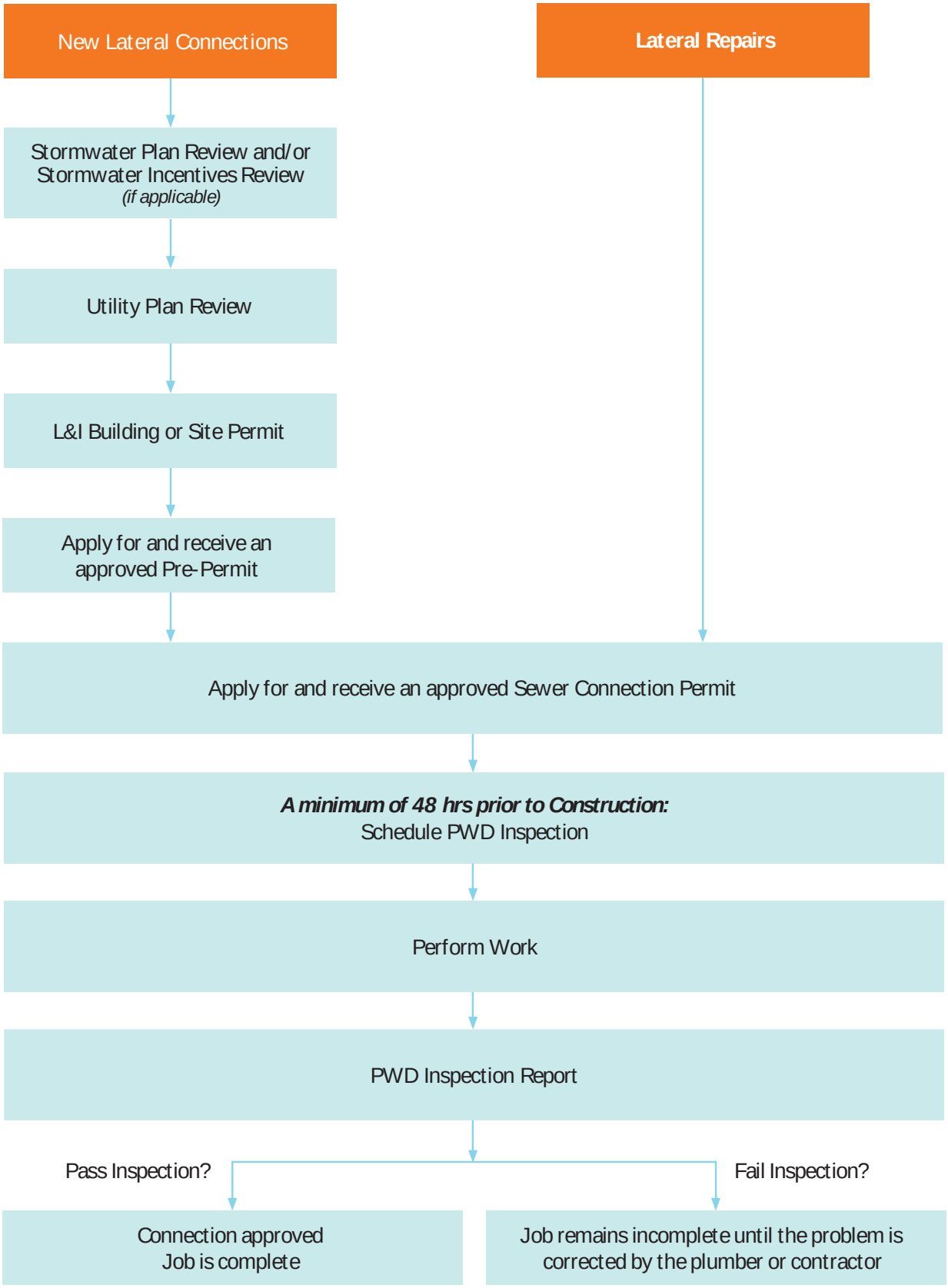
Sewer Connection and Repair Manual

Version 1.2 February 2024

PHILADELPHIA WATER DEPARTMENT

Sewer Connection Permit: Process Overview



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I. Introduction

The primary purpose of regulating private sewer connections is to protect the integrity of the City's public sewer system, ensuring the continuous collection and conveyance of sanitary waste and storm water. Well-constructed sewer connections will also help reduce the occurrence of cave-ins and premature pipe repair or replacement – both public and private.

