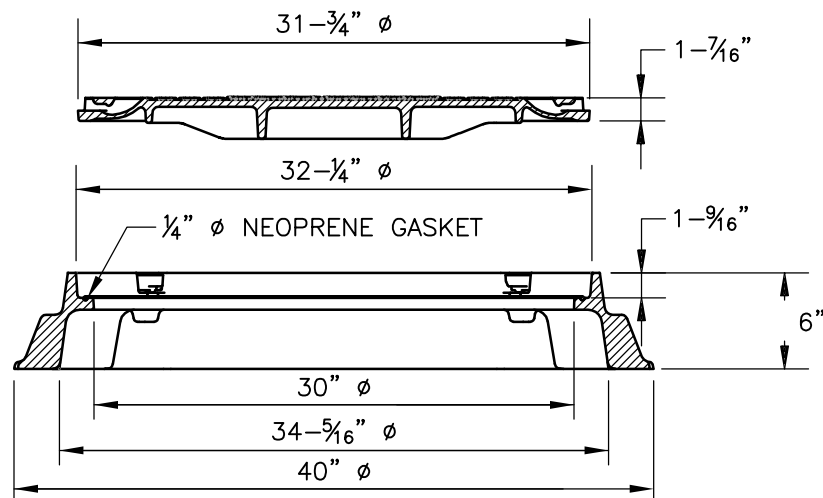
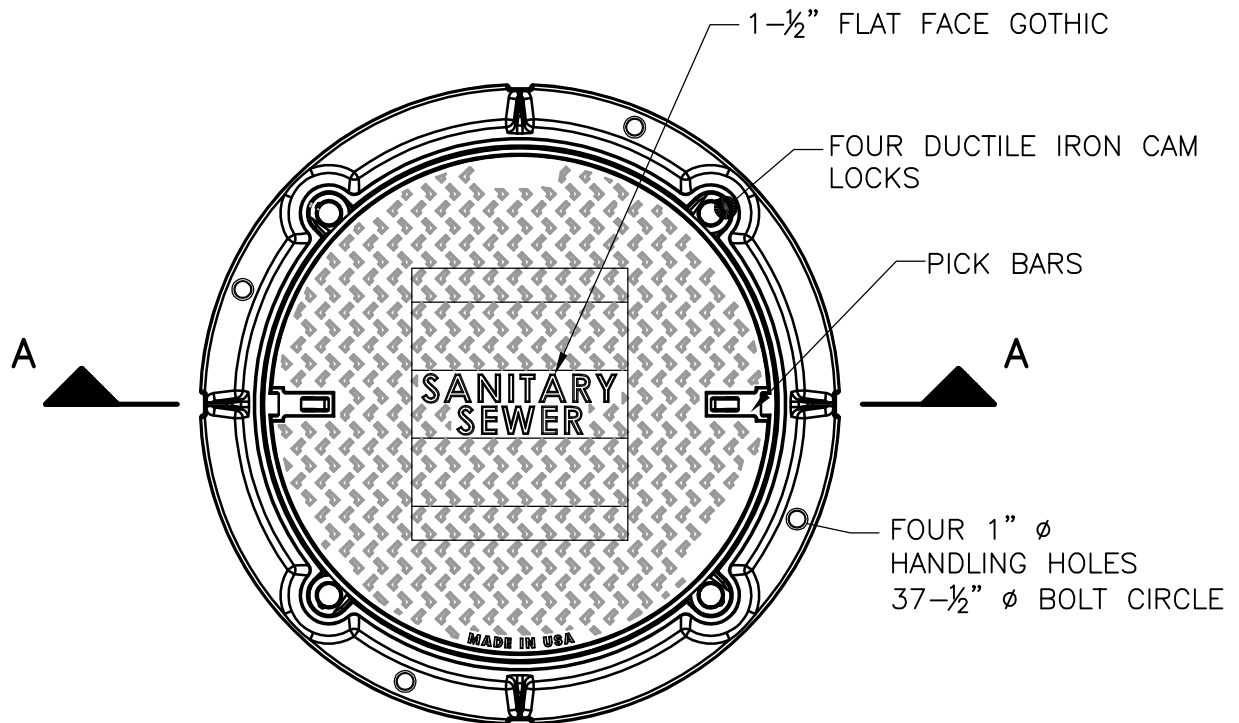
**DETAIL**

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS

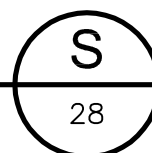


### SECTION A-A

STANDARD 32-INCH WATERTIGHT MANHOLE FRAME AND COVER

**DETAIL**

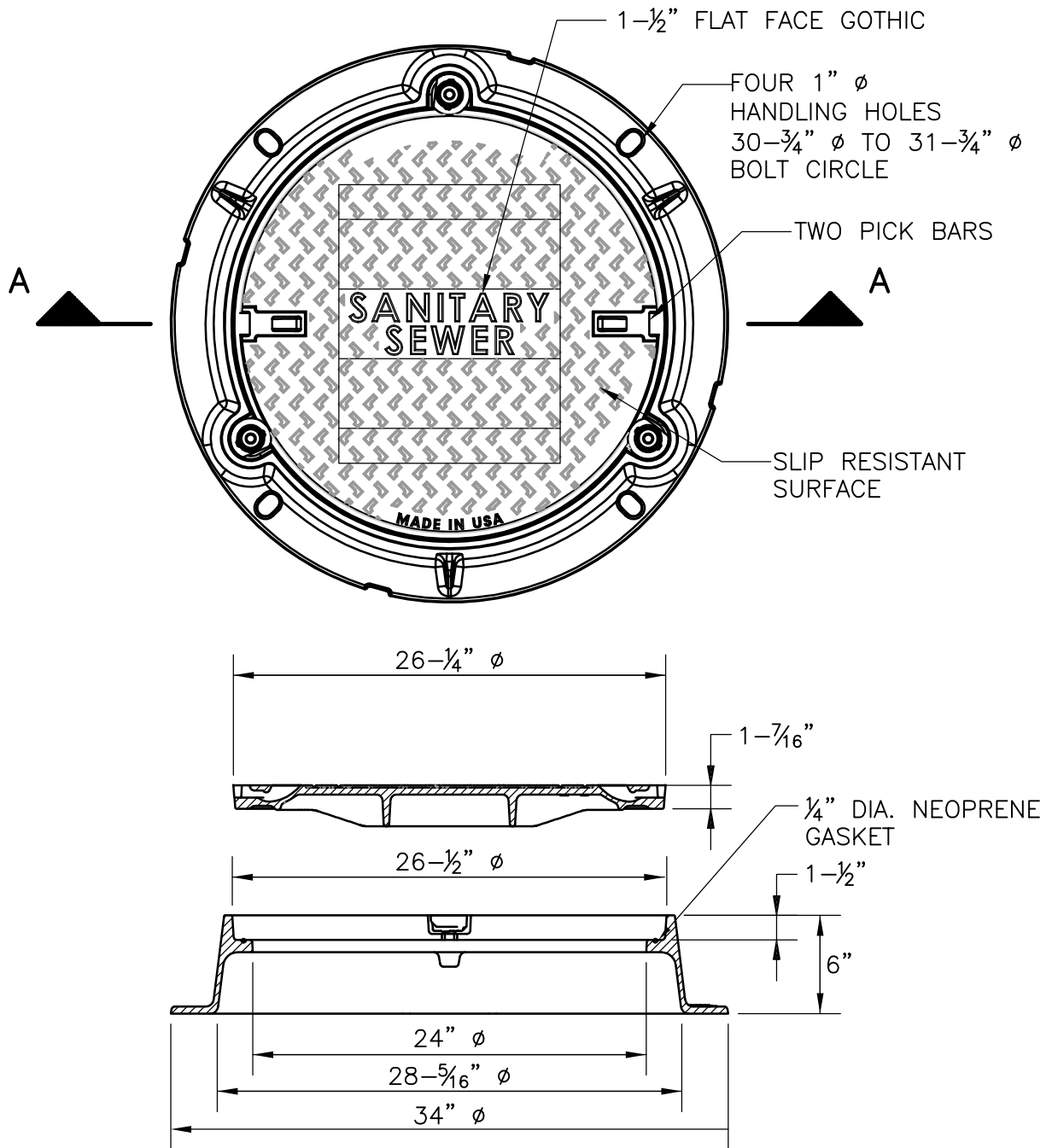
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# THE METROPOLITAN DISTRICT

SEWER STANDARD DETAILS

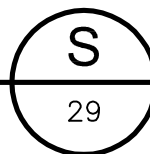


## SECTION A-A

STANDARD 26-INCH WATERTIGHT MANHOLE FRAME AND COVER

DETAIL

NTS



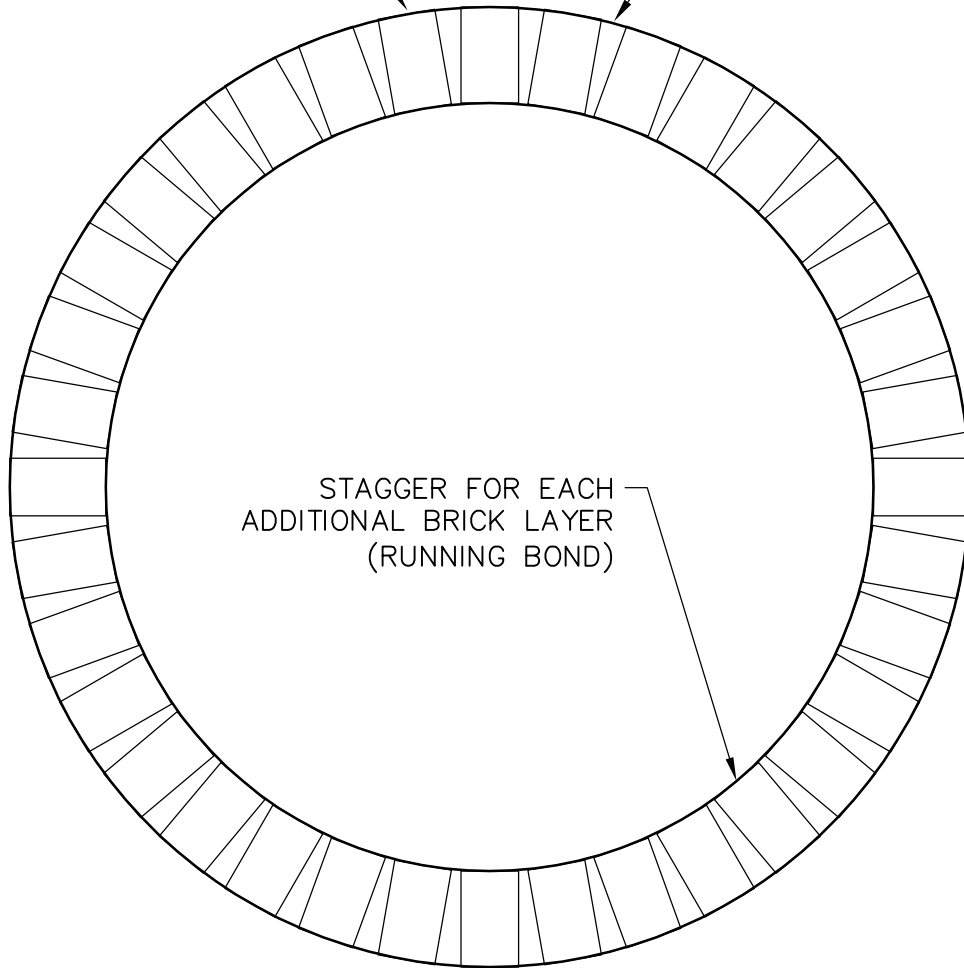
# THE METROPOLITAN DISTRICT

SEWER STANDARD DETAILS



FULL BRICKS WITH MORTARED  
JOINTS AROUND EDGE LAID FLAT

FULL PARGE MORTAR  
OVER BRICKS AND PRECAST  
ON OUTSIDE ONLY

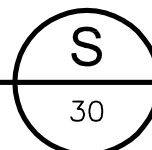


STAGGER FOR EACH  
ADDITIONAL BRICK LAYER  
(RUNNING BOND)

BRICK LEVELING COURSE FOR NEW MANHOLES

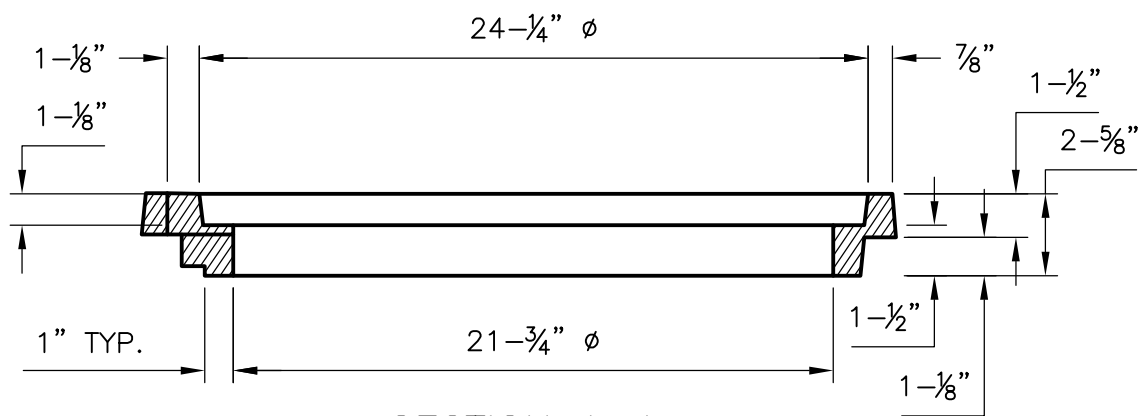
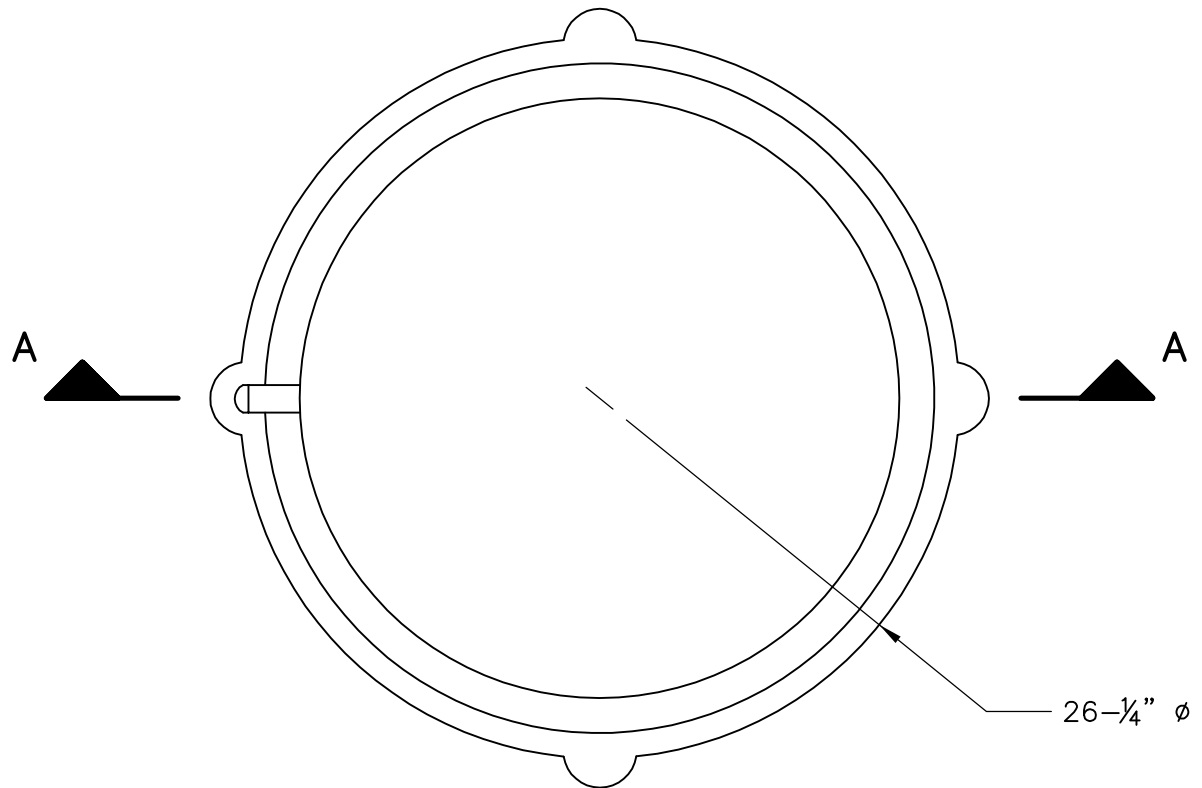
DETAIL

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# THE METROPOLITAN DISTRICT

SEWER STANDARD DETAILS

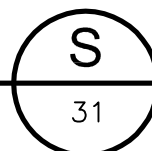


**SECTION A-A**

EXTENSION RING FOR SEWER MANHOLES (1-1/2 INCH)

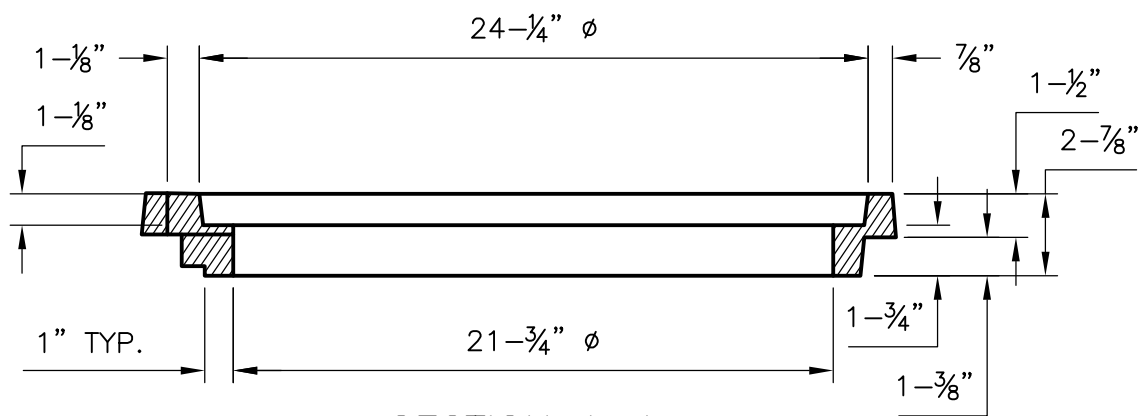
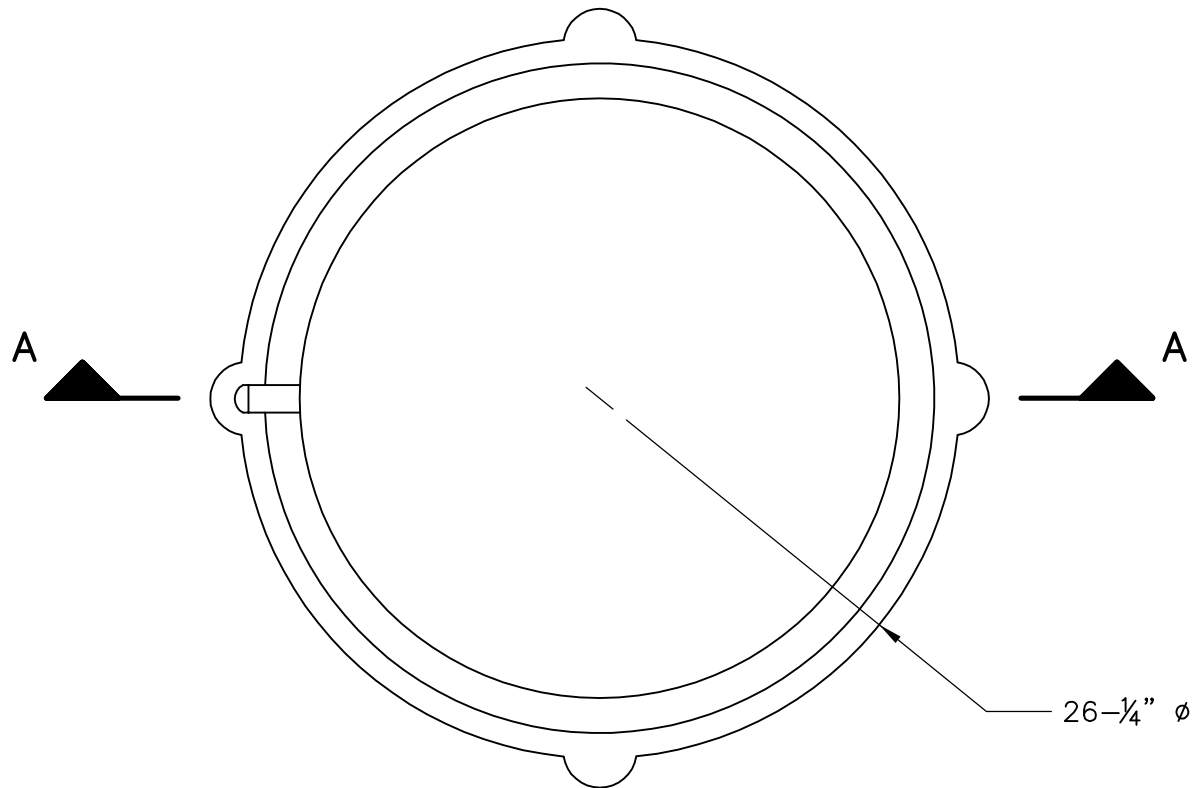
**DETAIL**

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS

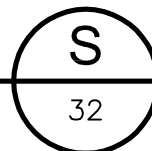


**SECTION A-A**

EXTENSION RING FOR SEWER MANHOLES (1-3/4 INCH)

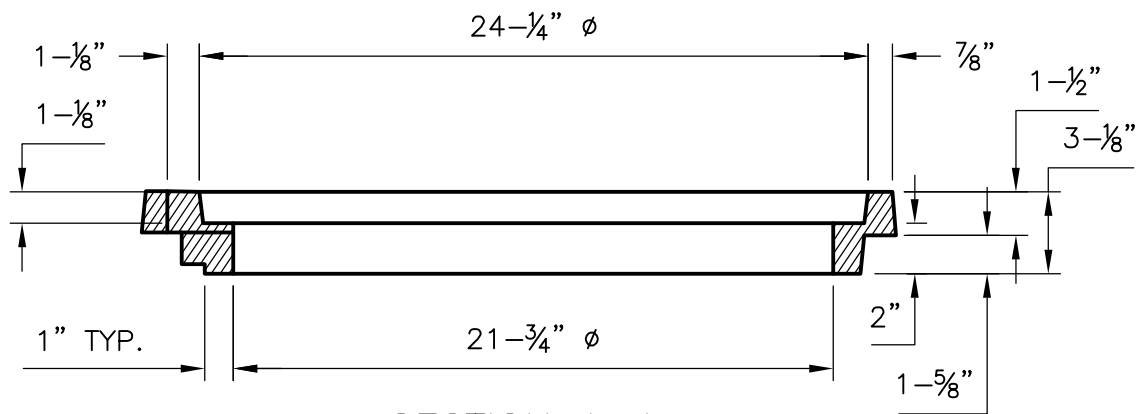
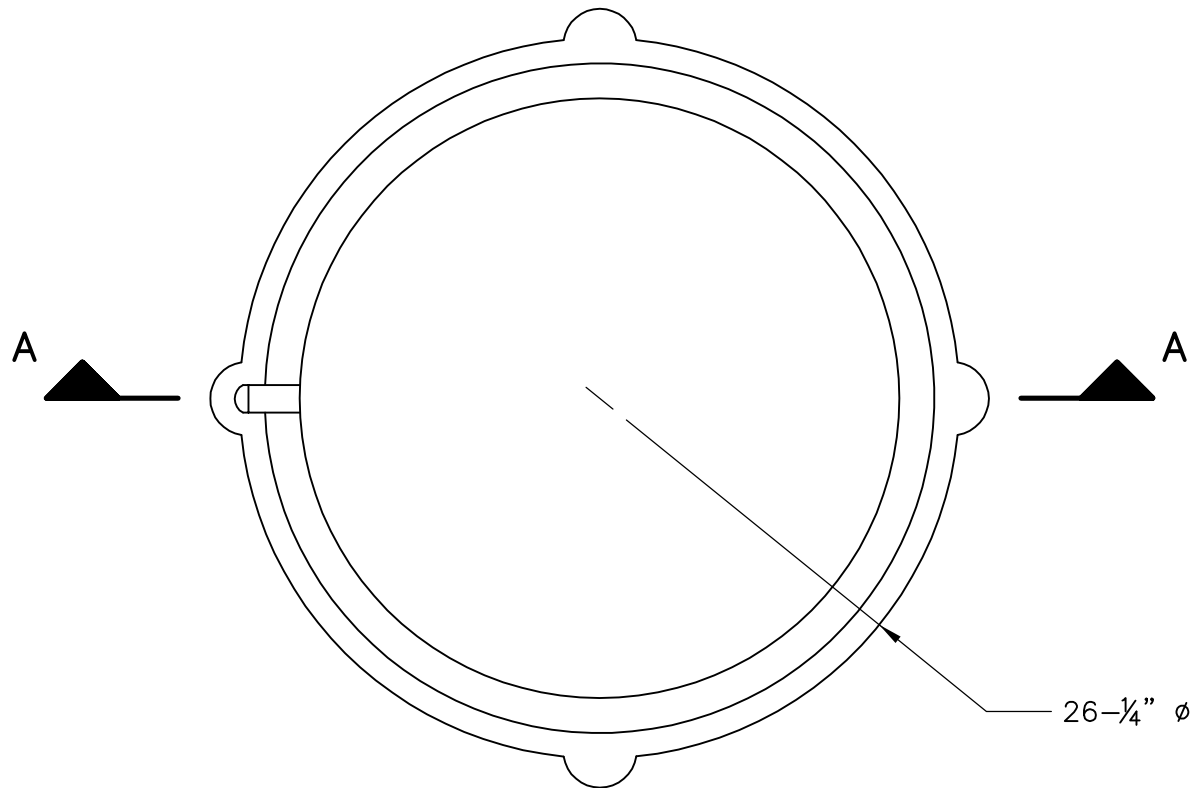
**DETAIL**

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# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS

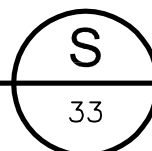


**SECTION A-A**

EXTENSION RING FOR SEWER MANHOLES (2 INCH)