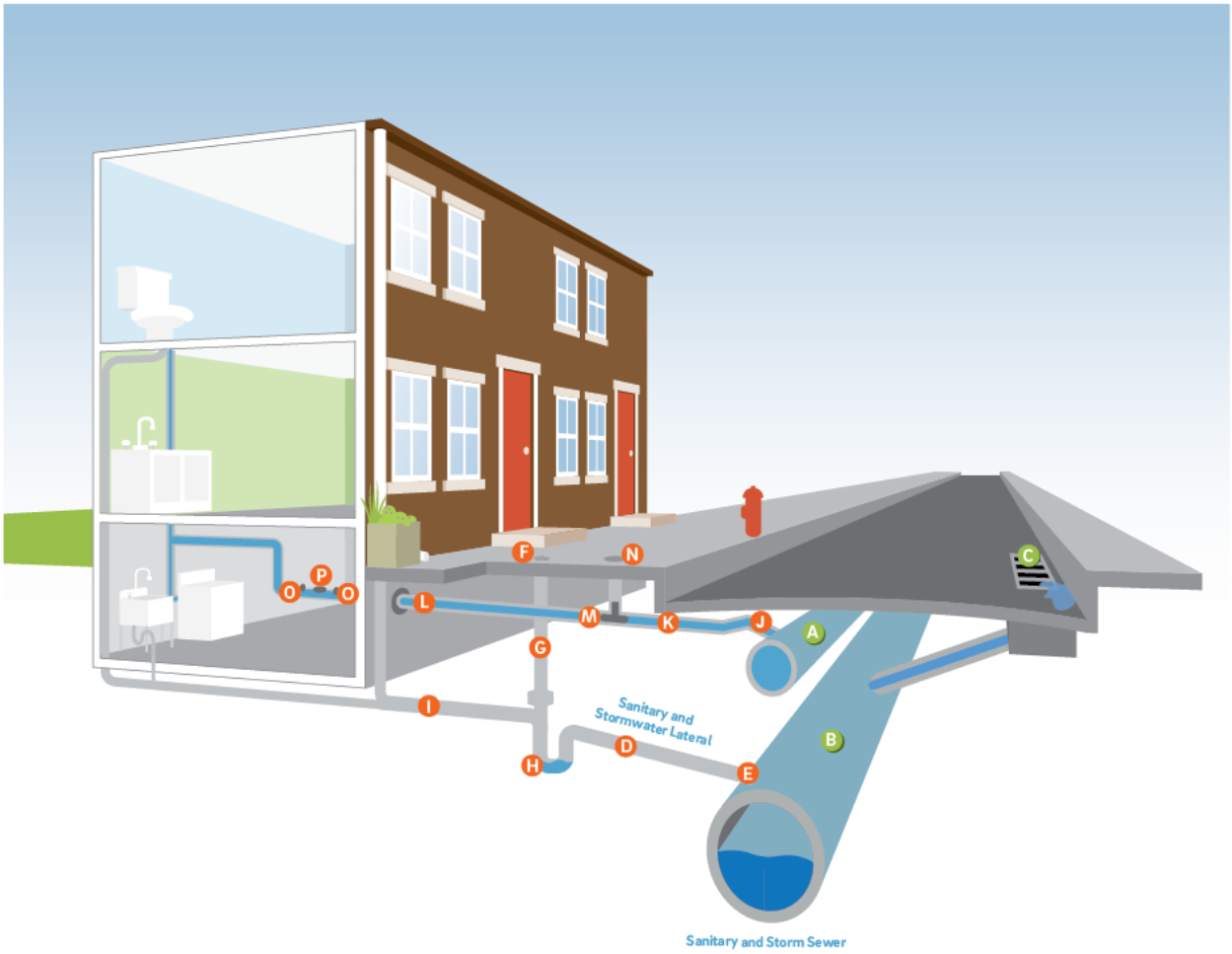
This Manual supplements Philadelphia Water Department Regulations, the Philadelphia Plumbing Code, the Property Maintenance Code, the Administrative Code, and other provisions of City Code. With the companion Sewer Connection Regulation, this Manual is intended to detail the rules and processes governing connections to the City's public sewer system. It is also intended to improve the working relationship between plumbers, customers, and the City by clarifying what is expected of private plumbing work in the street.

II. Sewer Connection Permit and Related Fees

For Sewer Connection Fees, please refer to section 504.14 of the PWD Regulations.

III. Typical Drainage System Components

Please note that the picture below shows drainage to a **combined** sanitary and stormwater sewer. In the case of **separate** sanitary and stormwater sewers, the sanitary lateral must always drain to the sanitary-only sewer and the stormwater lateral must always drain to the stormwater-only sewer. The sewer connection of the sanitary lateral must be downstream of the sewer connection of the stormwater lateral, in relation to the flow of the public sewer.



PWD's Responsibility

- A Water Main
- B Combined Storm and Sanitary Sewer
- C Stormwater Inlet

Customer Responsibility

- D Sanitary and Stormwater Lateral
- E Slant
- F Vent Cover
- G Vent Pipe
- H Curb Trap
- I Main House Drain
- J Ferrule
- K Water Service Pipe
- L Water Supply Pipe
- M Curb Stop
- N Curb Stop Box
- O Supply Valves
- P Water Meter

IV. Roles and Responsibilities

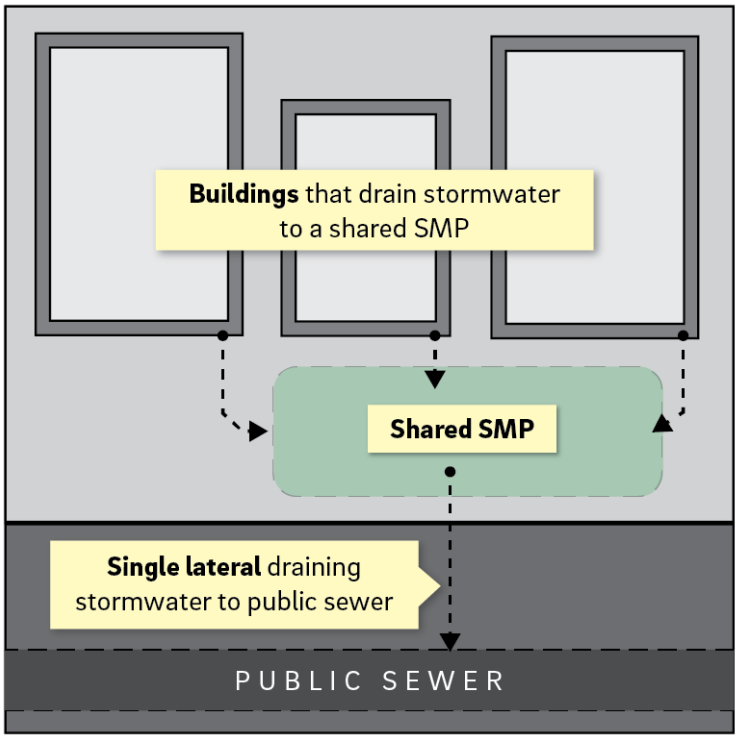
A. Property Owner

The property owner owns, and shall maintain and repair, the property's entire drainage system and the sewer connection, ensuring each is intact, unobstructed, and properly configured, connected, and functioning at all times.

The owner(s) of a private sewer shall maintain and repair the private sewer, ensuring it is intact, unobstructed, and properly configured, connected, and functioning at all times.

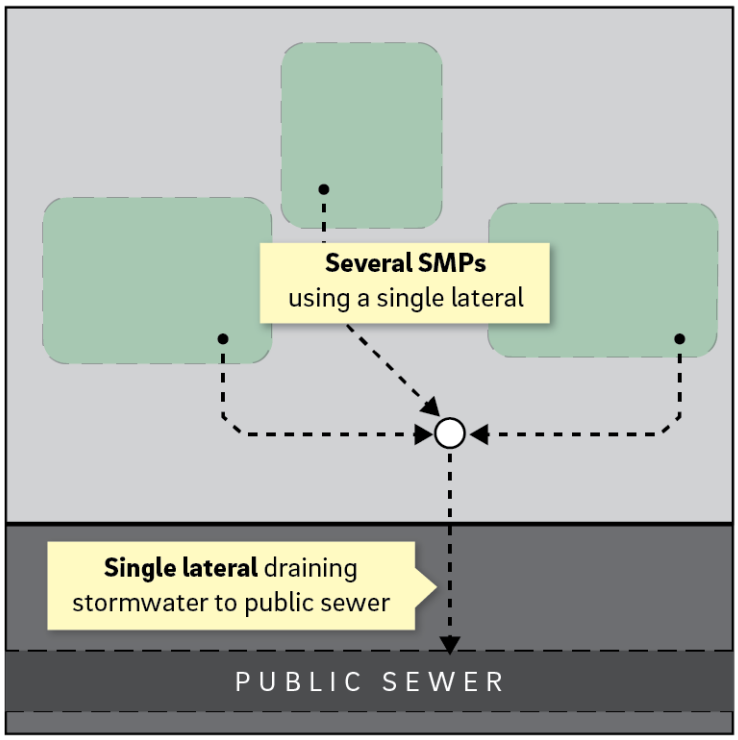
The sanitary, stormwater, or combined sanitary and stormwater lateral for each building or structure shall be separate and independent of the drainage system serving any other building, structure, or surface area, unless it is part of a common building sewer, drainage system or private sewer permitted under the Philadelphia Plumbing Code and approved by the Water Department and Department of Licenses and Inspections (L&I).