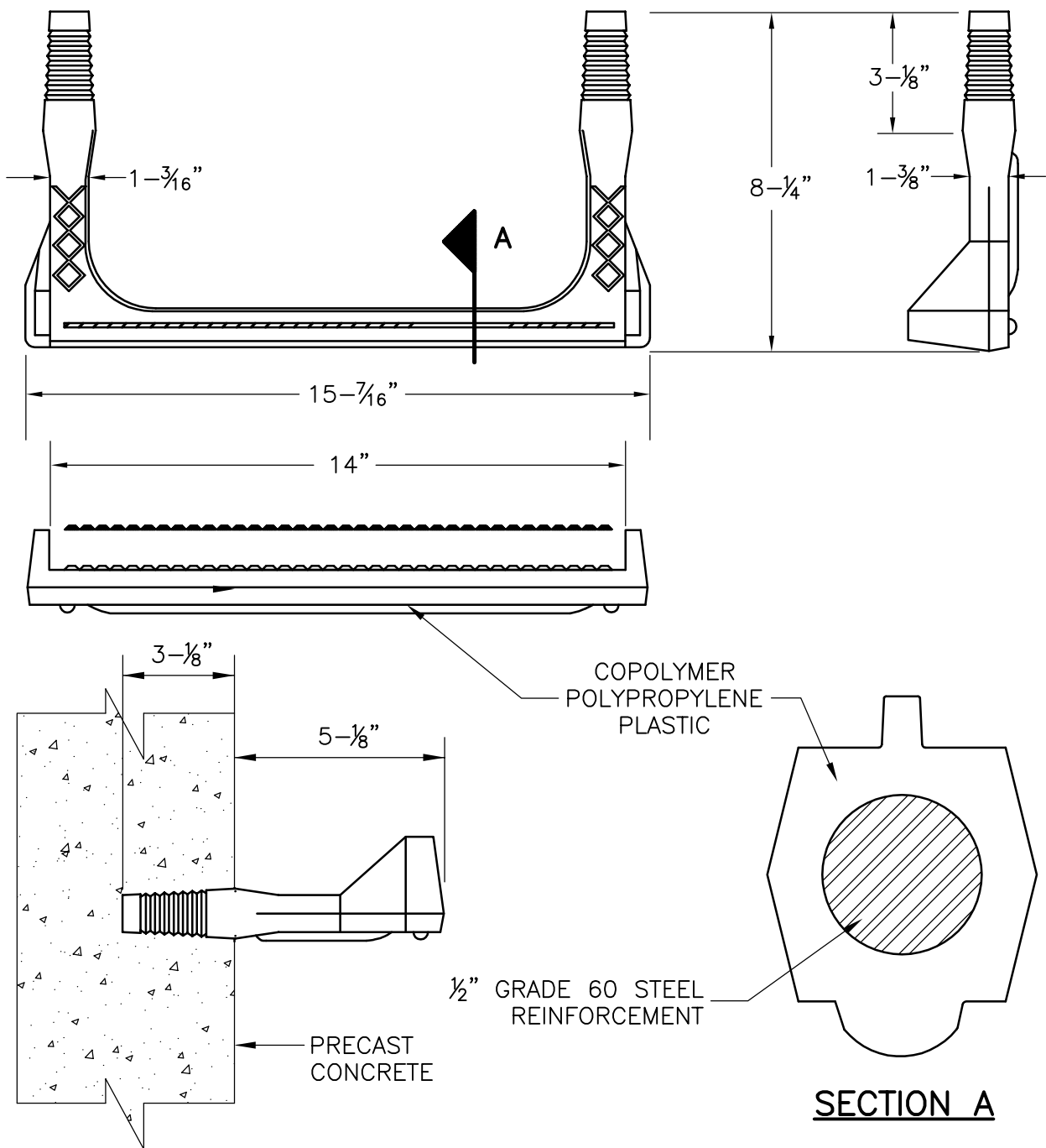
**DETAIL**

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# THE METROPOLITAN DISTRICT

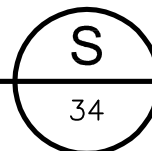
SEWER STANDARD DETAILS



PLASTIC STEP FOR PRECAST CONCRETE MANHOLE

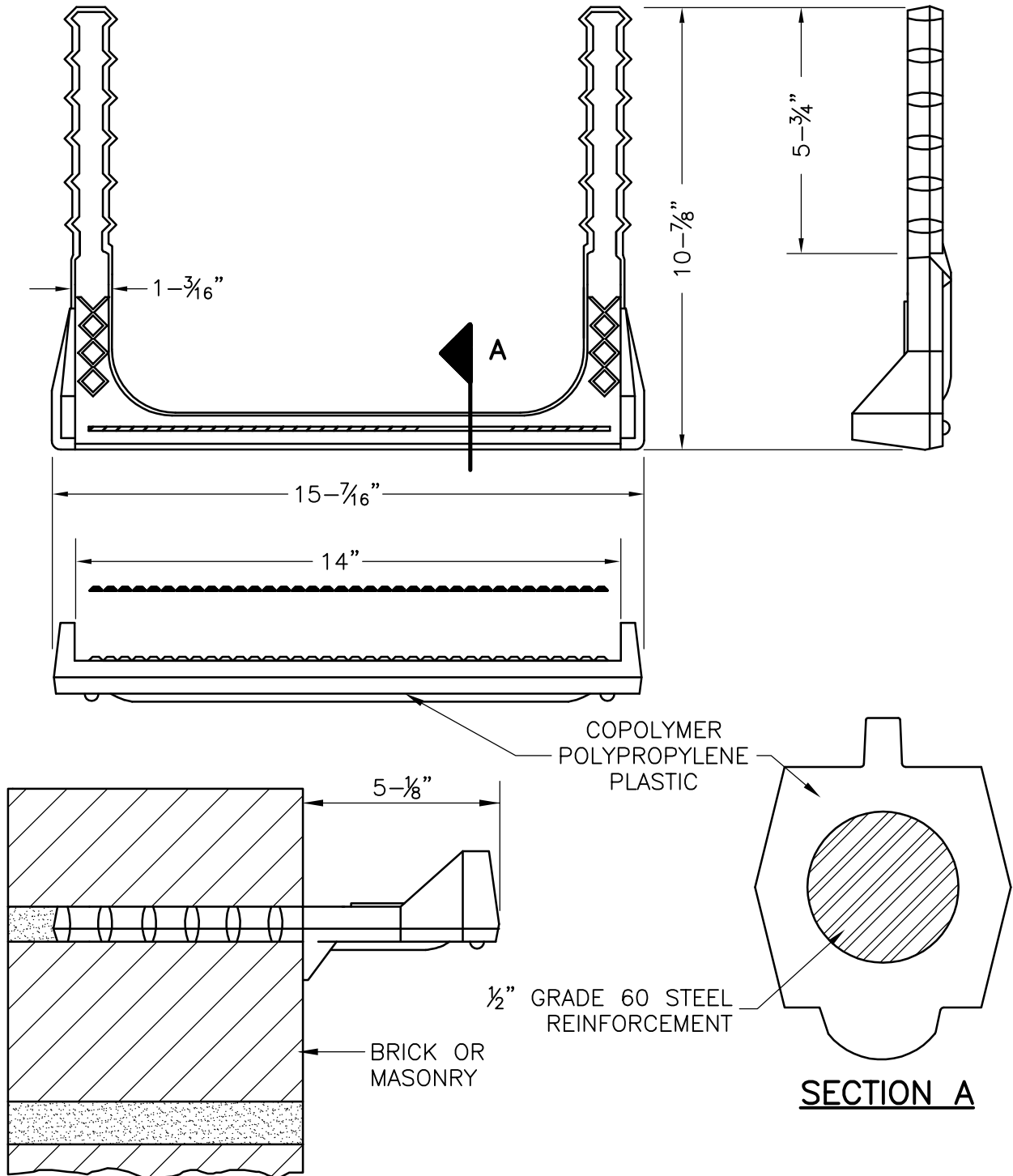
DETAIL

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# THE METROPOLITAN DISTRICT

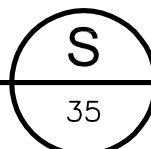
SEWER STANDARD DETAILS



PLASTIC STEP FOR BRICK OR MASONRY MANHOLE

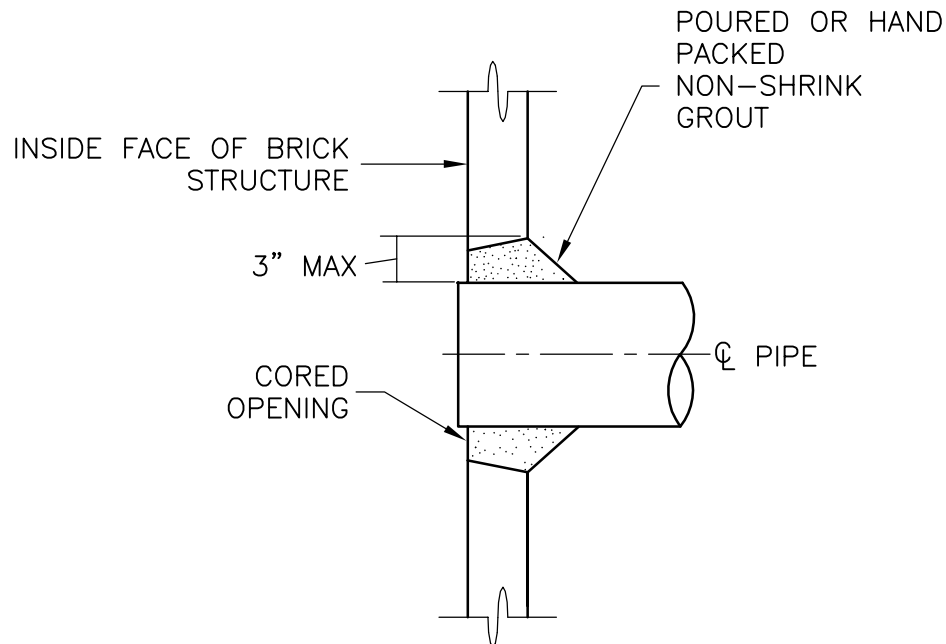
DETAIL

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# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



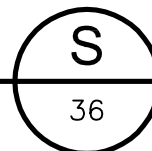
### NOTES:

1. REFER TO OTHER PIPE CONNECTION DETAILS FOR OTHER APPROVED CONNECTION METHODS.
2. PROVIDE WATER STOP AROUND NEW PVC PIPE FOR SANITARY SEWER FLOWS.
3. REWORK EXISTING MANHOLE INVERT TO ACCOMMODATE NEW FLOWS, IF NECESSARY.

## PIPE CONNECTION TO EXISTING BRICK STRUCTURE

DETAIL

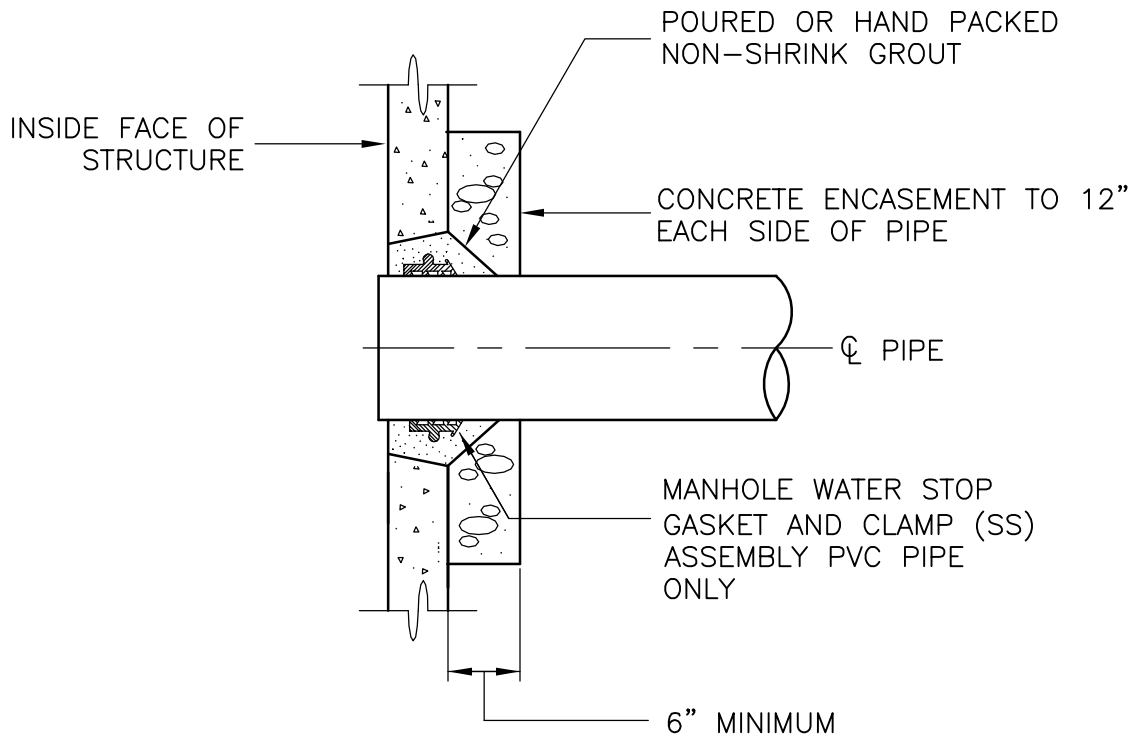
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# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



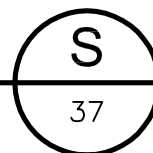
### NOTE:

1. FORM CONCRETE ENCASEMENT ON UNDISTURBED MATERIAL OR STRUCTURALLY FIRM FOUNDATION.

## PIPE CONNECTION TO EXISTING STRUCTURE WITH CONCRETE ENCASEMENT

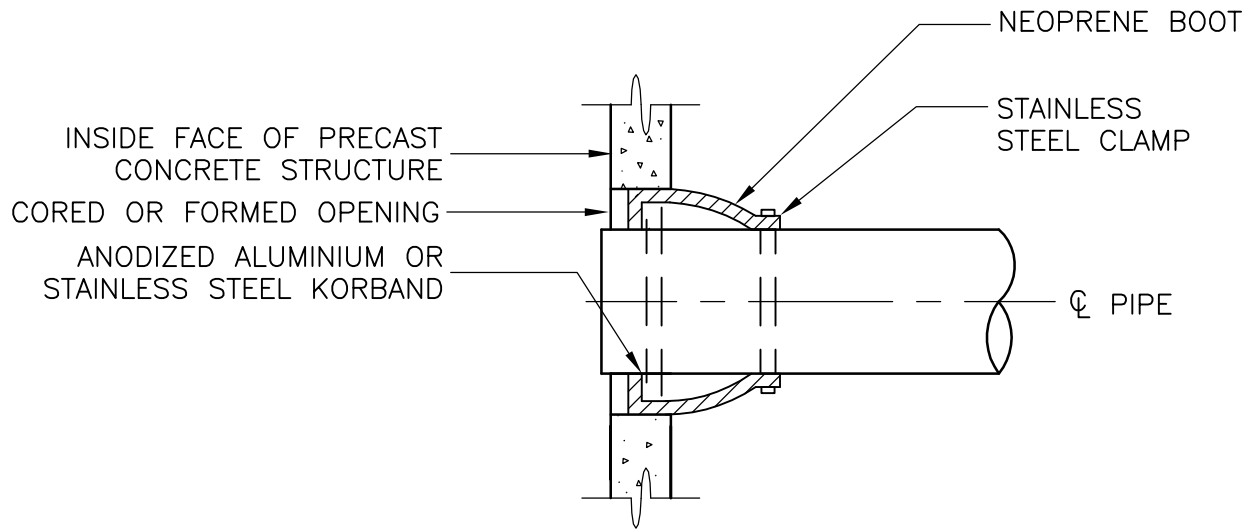
DETAIL

NTS

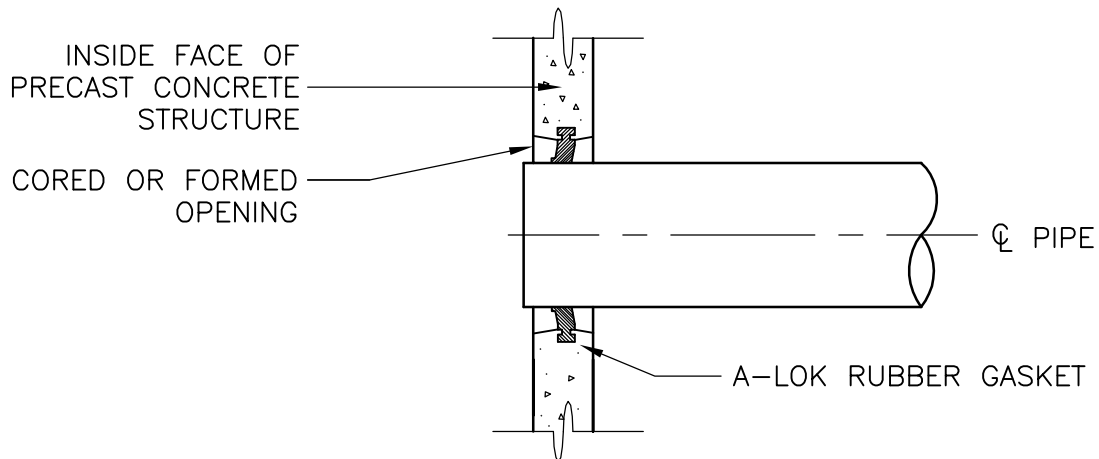


# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



### KOR-N-SEAL BOOT



### A-LOK SYSTEM

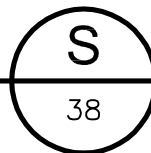
#### NOTE:

1. PACK NON-SHRINK GROUT AROUND ANNULAR AREA OF PIPE ON OUTSIDE OF STRUCTURE PRIOR TO BACKFILLING.

## PIPE CONNECTIONS TO PRECAST CONCRETE STRUCTURES

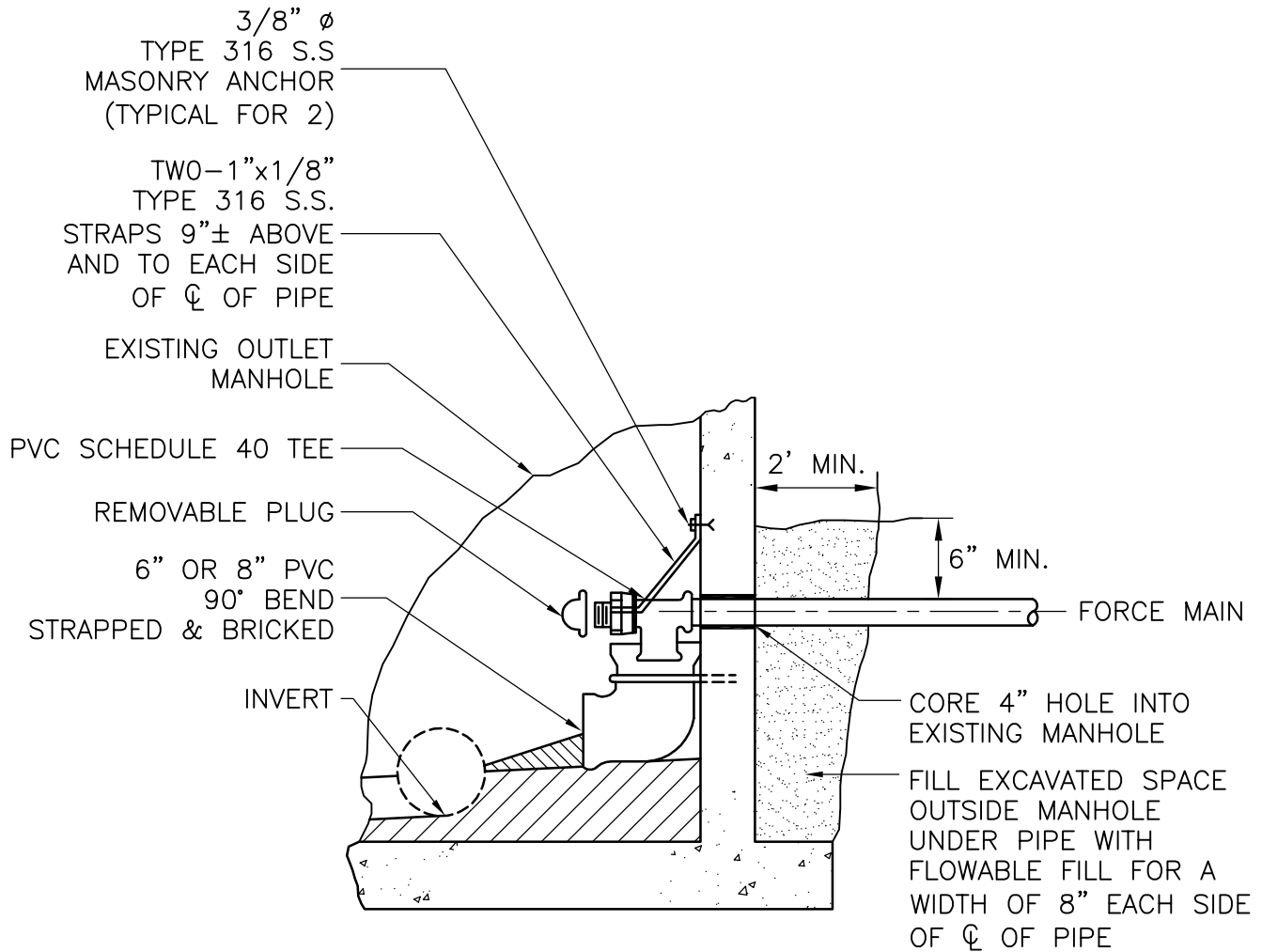
DETAIL

NTS



# THE METROPOLITAN DISTRICT

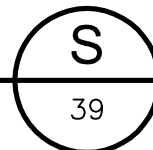
SEWER STANDARD DETAILS



FORCE MAIN OUTLET CONNECTION AT MANHOLE

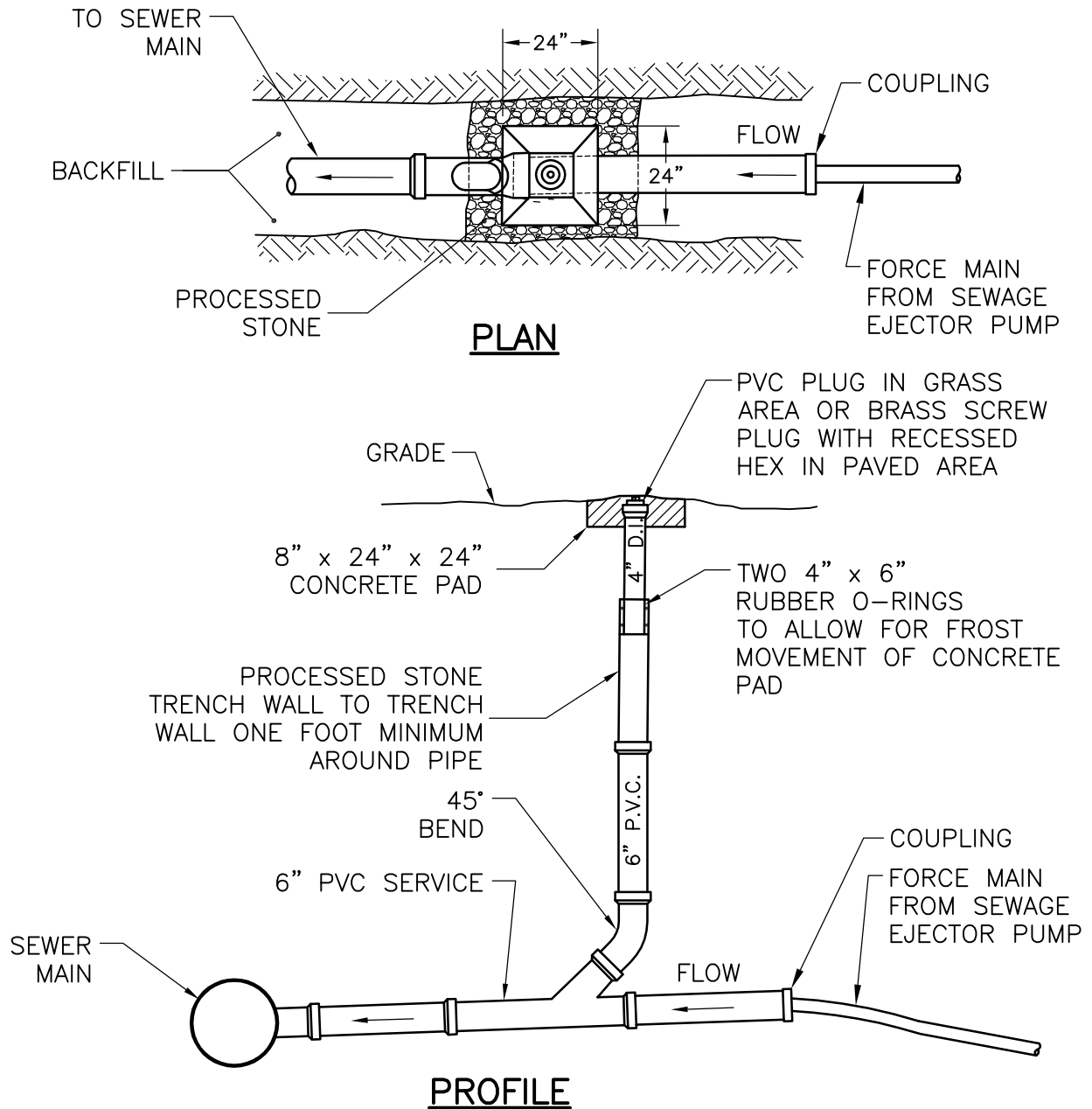
DETAIL

NTS



# THE METROPOLITAN DISTRICT

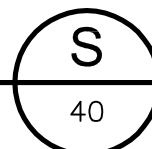
## SEWER STANDARD DETAILS



### CONNECTION TO SEWER FROM SEWAGE EJECTOR PUMP

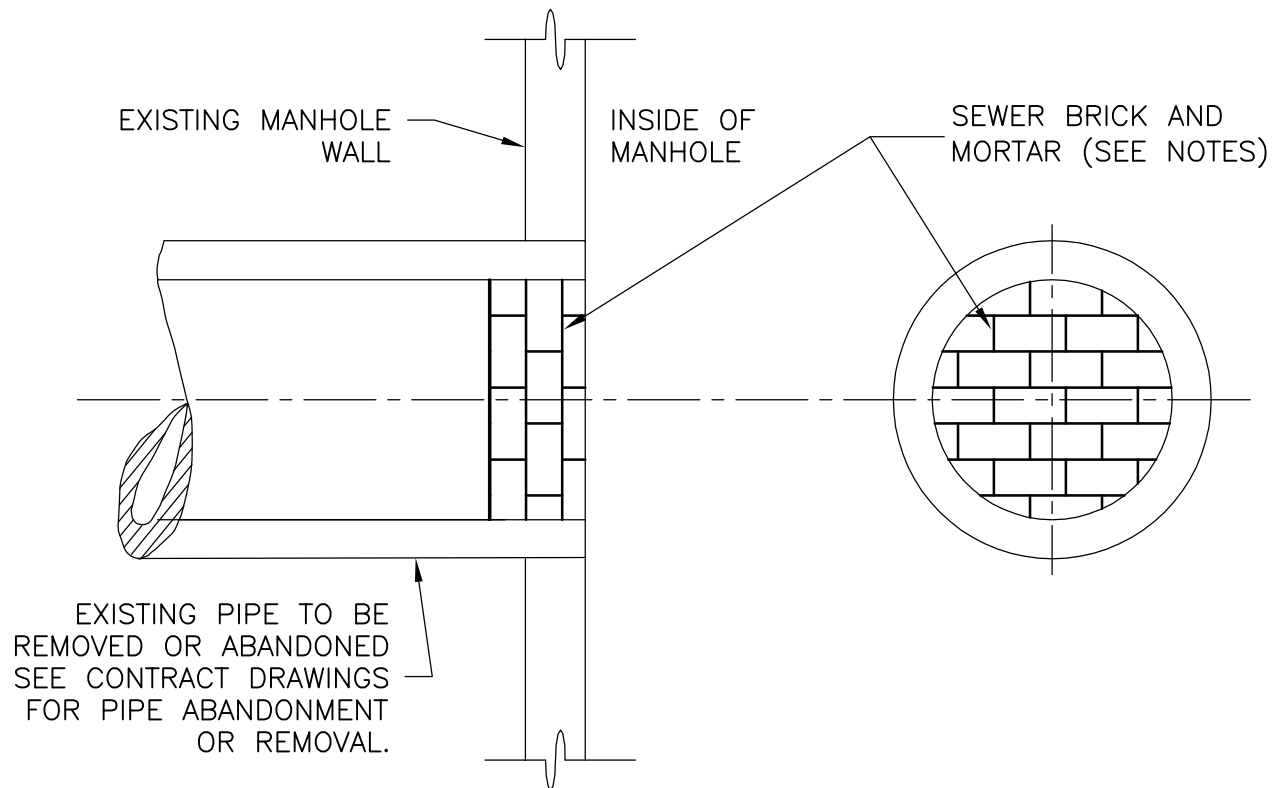
**DETAIL**

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS

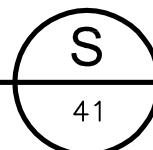


### NOTES:

1. MIN. 6" THICKNESS FOR PIPE SIZES 4" THROUGH 10".
2. MIN. 8" THICKNESS FOR PIPE SIZES 12" AND 15".
3. MIN. 12" THICKNESS FOR PIPE SIZES 15" AND GREATER.
4. SEWER PIPE 36" OR GREATER MAY UTILIZE CONCRETE BLOCK INSTEAD OF SEWER BRICK.

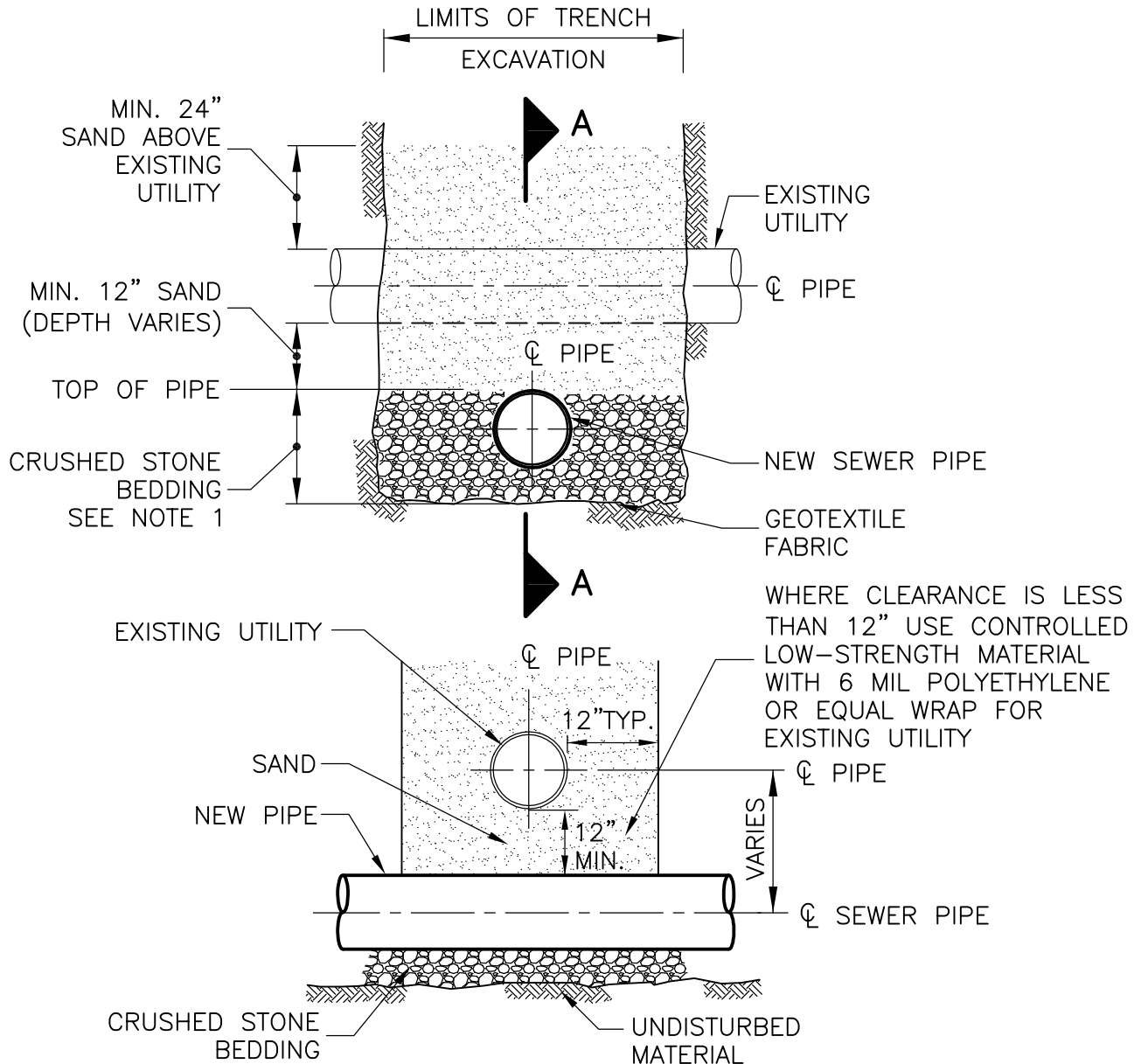
## PIPE PLUG AT MANHOLE DETAIL

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



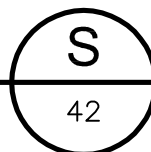
### NOTES:

1. CRUSHED STONE SHALL BE INSTALLED TO TOP OF PIPE FOR PVC AND DI PIPE AND TO SPRINGLINE FOR RC PIPE.
2. REFER TO SEWER TRENCH DETAIL FOR BACKFILLING AND RESTORATION REQUIREMENTS.

### EXISTING GAS OR WATER UTILITY CROSSING

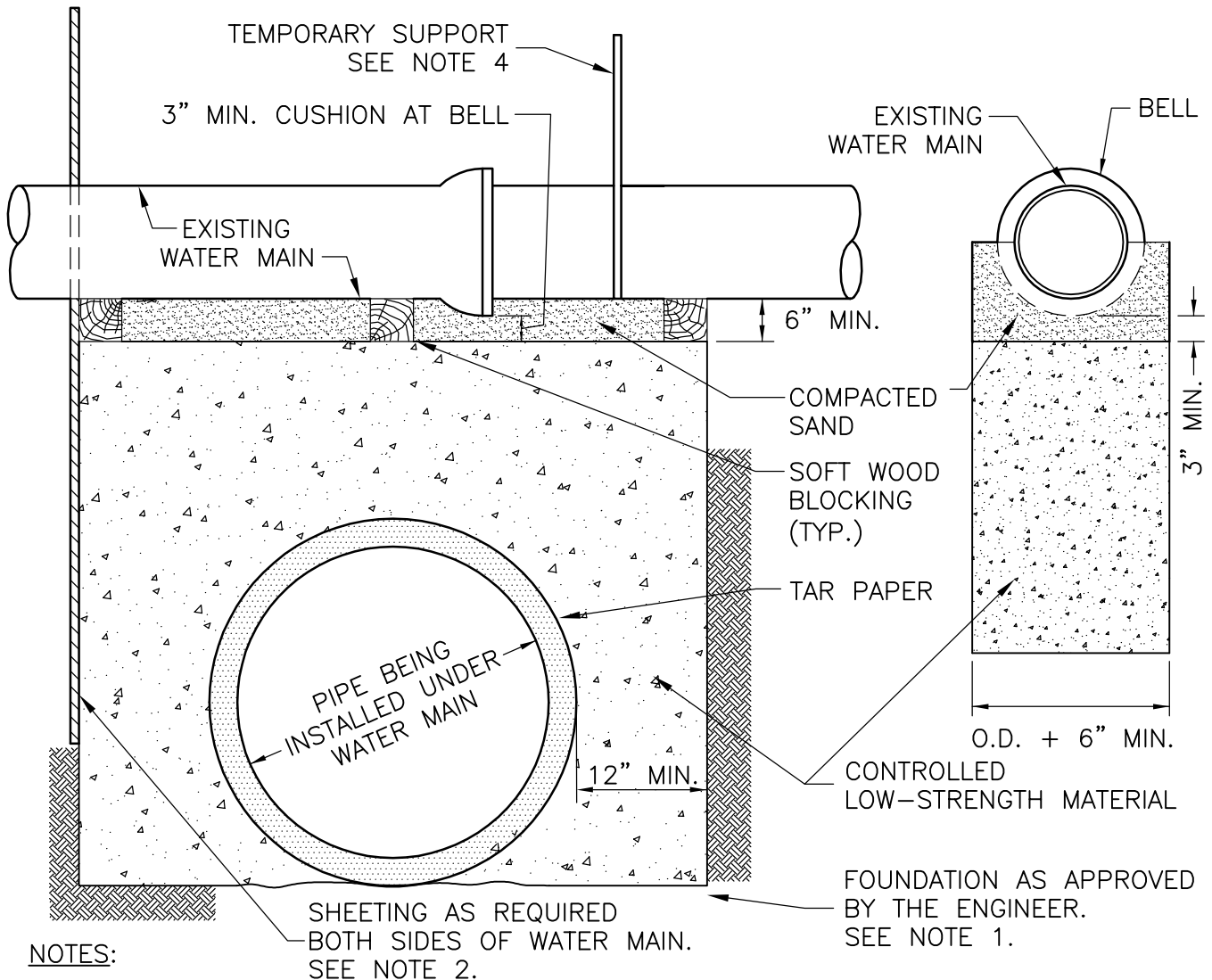
DETAIL

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS

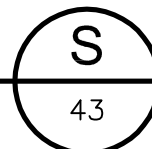


1. REFER TO SEWER TRENCH DETAIL FOR BEDDING OF PIPE BEING INSTALLED UNDER WATER MAIN.
2. CONTRACTOR TO SUBMIT DETAILS OF TRENCH SHORING AND PIPE SUPPORT TO THE ENGINEER FOR APPROVAL.
3. CONTRACTOR TO EXCAVATE TO HORIZONTAL CENTER OF EXISTING WATER PIPE PRIOR TO DRIVING SHEETING, SOLDIER PILES OR OTHER SHORING SUPPORTS.
4. PROVIDE TEMPORARY SUPPORT FOR THE EXISTING WATER MAIN WHILE EXCAVATING UNDER THE WATER MAIN. ALL DESIGNS MUST BE CERTIFIED BY A CT REGISTERED PROFESSIONAL ENGINEER.