Exceptions: 1) Multiple buildings, structures, or surface areas that have a shared stormwater management practice ("SMP") may use a single lateral to connect the SMP to a public sewer in accordance with PWD Regulations Chapter 6.



Exceptions: *continued*,

2) Several SMPs may use a single lateral to connect the SMPs to public sewer.



B. Plumber

A Plumber is required to be on-site at all times following commencement of any work governed by Section 504.0 of the Philadelphia Water Department Regulations - Requirements for Sewer Connections ("Sewer Connection Regulation"). The Plumber must have their license or registration, personal identification, and all permits available for inspection at the work site at all times. If not on-site, a journeyman or Master Plumber must be available for a site visit or electronic communication during a City inspection.

The responsibility to provide an adequate sewer connection remains with the Master Plumber. Any approval by the City of Philadelphia or Water Department does not remove any responsibility from the Master Plumber.

The Plumber must protect stockpiles of excavated material and must broom sweep the sidewalk and roadway adjacent to the work site at the end of each workday. Excavated material is prohibited from entering the Public Sewer.

The Plumber must comply with the Pennsylvania Underground Utility Line Protection Act (73 P.S. § 176 *et. seq.*, informally known as PA One Call), or equivalent.

It is the responsibility of the Plumber on-site to dig with care and verify all utility location information. If a Plumber causes or discovers any damage to public or private infrastructure or property during any work covered by the Sewer Connection Regulation, the Plumber must notify the Water Department immediately at 215-685-6300. The Water Department, upon being notified of such damage caused by the Plumber, may order the Plumber to make any emergency repairs to public or private infrastructure at the Plumber's expense. This includes the damage to any infrastructure owned by the City or adjacent properties.

If the Water Department determines that the public sewer or any other City infrastructure or property was damaged by a Plumber's operation, then the time and materials required by the City to repair such damage and other cleanup costs will be invoiced to the Master Plumber. The Water Department may withhold permits from a Master Plumber who fails to pay such an invoice, or who fails to resolve a legitimately disputed invoice.

The Plumber, and their personnel, must communicate and interact with Water Department personnel in a professional and respectful manner.

C. Water Department

The Water Department or its designee will inspect work conducted under the Sewer Connection Regulation and this Manual.

The Water Department may refer any violations of City Code and/or regulations under the jurisdiction of another City department to that agency.

The Water Department maintains current public sewer records, which are available for Plumbers, engineers, and other construction professionals to use when designing or constructing connections to the public sewer.

The Water Department will periodically review and update this Manual.

V. New Sewer Connections & Repairs: Permitting and Approval Process

A. General

A Sewer Connection Permit is required for new connections and repairs to a customer's existing lateral to the public sewer.

Connections to a private sewer, not owned or maintained by the Philadelphia Water Department, have a separate permitting process under the jurisdiction of L&I.

A person may not make a new drainage system connection to an existing public sewer unless:

1) the Water Department has determined that the public sewer has available capacity for the proposed connection in accordance with the Pennsylvania Sewage Facilities Act ("Act 537"), if applicable, and
2) they have obtained a Sewer Connection Permit.

A person may not reconnect, replace, or repair an existing lateral connection until they have obtained a Sewer Connection Permit.

Keep in Mind:
A Master Plumber shall not work under another Master Plumber's Plumbing Permit except as a subcontractor or an employee. When work is being performed by a subcontractor, L&I shall be notified in writing that such work is being performed with permission of the permitted Master Plumber holding the original permit.
No person shall install plumbing, water drain or waste piping, or fixtures unless properly licensed pursuant to Philadelphia Code Section 9-1003. No person shall hire such unlicensed person to perform plumbing work. Any person who has had plumbing work performed by an unlicensed person must have a Master Plumber inspect, and if necessary, redo the work. Permits must be secured for the inspection activity and for any additional plumbing work as a result of the inspection.

B. Planning Ahead – PA One Call

There are two types of PA One Call requests. The first is a PA One Call for ***design,*** which provides water, sewer, and green infrastructure as-built records. A design One Call is needed to create a Utility Plan for New Connections. The second is a PA One Call for ***excavation,*** which provides painted utility mark-outs at the requested locations. For both new and repair connections an excavation One Call must be made prior to beginning work.

Anyone intending to perform excavation or demolition work in Pennsylvania is required to notify the One Call System by calling "811" so utilities can mark their infrastructure prior to excavation. Except in the case of an actual emergency, notification shall be not less than three and not more than ten business days in advance of beginning excavation or demolition work.[1]
For more information regarding responsibilities under the One Call statute, visit https://www.pa1call.org.

C. New Connections

a. Utility Plan Review (UPR)

Utility Plan Review and Approval is required prior to obtaining Pre-Permits from Water Transport Records and Site or Building Permits from L&I. Generally, projects that need an L&I Site or Building Permit, propose new connections to PWD infrastructure or propose impacts or encroachments to PWD infrastructure are required to submit a plan for review to the PWD Utility Plan Review group.

Typically, an engineer or architect submits their Utility Plan through the online project dashboard located at https://www.pwdplanreview.org/. In addition to a Utility Plan that meets the checklist requirements, a PWD Water Service Line Sizing Model must be submitted for each proposed domestic or combined domestic/fire service line. The Utility Plan Checklist, Sample Utility Plan, PWD Water Service Line Sizing Model and additional information regarding the Utility Plan Review process can be found on our website:
https://water.phila.gov/development/connections/utility-plan-review/.

- Please note projects with 5,000 square feet of earth disturbance or greater will require a Stormwater Plan Review, in conjunction to the Utility Plan Review. For more information regarding the Stormwater Plan Review process, please refer to https://water.phila.gov/development/stormwater-plan-review/manual/.

[1] *See* Underground Utility Line Protection Act, 73 P.S. § 176 *et. seq.*

b. Pre-Permit Review for New Connections

Pre-Permit review is the first step in the application process for a new Sewer Connection Permit. The Pre-Permit review process can either be initiated by the engineering firm, the Plumber, or the contractor.

To apply for a Sewer Connection Permit, the applicant must submit documentation and obtain Pre-Permit approval from the Water Department, according to the steps listed below.

a. Assign a communication liaison to coordinate with PWD Water Transport Records (WTR) as well as all other parties involved in the project. This may include but is not limited to the design engineer, general contractor, Plumber, etc. The liaison will coordinate all related e-mails, phone calls, and meetings.

b. To apply for your Pre-Permit(s), email WTR@phila.gov with the following:
    a. project address,
    b. approved Utility Plan,
    c. a list of each proposed lateral (pipe size, pipe material, lateral type,)
    d. and the Plumber's name and license number.

c. Public sewer availability, size, depth, and material have been previously provided through the records distributed via PA Design One call. This information can also be obtained by calling Water Transport Records at 215-685-6271.
    a. The public sewer must be core-drilled for all new saddle connections (standard and modified). The notation of core drilling must be included on the approved Utility Plan. The same method of connection must be mentioned in the email submission.
    b. If there are existing laterals on-site that need to be abandoned a separate permit application to L&I is required. L&I will issue a Lateral Seal Permit to make sure all existing connections are properly sealed.

d. Allow 1-2 business days for review of any Pre-Permit request. Submittals are reviewed in the order they are received.

e. PWD will issue a formal response to the applicant upon completion of the sewer connection review. This response will be made via e-mail and will include all applicable Pre-Permit identification numbers.

c. Permitting for New Connections

After the Pre-Permit is created, the applicant shall apply for a Sewer Connection(s) Permit (from PWD) and a Plumbing Permit (from L&I). The connection(s), footway, and street opening permits are all included within a single Pre-Permit application that will be completed by the PWD Permit Desk at MSB. The Sewer Connection Permit is required for the sewer connection point and lateral up to the curb trap.