### PERMANENT WATER PIPE SUPPORT

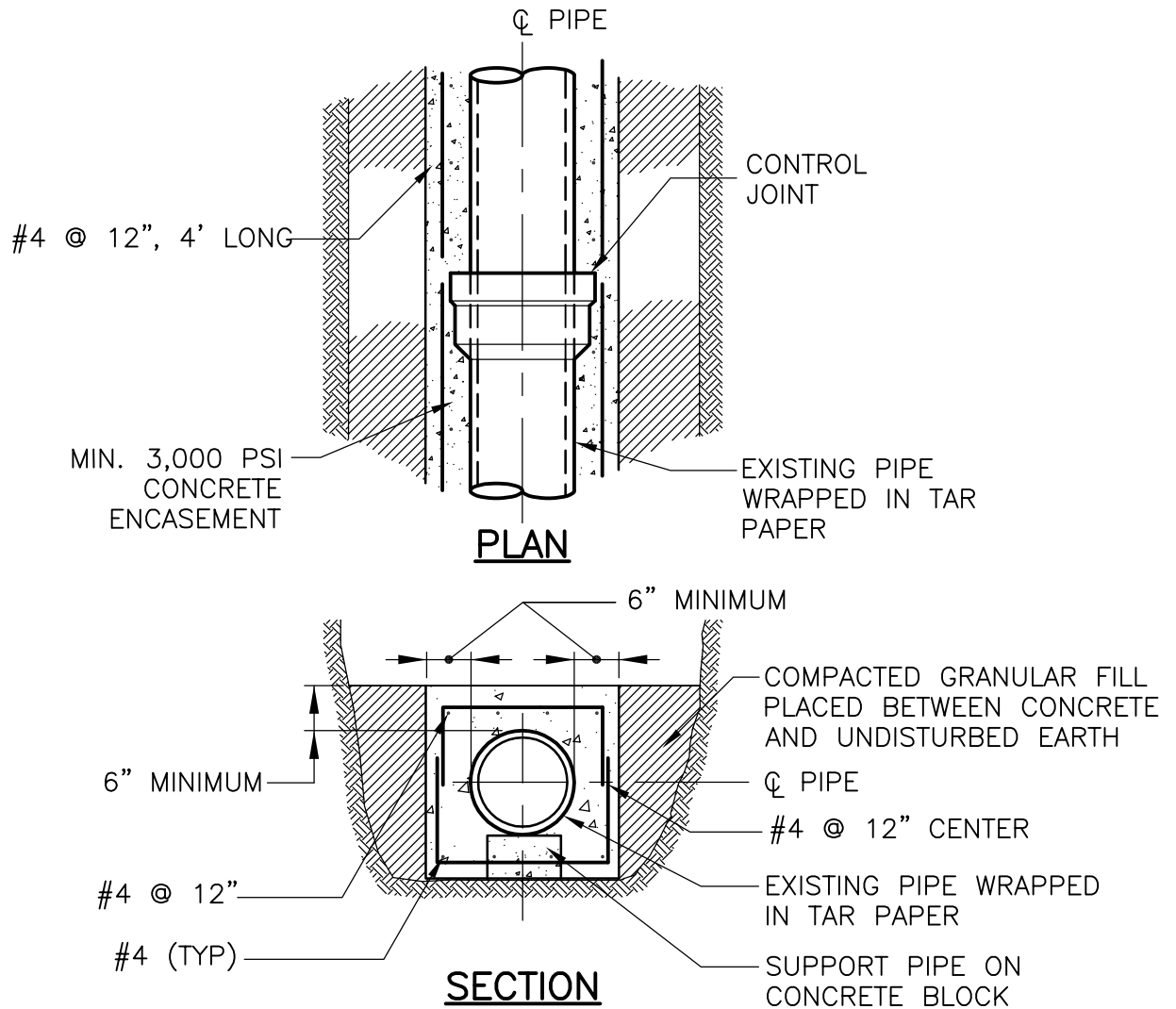
DETAIL

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



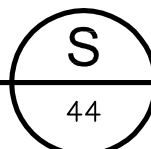
### NOTES:

1. CONTROL JOINTS AND PIPE JOINTS FOR ARCHES, AND ENCASEMENT SHALL COINCIDE FOR SPACING. MAXIMUM DISTANCE BETWEEN CONTROL JOINTS SHALL BE 24'±.
2. REINFORCING STEEL TO BE USED ONLY WHEN DEPTH OF COVER TO TOP OF SURFACE OF CONCRETE IS 5'-0" OR LESS.
3. REFER TO SEWER TRENCH DETAIL FOR BACKFILLING AND BEDDING REQUIREMENTS.
4. LIMITS OF CONCRETE ENCASEMENT SHALL BE SHOWN ON CONTRACT DRAWINGS OR AS DIRECTED BY ENGINEER.

## CONCRETE ENCASEMENT

### DETAIL

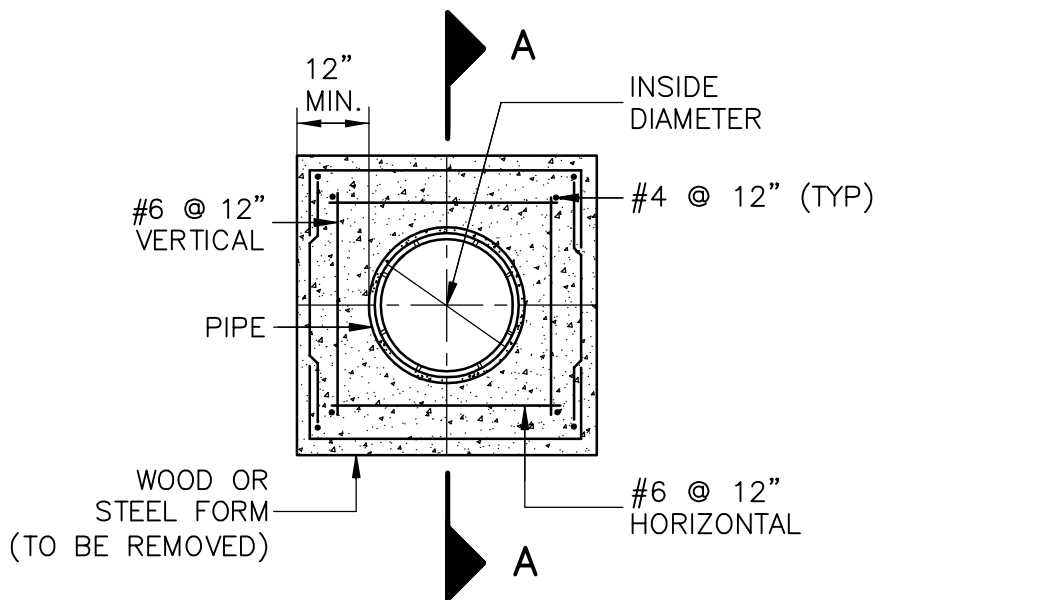
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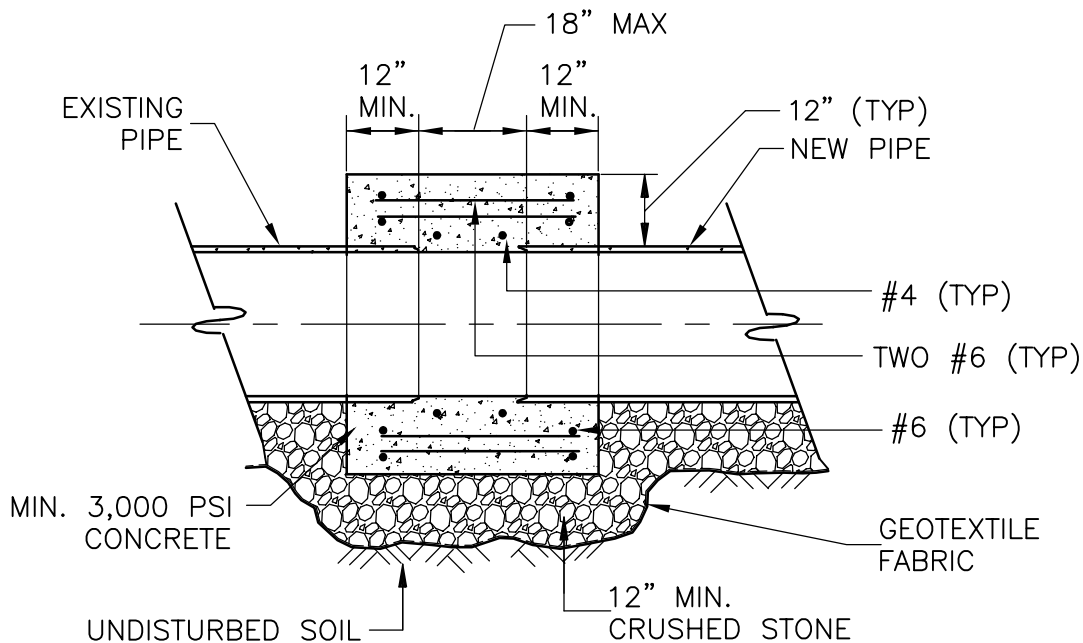


# THE METROPOLITAN DISTRICT

SEWER STANDARD DETAILS



PLAN

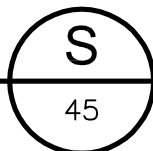


SECTION A-A

## REINFORCED CONCRETE PIPE COLLAR

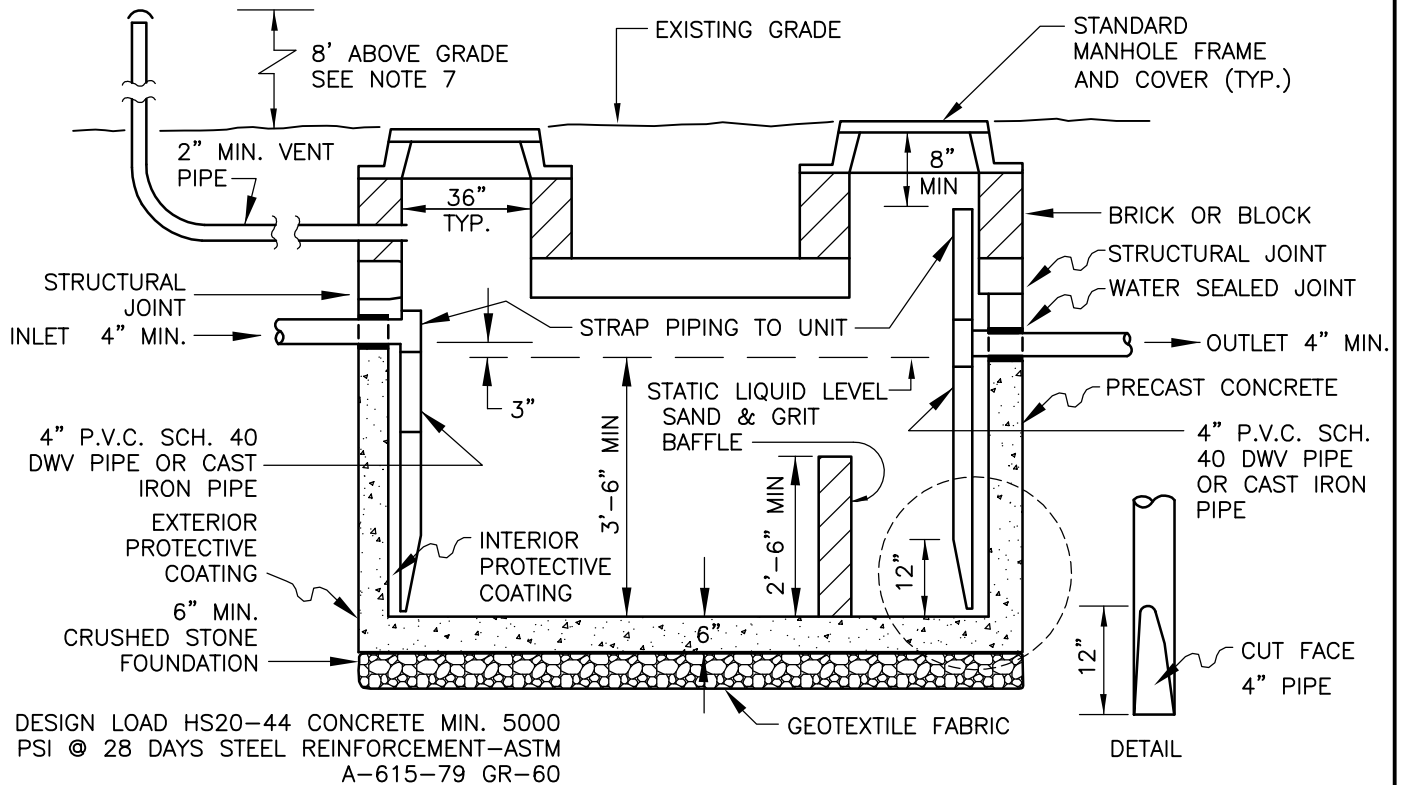
DETAIL

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS

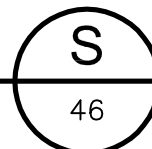


### OIL WATER SEPARATOR TANK SPECIFICATIONS

1. TANK SHALL HAVE A MINIMUM CAPACITY SUFFICIENT TO PRE-TREAT THE MAXIMUM DAILY FLOW PROPOSED AND NO LESS THAN 1000 GALLONS. TANK SHALL BE CONSTRUCTED OF PRECAST CONCRETE.
2. INTERIOR OF THE TANK AND EXTENSION TO GRADE MANHOLES SHALL BE COATED WITH AN EPOXY PETROLEUM RESISTANT SEALANT. EXTERIOR OF THE TANK AND EXTENSION TO GRADE MANHOLES SHALL BE COATED WITH A WATERPROOF FOUNDATION SEALANT. THIS INCLUDES THE TANK EXTERIORS TOP AND BOTTOM.
3. STRUCTURAL SEAM OF THE TANK SHALL BE FILLED IN WITH NON-SHRINKING GROUT OR WATER PLUG AND COATED WITH A WATERPROOF SEALANT.
4. VOIDS BETWEEN INLET AND OUTLET PIPING OF THE TANK SHALL BE FILLED WITH NON-SHRINKING GROUT AND COATED WITH A WATERPROOF SEALANT.
5. THE TANK SHALL HAVE EXTENSIONS TO GRADE ABOVE THE INLET AND OUTLET PIPING. THE EXTENSION SHALL HAVE FRAMES AND MANHOLE COVERS.
6. THE OUTLET PIPING SHALL UTILIZE A TEE-PIPE ON THE INTERIOR OF THE TANK. THE TEE-PIPE SHALL BE EQUIPPED WITH A STAND PIPE RISER EXTENDING UP THE EXTENSION TO GRADE BUT NO CLOSER THAN EIGHT (8) INCHES FROM THE MANHOLE COVER. THE TEE-PIPE SHALL EXTEND SIX (6) TO TWELVE (12) INCHES FROM THE BOTTOM OF THE TANK.
7. THE INLET EXTENSION TO GRADE SHALL BE PROVIDED WITH A VENT LINE WHICH EXTENDS EIGHT (8) FEET ABOVE FINISHED GRADE AND PROPERLY SECURED TO THE BUILDING. THE SIZE OF THE VENT SHALL BE HALF THE SIZE OF THE OUTLET DISCHARGE LINE.
8. THE HORIZONTAL STRUCTURAL SEAM OF THE TANK SHALL BE LOCATED ABOVE THE STATIC LIQUID LEVEL OF THE TANK.
9. THE INCOMING PIPE SHALL NOT INCLUDE ANY SOURCES OF DOMESTIC WASTEWATER OR STORMWATER.
10. THE OUTLET PIPE SHALL BE CONNECTED TO THE SANITARY SEWER.
11. THE OUTLET PIPE SHALL BE AT LEAST THE SIZE OF THE INLET PIPE OR GREATER AND AT A MINIMUM SHOULD BE 4.0 INCHES IN DIAMETER.
12. IF HEAVY PIPING, SUCH AS CAST IRON IS USED, ALL PIPING MUST BE STRUCTURALLY SECURED.
13. THE CONCRETE COVERS PROVIDED BY THE OIL SEPARATOR MANUFACTURERS MUST BE REMOVED AND DISCARDED.

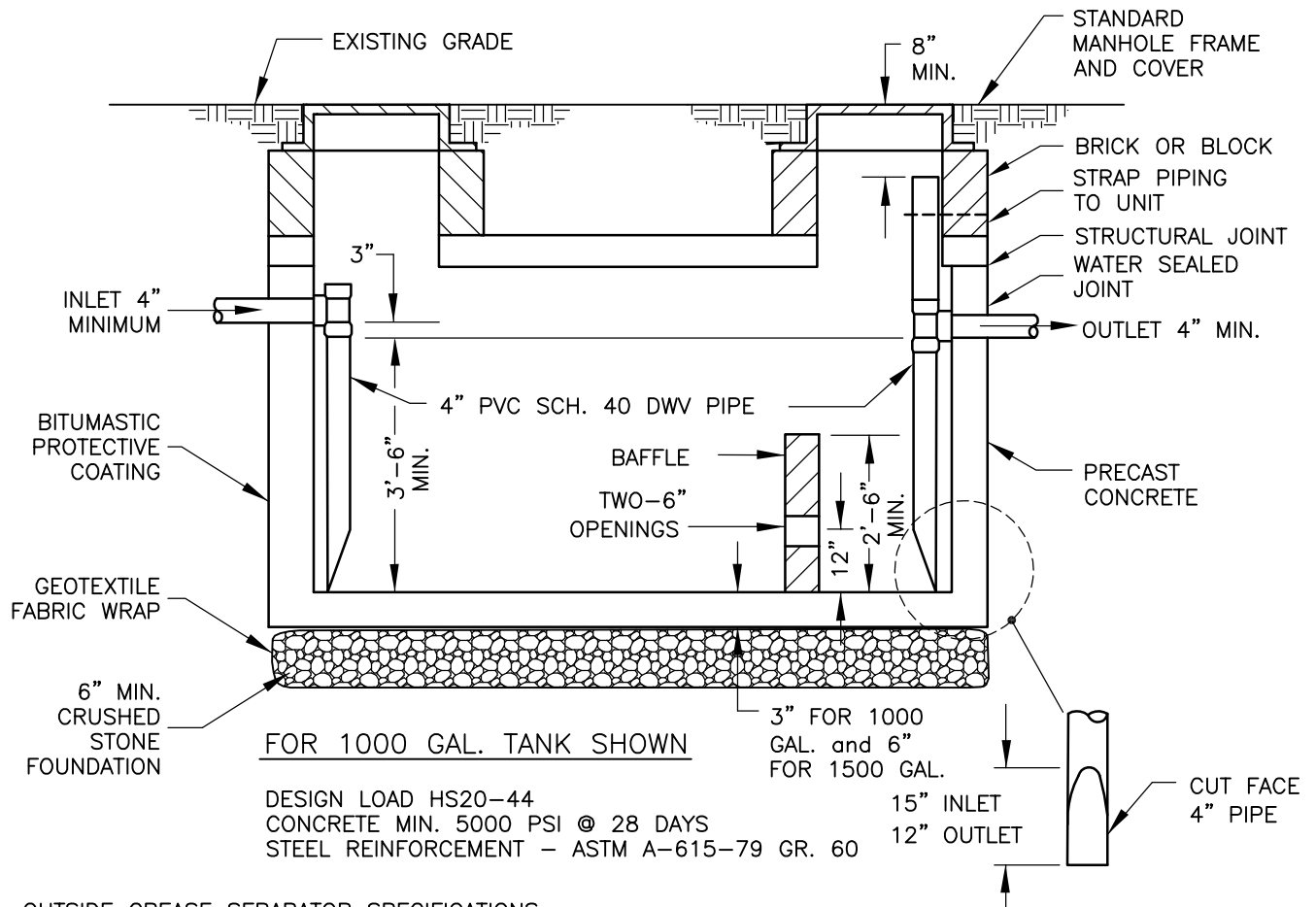
## OIL WATER SEPARATOR DETAIL

NTS



# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



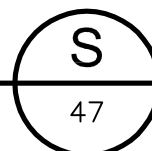
### OUTSIDE GREASE SEPARATOR SPECIFICATIONS

1. TANK SHALL HAVE A MINIMUM CAPACITY SUFFICIENT TO PRE-TREAT THE MAXIMUM DAILY FLOW PROPOSED AND NO LESS THAN 1,000 GALLONS. TANK SHALL BE CONSTRUCTED OF PRECAST CONCRETE.
2. EXTERIOR OF THE TANK AND EXTENSION GRADE MANHOLES SHALL BE COATED WITH A WATERPROOF FOUNDATION SEALANT. THIS INCLUDES THE TANK EXTERIORS TOP AND BOTTOM.
3. STRUCTURAL SEAM OF THE TANK SHALL BE FILLED IN WITH NON-SHRINKING GROUT OR WATER PLUG AND COATED WITH A WATERPROOF SEALANT.
4. VOIDS BETWEEN INLET AND OUTLET PIPING OF THE TANK SHALL BE FILLED WITH NON-SHRINKING GROUT AND COATED WITH A WATERPROOF SEALANT.
5. THE TANK SHALL HAVE EXTENSIONS TO GRADE ABOVE THE INLET AND OUTLET PIPING. THE EXTENSION SHALL HAVE FRAMES AND MANHOLE COVERS.
6. THE OUTLET PIPING SHALL UTILIZE A TEE-PIPE ON THE INTERIOR OF THE TANK. THE TEE-PIPE SHALL BE EQUIPPED WITH A STAND PIPE RISER EXTENDING UP THE EXTENSION TO GRADE BUT NO CLOSER THAN EIGHT (8) INCHES FROM THE MANHOLE COVER. THE TEE-PIPE SHALL EXTEND SIX (6) TO TWELVE (12) INCHES FROM THE BOTTOM OF THE TANK.
7. THE HORIZONTAL STRUCTURAL SEAM OF THE TANK SHALL BE LOCATED ABOVE THE STATIC LIQUID LEVEL OF THE TANK.
8. THE INCOMING PIPE SHALL NOT INCLUDE ANY SOURCES OF DOMESTIC WASTEWATER OR STORMWATER. THE OUTLET PIPE SHALL BE CONNECTED TO THE SANITARY SEWER. THE OUTLET PIPE SHALL BE AT LEAST THE SIZE OF THE INLET PIPE OR GREATER AND AT A MINIMUM SHOULD BE 4.0 INCHES IN DIAMETER.
9. IF HEAVY PIPING, SUCH AS CAST IRON IS USED, ALL PIPING MUST BE STRUCTURALLY SECURED.

## OUTSIDE GREASE SEPARATOR FOR KITCHEN WASTE LINES

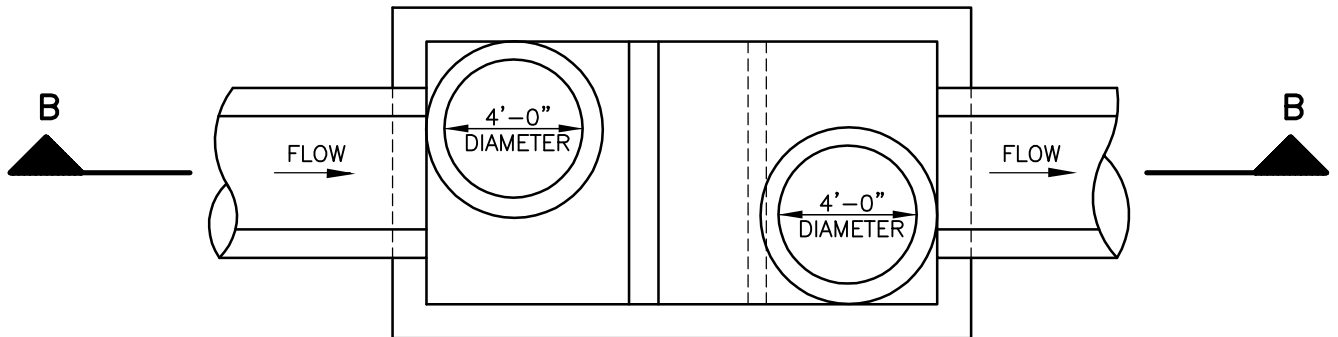
DETAIL

NTS

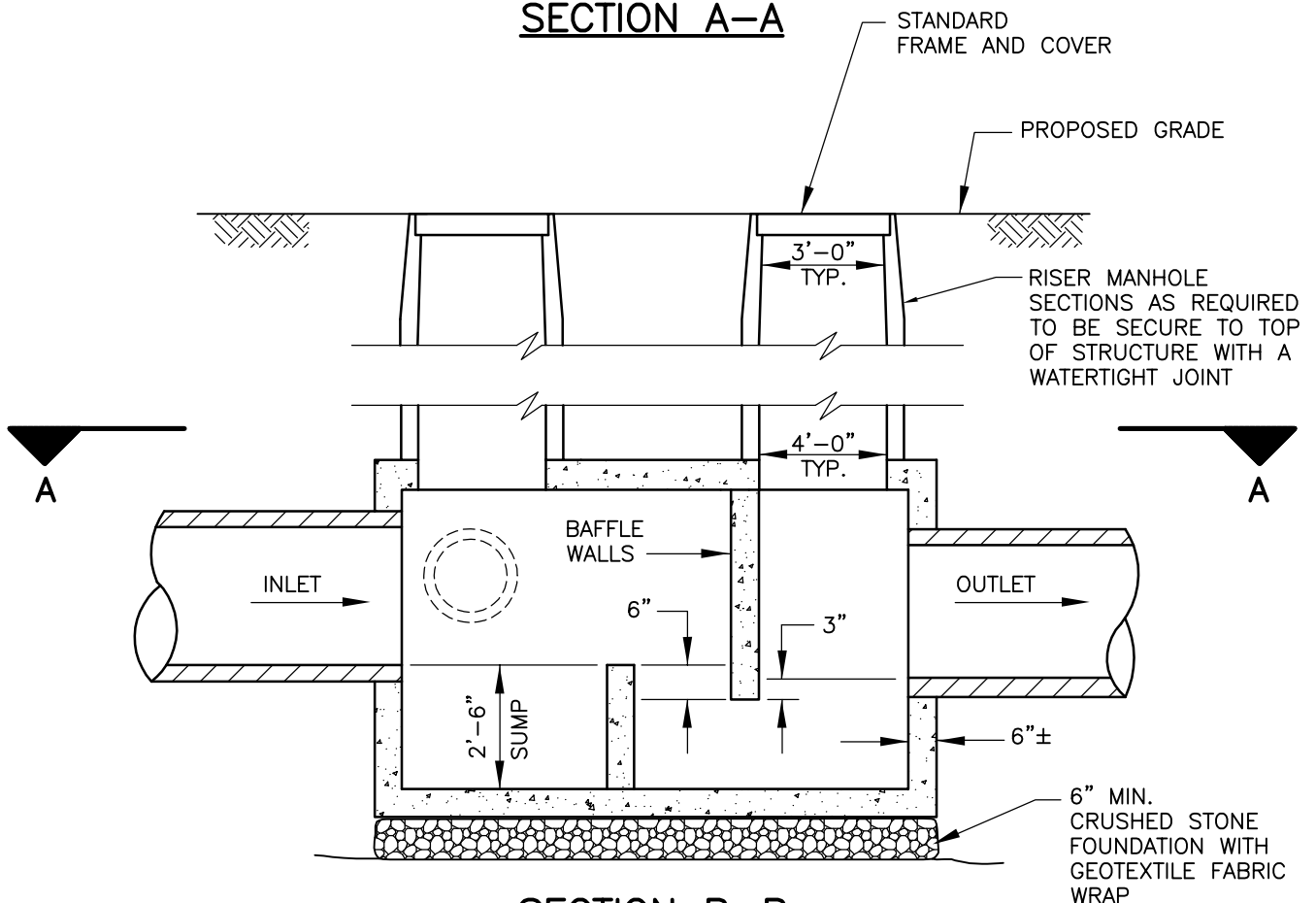


# THE METROPOLITAN DISTRICT

## SEWER STANDARD DETAILS



### SECTION A-A

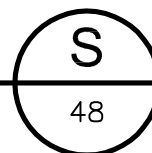


### SECTION B-B

## GRIT COLLECTOR

## DETAIL

NTS



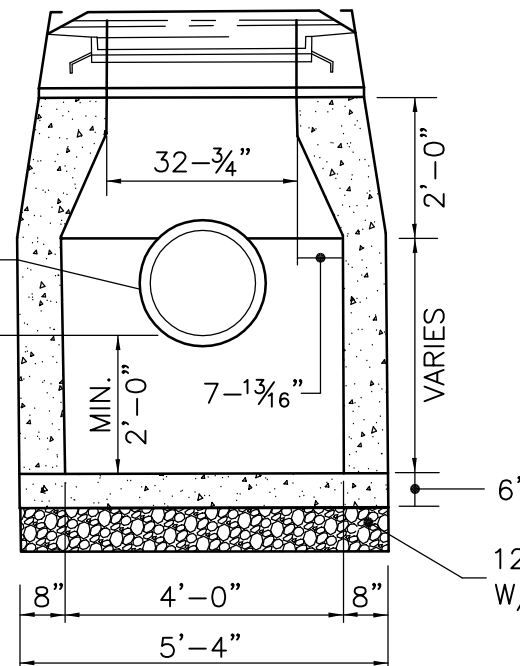
# THE METROPOLITAN DISTRICT

## STORM DRAIN STANDARD DETAILS



PERVIOUS BACKFILL  
ABOVE THIS ELEVATION  
MAX. DEPTH 3'-0"

SEE  
NOTE 1



**SECTION**

### NOTES:

1. TRAP HOOD REQUIRED ON ALL CATCH BASINS EXCEPT THOSE USED ON MAIN LINE DRAIN (FLOW THROUGH). TRAP HOOD REQUIRED ON DOWNSTREAM CONNECTION BEFORE COMBINED SEWER. REFER TO CATCH BASIN TRAP AND TRAP HOOD DETAILS.
2. ALL CATCH BASINS SHALL BE PRECAST CONCRETE. USE OF CONCRETE BLOCK CATCH BASINS WILL BE BASED ON DISTRICT, MUNICIPALITY OR CT DOT APPROVAL.
3. THICKNESS OF ALL CATCH BASINS OVER 10 FEET SHALL BE INCREASED TO 12 INCHES STARTING AFTER THE FIRST 10 FEET. INSIDE DIMENSION SHALL REMAIN THE SAME.

12" MIN. CRUSHED STONE  
W/ GEOTEXTILE FABRIC BELOW

PRECAST TYPE 'C' TOP UNIT  
ADJUST FRAME TO  
GRADE WITH BRICK  
(MIN. 2 COURSES, 18" MAX)

UNLESS SPECIFICALLY ORDERED  
OTHERWISE, MINIMUM DEPTH UNDER  
TRAVELWAY IS 19-1/2" AND UNDER  
UNTRAVELED AREAS IS 0'-3"

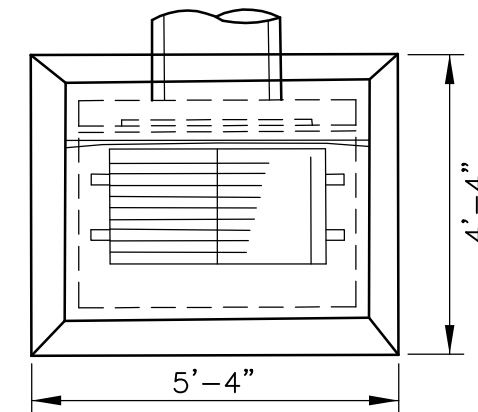
SEE NOTE 1

BRICK, CONCRETE, MASONRY CONCRETE  
UNITS. WHERE BRICK OR MASONRY  
CONCRETE UNITS ARE USED, CORBELLING  
WILL BE PERMITTED. MAXIMUM CORBEL  
TO BE 3". NO PROJECTION SHALL  
EXTEND INSIDE OF LIMITS

12" MIN. CRUSHED STONE W/  
GEOTEXTILE FABRIC BELOW

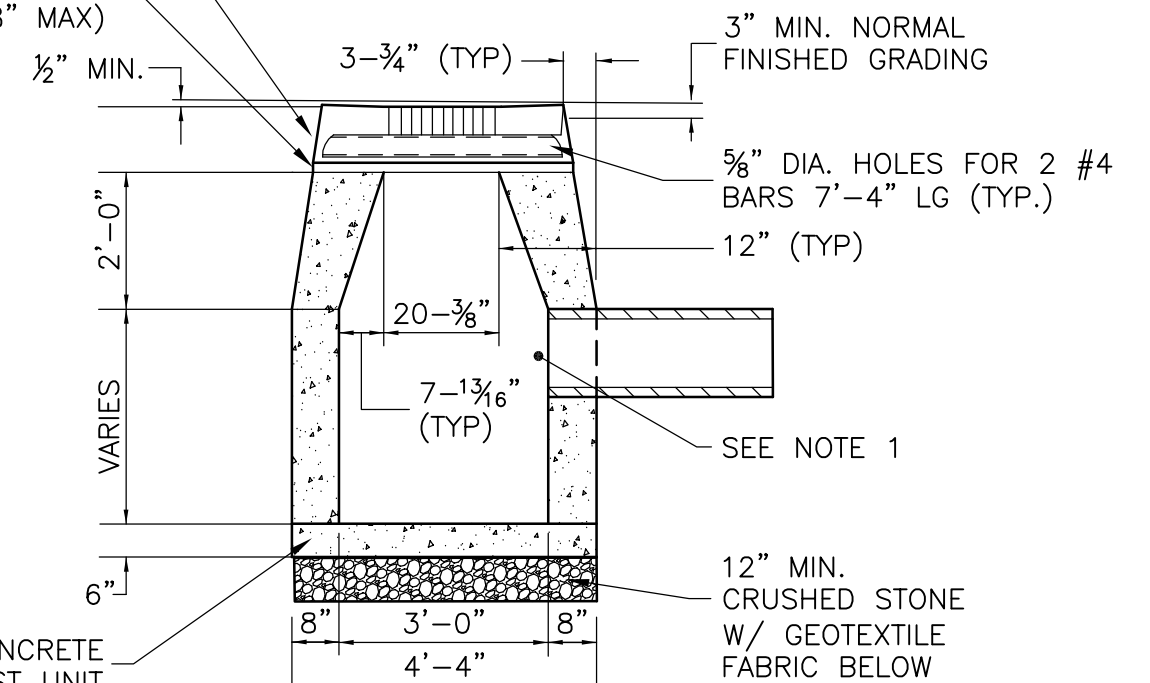
DRAINAGE OPENINGS  
IN 4 WALLS AT OR  
IMMEDIATELY ABOVE  
THIS ELEVATION

**TYPE 'C' CATCH BASIN**



**PLAN**

PRECAST TYPE "CL"  
TOP UNIT  
ADJUST FRAME TO  
GRADE WITH BRICK  
(MIN. 2 COURSES, 18" MAX)