The Plumbing Permit is for on-site work up to and including the curb trap, but not including the lateral and the connection. See Appendix A5 for this diagram.

To apply for a Sewer Connection Permit (for a new connection), follow the instructions below. Please note these instructions may have been updated since the posting of this Manual, and the most up to date version can be accessed here: https://water.phila.gov/development/connections/permits

a. Email Jason.Pezzetti@phila.gov or visit the PWD Permit Desk on the basement floor of the Municipal Services Building, 1401 John F Kennedy Blvd, Philadelphia, PA 19102. The following information and documentation are required:

    1. Pre-Permit application, completed and approved
    2. Plumber's name and registered license number
    3. OPA addresses for service *(shown on Pre-Permit application)*
        a. **NO AKA's will be accepted**
    4. Current PA-1 call number
    5. Size of street opening in approximate square feet (sq. ft.)
        a. 18 sq. ft. minimum; extra cuts increase square feet in 9 sq. ft. increments.
    6. Approved Utility Plan
    7. Sewer lateral size
    8. Sewer lateral type – Combined/Storm/Sanitary

    The PWD Permit Desk can be reached at the number listed in Appendix A7 for questions.

b. As mentioned above, a Plumbing Permit is required for L&I tracking. For instructions on how to apply for a Plumbing Permit, please visit the following website: https://www.phila.gov/services/permits-violations-licenses/apply-for-a-permit/building-and-repair-permits/get-a-plumbing-permit/ https://business.phila.gov/Documents/permits/plumbingpermit.pdf

Keep in Mind:

The Philadelphia Plumbing Code requires that applications for Plumbing Permits be submitted by a Master Plumber or their authorized agent in accordance with Chapter 3 of the Administrative Code. All Plumbing Permit applications shall have the Master Plumber's seal affixed.

Any Plumber who accepts a contract as a subcontractor from another plumbing or retail firm must indicate so on the Application for Plumbing Permit.

Any Master Plumber who starts work without securing the proper permits as required by the Plumbing Code and the Administrative Code shall be subject to having their license suspended or revoked in accordance with the provisions of Chapter 9, Section 0-1003(8) of The Philadelphia Code.

D. Existing Sewer Connections

To obtain a permit to repair an existing lateral[2], Utility Plan Review and Pre-Permit Review are not required[3]. The Plumber must obtain proper City permits prior to beginning excavation. The Sewer Connection Permit (for repairs) pertains to an existing lateral and connection with no additional fixtures or drainage area and does not permit any new public sewer penetrations. The Plumber may apply for this Permit at the PWD Permit Desk within the basement floor of the Municipal Services Building (MSB – 1401 JFK Boulevard). At this time, a street opening, and footway opening may be added to the Sewer Connection Permit.

Depending on the section of pipe requiring repair, a Sewer Connection Permit (from PWD) and/or a Plumbing Permit (from L&I) may be required. See below for which permit is required for the drainage system segment requiring repair:

Work Being Done	Type of Permit Needed
Main House Drain	Plumbing Permit (L&I)
Curb Trap	Plumbing Permit (L&I)
Vent Pipe	Plumbing Permit (L&I)
Sewer Lateral	Sewer Connection Permit (PWD)
Stub/Slant	Sewer Connection Permit (PWD)

To apply for a Sewer Connection Permit (to repair an existing lateral/connection), follow the instructions below. Please note these instructions may have been updated since the posting of this Manual, and the most up to date version can be accessed here: https://water.phila.gov/development/connections/permits

a. Email Jason.Pezzetti@phila.gov or visit the PWD Permit Desk on the basement floor of the Municipal Services Building, 1401 John F Kennedy Blvd, Philadelphia, PA 19102. The following information and documentation are required:
    1. Plumber's name and registered license number
    2. OPA addresses for service
        a. **NO AKA's will be accepted**
    3. Current PA-1 call number

[2] Please note, a job is considered a repair when a section or entirety of an existing lateral is replaced or repaired. Proposing to change the size of an existing lateral is automatically considered a new connection, which requires both Utility Plan and Pre-Permit approvals.

[3] Please note that while proposing to repair a lateral does not trigger a Utility Plan Review, the project is not exempt from the Utility Plan Requirement if other aspects trigger their review.