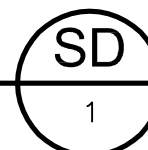


**TYPE 'C-L' CATCH BASIN**

### CTDOT STANDARD CATCH BASIN

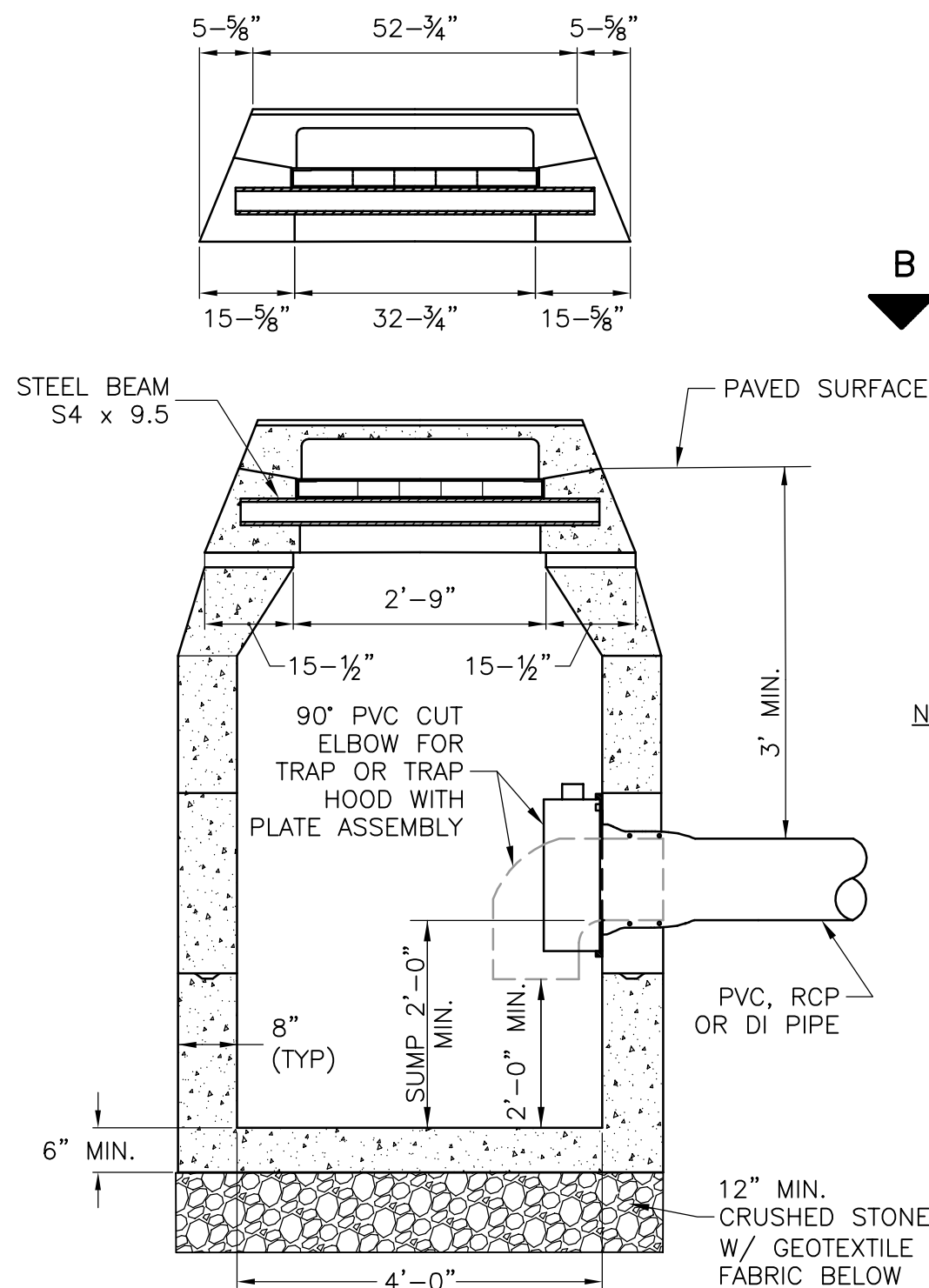
DETAIL

NTS

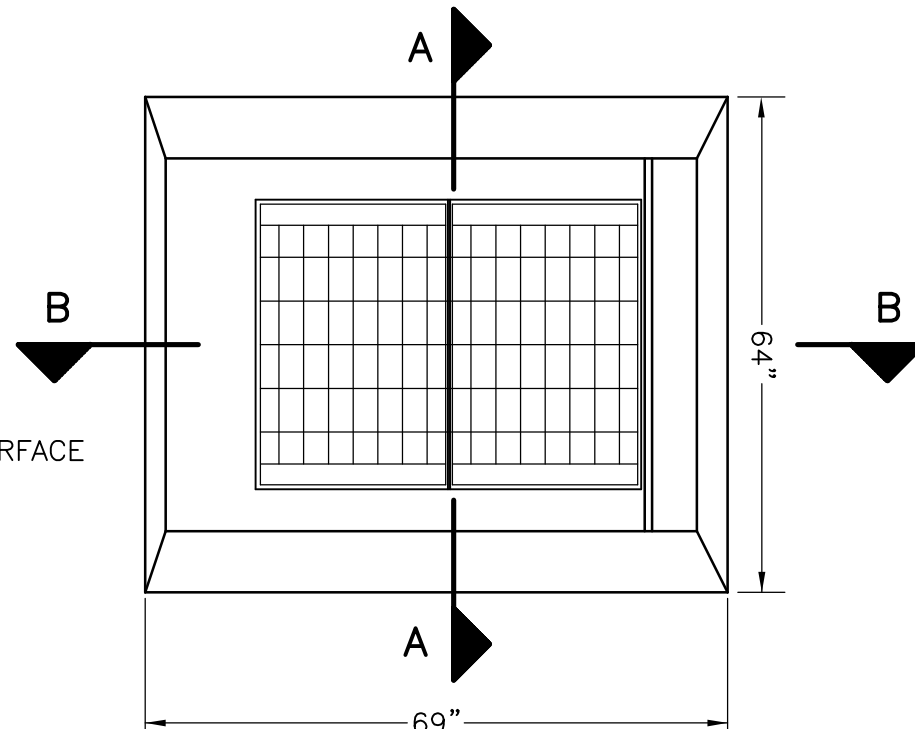


# THE METROPOLITAN DISTRICT

## STORM DRAIN STANDARD DETAILS



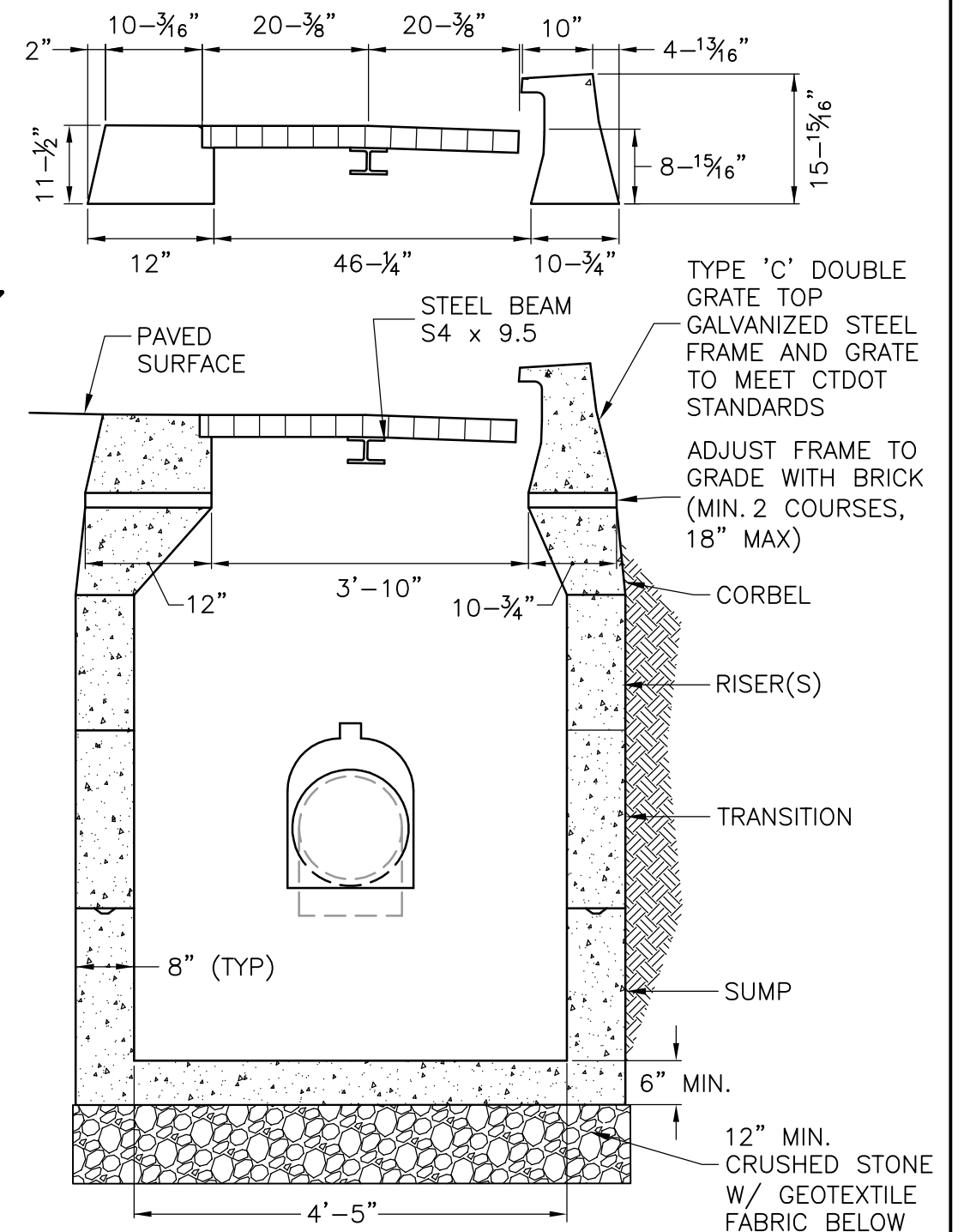
SECTION A-A



PLAN

### NOTES:

1. TRAP HOOD REQUIRED ON ALL CATCH BASINS EXCEPT THOSE USED ON MAIN LINE DRAIN (FLOW THROUGH). TRAP HOOD REQUIRED ON DOWNSTREAM CONNECTION BEFORE COMBINED SEWER. REFER TO CATCH BASIN TRAP AND TRAP HOOD DETAILS.
2. ALL CATCH BASINS SHALL BE PRECAST CONCRETE. USE OF CONCRETE BLOCK CATCH BASINS WILL BE BASED ON DISTRICT, MUNICIPALITY OR CT DOT APPROVAL.
3. THICKNESS OF ALL CATCH BASINS OVER 10 FEET SHALL BE INCREASED TO 12 INCHES STARTING AFTER THE FIRST 10 FEET. INSIDE DIMENSION SHALL REMAIN THE SAME.

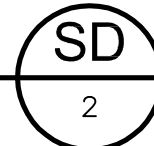


SECTION B-B

CTDOT DOUBLE GRATE PRECAST CONCRETE CATCH BASIN (TYPE I)

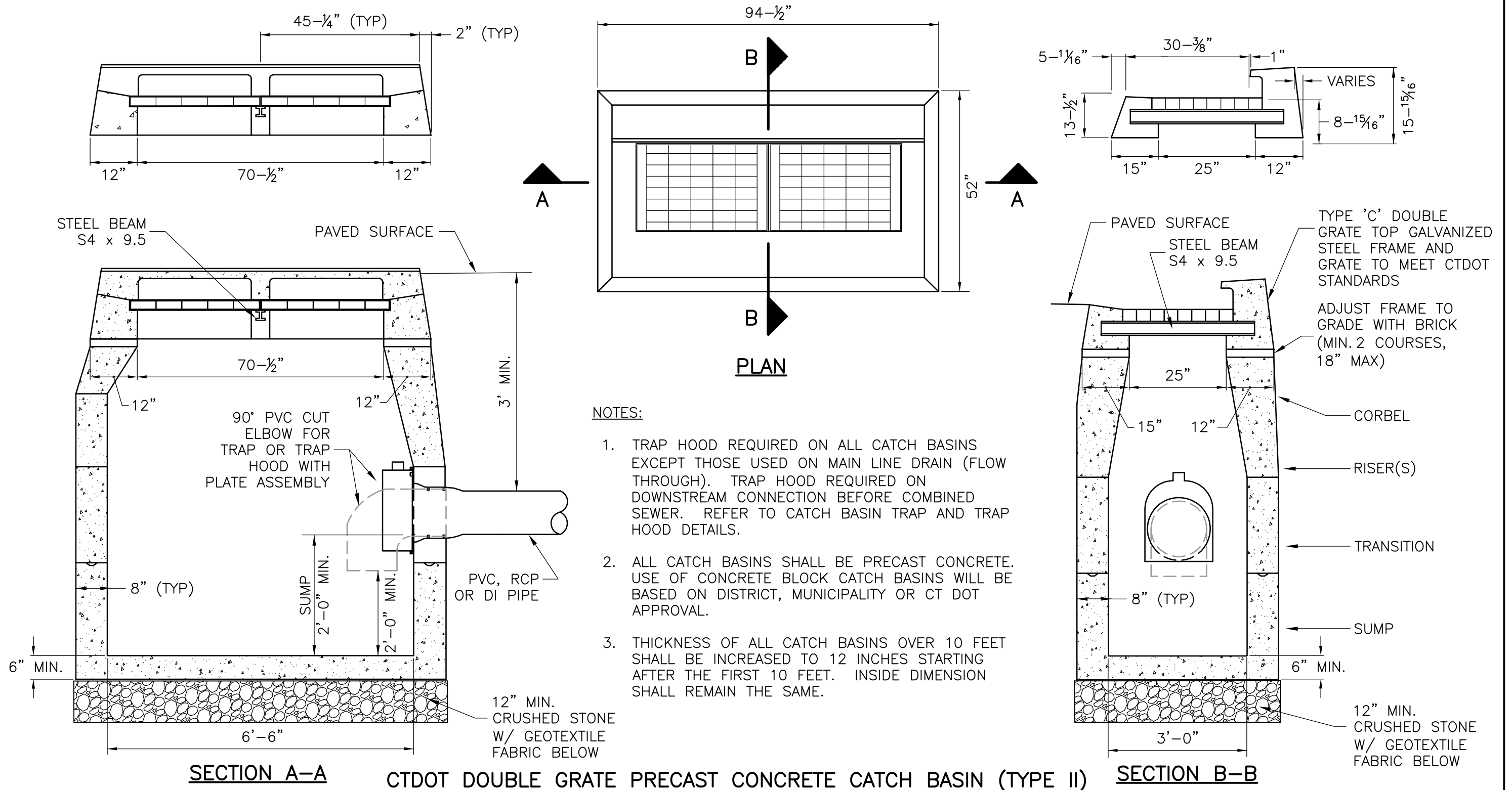
DETAIL

NTS



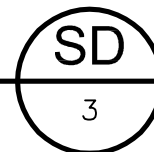
# THE METROPOLITAN DISTRICT

## STORM DRAIN STANDARD DETAILS



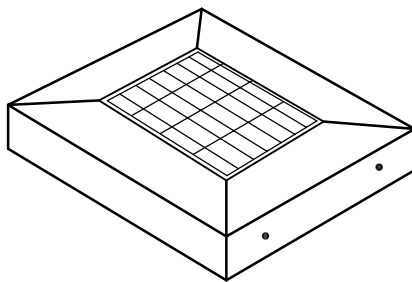
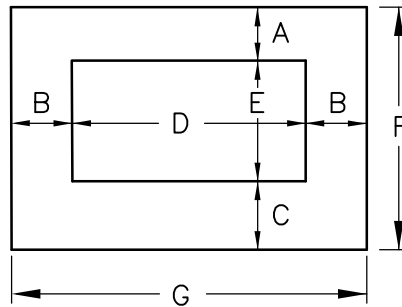
DETAIL

NTS

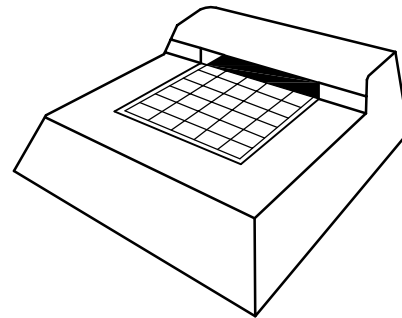


# THE METROPOLITAN DISTRICT

## STORM DRAIN STANDARD DETAILS

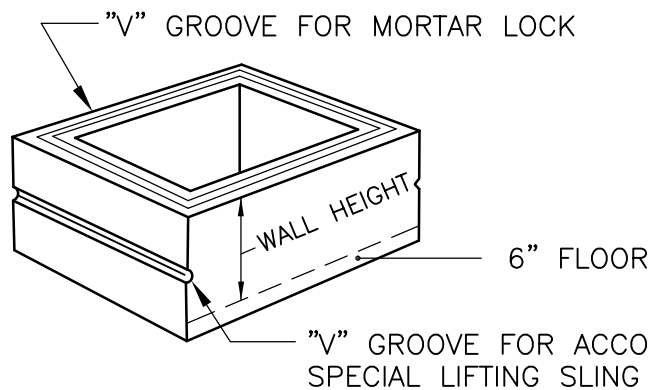


**TYPE C-L**



**TYPE C**

TYPE	A	B	C	D	E	F	G
C	8"	12"	12"	32 3/4"	25 3/8"	45 3/8"	56 3/4"
C-L	12"	12"	12"	32 1/2"	21 1/2"	44 1/2"	56 1/2"



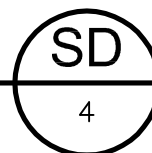
### NOTE:

1. DIMENSIONS FOR TOP OF SUBSTRUCTURE BUILT OF BLOCKS, OR CAST IN PLACE.

CTDOT PRECAST CONCRETE CATCH BASIN TOPS AND SUMPS

**DETAIL**

NTS

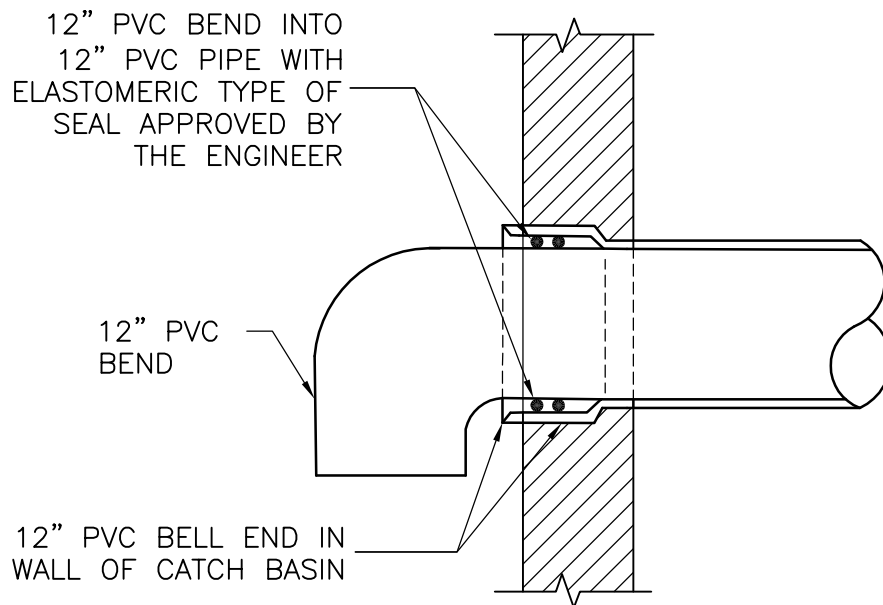


4



# THE METROPOLITAN DISTRICT

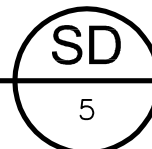
## STORM DRAIN STANDARD DETAILS



### ELBOW TRAP FOR CATCH BASIN

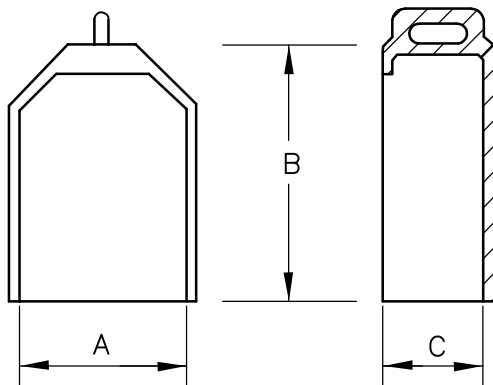
DETAIL

NTS



# THE METROPOLITAN DISTRICT

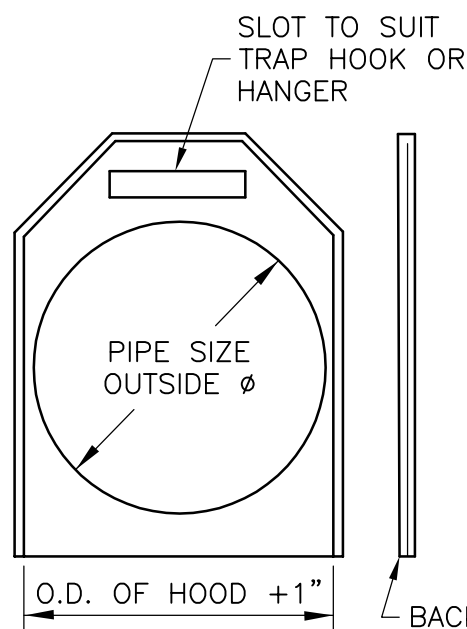
## STORM DRAIN STANDARD DETAILS



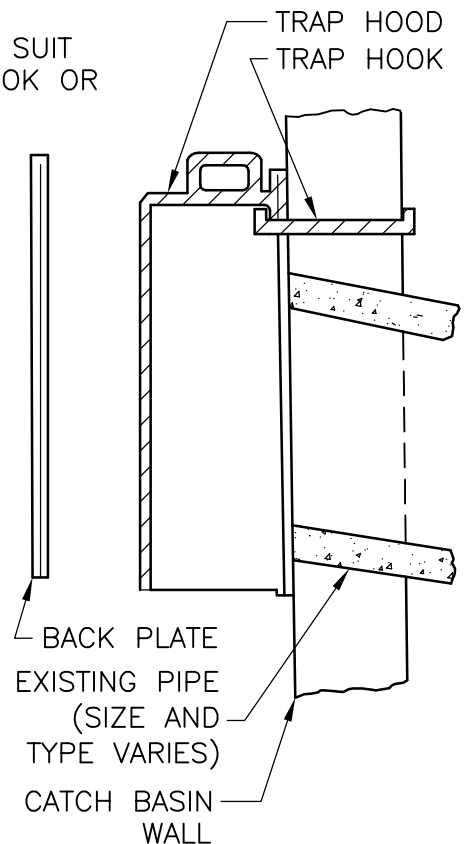
### TRAP HOOD MINIMUM DIMENSIONS

PIPE SIZE	A	B	C
10	12	20	6- $\frac{1}{2}$
12	15- $\frac{3}{4}$	22	7- $\frac{1}{2}$
15	18	25	9
18	20	27	10

\* ALL VALUES IN INCHES



### SECTIONS



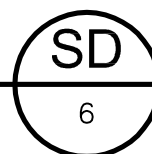
### NOTES:

1. TRAP HOODS SHALL BE CAST IRON FOR 10", 12", 15" AND 18" PIPE SIZES AND FABRICATED ALUMINUM FOR PIPES 21" AND GREATER.
2. ALL TRAP HOODS SHALL INCLUDE STAINLESS STEEL HOOKS OR HANGERS FOR MOUNTING TO THE CATCH BASIN WALL. BACK PLATES SHALL BE FURNISHED ONLY WHEN REQUESTED.
3. TRAP HOODS SHALL BE FROM CAMPBELL FOUNDRY, NEENAH FOUNDRY, EAST JORDAN IRON WORKS OR APPROVED EQUAL. DIMENSIONS AND MODEL NUMBERS VARY BASED ON DISCHARGE PIPE SIZE AND MANUFACTURER.
4. SEE MANUFACTURER FOR INSTALLATION INSTRUCTIONS.

## CATCH BASIN TRAP HOODS

DETAIL

NTS



## **PART 5**

### **APPROVED MATERIALS FOR SANITARY SEWER AND STORM INSTALLATIONS**

The MDC Approved Materials List can be found at the MDC website at the following webpage: <http://themdc.org/what-we-do/engineering-planning/technical-services>

If deviations from the prescribed materials are necessary, approval must be obtained from the MDC prior to the purchase and installation.

**APPENDIX A**

**APPLICATION FOR ELIGIBILITY**

## APPLICATION FOR ELIGIBILITY FORM

The undersigned, having read and understood the terms of the construction manual, rules, regulations and ordinances of The Metropolitan District pertaining to the issuance of permits to drain layers, and to the laying of water services, sewers and drains, hereby requests eligibility for sewer connection and/or water service permits in the name indicated hereinbelow and hereby agrees, for himself and partners, or for any corporation in whose name the license or permits is to be issued, to fulfill and be bound by all of the provisions of said construction manual, rules regulations and ordinances, and also to any amendments or additions thereto which may hereafter be made.

.....  
(Name under which permits will be issued)

.....  
(Business Address – Street and Town)

.....  
(Business Telephone)

If business is a Partnership or Corporation, list below the owners partners principal officers and/or State Licensee:

Name	Title	Home Address	Home Telephone
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

.....  
Said applicant agrees to notify The Metropolitan District within 24 hours of any change in the employment status of the (partner, officer, associate, employee) listed herein, including persons empowered to sign applications and receive permits as listed on the reverse side.

Application is made for:

**ELIGIBILITY FOR SEWER CONNECTION AND WATER SERVICE PERMITS**  
(for work on private sewers and drains & water services under STATE OF CONNECTICUT)

LICENSE NO.....

Signed \_\_\_\_\_  
(Name of Corporation of firm (Seal))

Issued to (Signed).....

by \_\_\_\_\_

\_\_\_\_\_  
Witness

Its \_\_\_\_\_ Duly Authorized  
(Title)

\_\_\_\_\_  
Witness

**METROPOLITAN DISTRICT ACTION**

It has been determined that satisfactory **Insurance Certification** and **Bond** covering the aforementioned applicant has been filed in this office and the named application has been found in order and accepted on:

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Signed (for the MDC)**

.....  
**TO BE COMPLETED BY THE CONTRACTOR**

Persons empowered to sign applications and receive permits for the aforementioned company: **(Print or Type only)**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**APPENDIX B**

**MDC BOND FORM**

CONTRACTORS BOND NO. \_\_\_\_\_

Know all Men by these Presents, that \_\_\_\_\_ and/or  
(Name of Firm, Partnership or Corporation)

\_\_\_\_\_  
(Name of Responsible Individual State Licensee) \_\_\_\_\_ (Title)  
as principal, and \_\_\_\_\_ as surety

are held and firmly bound unto THE METROPOLITAN DISTRICT, within its service area in the State of Connecticut, in the sum of Ten Thousand dollars (\$10,000), lawful money of the United States of America to be paid to the said METROPOLITAN DISTRICT, its respective successors or assigns, for which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Signed and Sealed and dated \_\_\_\_\_ Conn., this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_

The condition of this Obligation is such, that whereas, the above bound principal has by The Metropolitan District and/or by the State of Connecticut been duly licensed as a Contractor in said District Service Area, said obligation shall be continuous subject to cancellation by said Surety by giving ninety (90) days notice in writing of its intention to so do.

Now, therefore, if the said \_\_\_\_\_ shall well and truly keep and perform, during said term, all the terms and conditions of the ordinances, resolution, rules and regulations of The Metropolitan District, regulating the laying of sewers, drains, and appurtenances, sewer house connections, private drains, water mains, water services and appurtenances, and shall forever indemnify and save harmless THE METROPOLITAN DISTRICT and all its respective agents for or on account of any damages to property of any person or persons or any damage to the sewer or water system of THE METROPOLITAN DISTRICT in consequences of or resulting from any work performed by

said principal \_\_\_\_\_ servants  
or agents, or of, or from any negligence in guarding said work, or of, or from any act or

omission of said principal \_\_\_\_\_ servants or agents until the expiration of the one year maintenance period after, work, under any permit issued, is complete; shall faithfully perform said work in all respects with the rules and regulations established by THE METROPOLITAN DISTRICT, and the terms of the permits that may be issued to him, and shall also pay all fines or penalties imposed upon him for violation of any such rules or regulation, then this obligation shall be of no effect; otherwise, it shall remain in full force and virtue.

Signed: \_\_\_\_\_ (Corporate Seal of Surety)  
(Individual State Licensee)

Signed: \_\_\_\_\_ Signed: \_\_\_\_\_  
(Corporation of Firm) (Surety Corporation)

By: \_\_\_\_\_ By: \_\_\_\_\_

Its: \_\_\_\_\_ Duly Authorized Its Duly Authorized Agent

Witnessed by: \_\_\_\_\_ Witnessed by: \_\_\_\_\_

On: \_\_\_\_\_ On: \_\_\_\_\_  
(Date) (Date)



**APPENDIX C**

**MDC INSURANCE CERTIFICATE**

**CERTIFICATE OF INSURANCE -THE METROPOLITAN DISTRICT** FORM INS390 | ISSUE DATE (MM/DD/YY)

INSURED	THIS IS TO CERTIFY THAT THE POLICIES LISTED BELOW HAVE BEEN ISSUED, SUBJECT TO APPLICABLE TERMS, CONDITIONS AND EXCLUSIONS. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES INDICATED BELOW.
	<b>COMPANIES AFFORDING COVERAGE</b>
PRODUCER	COMPANY LETTER <b>A</b>
	COMPANY LETTER <b>B</b>
	COMPANY LETTER <b>C</b>

<b>MINIMUM INSURANCE REQUIREMENTS</b> BODILY INJURY AND PROPERTY DAMAGE \$1,000,000 EACH OCCURRENCE \$1,000,000 AGGREGATE	(NOTE: CERTAIN PROJECTS, CONTRACTS OR AGREEMENTS MAY REQUIRE HIGHER OR LOWER LIMITS AND/OR REQUIRE SPECIFIC ADDITIONAL INSURANCE COVERAGES. SEE PROJECT, CONTRACT OR AGREEMENT FOR ADDITIONAL INFORMATION.)
--	---

COVERAGES					
CO LTR	TYPE OF INSURANCE	POLICY NUMBER	EFF. DATE (MM/DD/YY)	EXP. DATE (MM/DD/YY)	ALL LIMITS IN THOUSANDS
	<b>GENERAL LIABILITY</b>  ___ COMMERCIAL GENERAL LIABILITY ___ CLAIMS MADE ___ OCCUR. ___ PER PROJECT AGG. LIMIT END. ___ BLANKET CONTRACTUAL ___ THE METROPOLITAN DISTRICT AND THE STATE OF CONN. ADDED AS ADDITIONAL INSURED				EACH OCCURRENCE \$ GENERAL AGGREGATE \$ PRODUCTS COMP/OPS AGGREGATE \$ SELF-INSURED RETENTION \$
	<b>AUTOMOBILE LIABILITY</b>  ___ ANY AUTO ___ ALL OWNED AUTOS ___ SCHEDULED AUTOS ___ HIRED AUTOS ___ NON-OWNED AUTOS				COMBINED SINGLE LIMIT \$ BODILY INJURY (Per Person) \$ BODILY INJURY (Per Accident) \$ PROPERTY DAMAGE \$ SELF-INSURED RETENTION \$
	<b>EXCESS/UMBRELLA LIABILITY</b>				EACH OCCURR. \$ AGGREGATE \$
	<b>WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY</b>				STATUTORY \$ (EACH ACCIDENT) \$ (DISEASE-POLICY LIMIT) \$ (DISEASE-EACH EMPLOYEE)
	<b>PROTECTIVE LIABILITY</b> ((IN THE NAME OF THE METROPOLITAN DISTRICT) POLICY MUST BE SUBMITTED.				BODILY INJURY & PROPERTY DAMAGE EACH OCCURRENCE: AGGREGATE:
	<b>OTHER</b>				

<b>DESCRIPTION OF OPERATIONS</b>	
<b>CERTIFICATE HOLDER</b> THE METROPOLITAN DISTRICT 555 MAIN STREET-PO BOX 800 HARTFORD, CT 06142-0800	IT IS AGREED THAT 30 DAYS' NOTICE OF CANCELLATION OR RESTRICTIVE AMENDMENT OF SAID POLICIES SHALL BE MAILED TO THE METROPOLITAN DISTRICT, AND IT IS FURTHER AGREED THAT ALL EARNED PREMIUM CHARGES FOR THE PROTECTIVE LIABILITY AND OTHER POLICIES WILL BE BILLED TO THE ABOVE NAMED PERSON OR FIRM. AUTHORIZED REPRESENTATIVE

## **Insurance Requirements:**

### **For License As Pipe Layer, Excavator Or Eligibility For Metropolitan District Permits:**

**Commercial General Liability:** Limit of Liability not less than \$1,000,000 each occurrence, \$1,000,000 aggregate. MDC must be added as additional insured.

**Automobile Liability:** Limit of Liability not less than \$1,000,000 combined single limit.

**Workers' Compensation:** As required by Connecticut Law and Employer's Liability with a limit of not less than \$100,000/occurrence, \$500,000 disease policy limit and \$100,000 disease each employee.

**Owner/Operator Note:** A letter from your insurance agent attesting to the fact that W/C insurance is not mandatory and you elect not to carry it, will satisfy this requirement.

**Protective Liability:** For and in the name of the District with a minimum limit of liability not less than \$1,000,000/occurrence and \$1,000,000/aggregate.

All of the above requirements must be met prior to issuance of a permit.

## **APPENDIX D**

### **MDC SEWER CONNECTION PERMIT FORM**