4. Size of street opening in approximate square feet (sq. ft.)
    a. 18 sq. ft. minimum; extra cuts increase square feet in 9 sq. ft. increments.
5. Sewer lateral size
6. Sewer lateral type – Combined/Storm/Sanitary

b. Should a repair job be considered an emergency, the Plumber may start work immediately, but must obtain all proper permits within three (3) days of starting.

c. It is the Plumber's responsibility to determine the extent of repair work required.

E. Inspection Scheduling for New Connections and Repairs

When the Plumber receives the Sewer Connection Permit (PWD) they must call the Water Transport Records Unit to schedule the inspection of the connection or repair work.

1. Connections to the public sewer must be inspected by a PWD inspector from the start of connection/repair to the completion of backfilling 1-foot over the City Sewer. The duration of the backfill is to be completed in accordance with the Philadelphia Streets Department Regulations for Opening and Restoring Street Openings. Please utilize the following link to refer to these Regulations: https://www.phila.gov/documents/regulations-for-opening-and-restoring-street-openings/

2. **The Plumber must notify PWD at 267-455-4460 *at least* 48 hours before excavation to schedule the inspection**. A work order confirmation number can be provided at this time. As the schedule is based on workload and availability the contractor should call as soon as possible to schedule their inspection.

3. In the event of an emergency repair, additional fees may be assessed with the use of the off-hours inspection scheduling.

F. Working in the Street

Street excavations, closures or detours, trenching, compaction, pipe support, backfilling and pavement restoration shall conform with the Regulations of the Streets Department. Please utilize the following link to refer to these Regulations: https://www.phila.gov/documents/department-of-streets-regulations/.

When working near PWD Infrastructure, refer to the Working in the Street: Excavation and Access near PWD Infrastructure for further guidance. This resource can be found on PWD's Contractor Resources site, located at: https://water.phila.gov/contractors/

For more guidance on working near PWD Green Stormwater Infrastructure (GSI,) refer to Appendix A10.

a. Boring or tunneling in the public right-of-way is generally not permitted. Written approval must be obtained from the Water Department and the Streets Department Chief Engineer of the Highway Division prior to boring or tunneling in the public right-of-way.

G. Excavation

a. Information about underground infrastructure obtained during Pre-Permit or Utility Plan Reviews should be verified in the field. A PA One Call request must be filed to obtain and mark-out water, sewer, and green infrastructure records. Infrastructure location data provided by PWD is for information only and the accuracy of such data should be independently verified by the contractor, in the field, prior to connection installation.

b. If a utility has been exposed and/or damaged during excavation, it is the excavator's responsibility to promptly notify the utility owner so the line may be inspected and repaired, if necessary, before being backfilled. The PA1Call site has a Facility Owner List that can be used to help identify the proper contact: https://phoenix.pa1call.org/userlist/default.aspx?_gl=1*azw6jz*_ga*Njg1OTkzNDc4LjE2OTUzMTI3Njg.*_ga_HXET6LT8T6*MTY5NTMxMjc2OC4xLjEuMTY5NTMxMzc0NS4wLjAuMA

c. If the contractor hits or damages PWD infrastructure while digging, they should make the area safe, maintain flow and immediately call PWD. If a sewer has been damaged, please call both PWD Sewer Maintenance at 215-685-2024 and the WTR inspector(s) at 267-455-4460. If a water main or water service has been damaged, please call PWD Customer Service at 215-685-6300. Please note that PWD Sewer Maintenance may not be able to get to the site immediately, and the plumber is responsible for the work zone, location, and ditch safety until PWD arrives.

d. Shoring shall be installed in ditches and trenches according to OSHA regulations. Failure to excavate and shore according to OSHA's Trenching and Excavation resources (https://www.osha.gov/trenching-excavation/resources) may result in a stop work order and/or other penalties at OSHA's discretion.

e. **When a Plumber excavates a ditch, and finds a void, cavity or undermining under the street's surface, the Plumber must immediately contact the Streets Department District Highway Yard Supervisor** (See Appendix A8 for contacts). The Highway Yard will investigate and, depending on its findings, the Plumber will be issued a void verified report so that the Plumber will not be billed for the extent of the void in the roadway. Should the Plumber fail to notify the Streets Department, extra costs may be imposed on them.

f. The Streets Department will provide fill and not charge for an oversize ditch if all steps are taken to document the findings. For protection, take photos and contact the closest yard.

g. During any excavation, please be mindful of neighbors and the safety of pedestrians, bikers, and drivers.

H. Making the Connection or Lateral Repair

Lateral pipe shall be properly constructed, installed, and maintained and shall be in accordance with the standards in this Manual. Sewer connections shall be properly and securely made in accordance with the standards in this Manual.

a. The connection procedure may only begin when the PWD inspector arrives.

b. The Plumber must provide a copy of the Sewer Connection Permit, proof of payment, and all proper City permits prior to starting the connection or repair operation.

c. The Plumber is required to sign the inspection report when the inspector arrives. Examples of the inspection reports can be found in A2 and A3 of the Appendices.

d. The Plumber must install the connection per the approved drawing, details, and approved procedure and in accordance with the Philadelphia Plumbing Code and PWD Regulations.

e. The lateral must be in alignment with the cored hole or stub / slant. No deflection is permitted beyond the manufacture's acceptable tolerance for an approved pipe material joint. Approved fittings and bends are required for any deflection or change in direction greater than the pipe manufacturer's allowable deflection. No field fabricated bends are permitted.

f. If an existing stub / slant is found in the field, where the connection is proposed, it can be used if it is in good condition. The stub / slant needs to be verified by the inspector on-site. If given approval by the inspection, the stub /slant can also be removed to use the existing hole into the City Sewer.

g. The Department does not recommend the reuse of any laterals in replacement of a new connection.

h. It is the responsibility of the Plumber on site to dig with care and verify all utility location information. If a Plumber causes or discovers any damage to public or private infrastructure or property during any work covered by this Section, the Plumber shall notify the Water Department immediately. The Water Department, upon being notified of such damage caused by the Plumber, may order the Plumber to make any emergency repairs to public or private infrastructure at the Plumber's expense.

i. If connection to the public sewer or a repair to an existing lateral is not made per the approved drawing and procedure as detailed in this Manual, or is not otherwise approved by the WTR inspector, the Plumber will be given a chance to

correct the inadequate connection or repair. If the Plumber refuses to make a connection or repair that complies with the Sewer Connection Regulation, the following actions may also occur:

1) PWD may revoke the Sewer Connection Permit,
2) PWD may report the Plumber to L&I for disciplinary action such as license suspension or revocation,
3) The Plumber may be ordered to stop work immediately, and/or
4) PWD may issue the property a notice of violation.

j. For new connections, in the event of a field change where the proposed connection construction does not match the permits presented, all connection work must stop. The Master Plumber to which the Sewer Connection Permit is issued to must submit a revised Utility Plan to confirm the work can continue as permitted, or the existing Permit must be cancelled, and a new Pre-Permit created.

k. The ditch must be secured until the completion of backfilling. Safety may include the use of cones, plating, and signs.

I. Connection Procedure Guidelines

To protect our infrastructure, PWD prefers a core drill connection over a WYE connection. While there are scenarios where a WYE connection is required, the connection method must be approved by PWD via the Utility Plan and the PWD inspection once they confirm field conditions.

Objectives:

1. To make a sound connection to City's sewer lines in compliance with PWD Standards.
2. The connections should not jeopardize the structural integrity of the existing sewer lines.
3. The connections should not jeopardize or compromise the operation and flow of the existing sewer lines.

Modified and Standard Saddle Connection Installation Procedure:

1. Excavate safely to expose the existing sewer pipe without damaging it.
2. Excavate a ditch wide enough to accommodate coring the existing sewer pipe and concreting the connection joint to 1-foot past the edge of the cored opening in all directions.
3. Contractors should perform the connection in a safe manner, and per OSHA regulations.
4. Shoring shall be installed in ditches and trenches as per OSHA regulations or as regulated by PWD. **Violation of this provision will result in a Stop Work Order and/or penalties prescribed by law.** *(Refer to OSHA's Trenching and Excavation resources: https://www.osha.gov/trenching-excavation/resources)*

5. **MODIFED SADDLE CONNECTIONS:** For a modified saddle connection, contractors must encase the sewer in concrete 24 hours prior to core drilling
6. Core drill a hole not more than 1-inch larger than the outer diameter of the connecting pipe or saddle.
7. Prevent any pieces of cored section or debris from falling into the sewer.
8. Remove all broken pieces or debris that fall into the sewer.
9. Caulk the interior surface of the cored area with non-shrink or epoxy mortar.
10. Cut a saddle long enough on the bell-end side so that, when inserted into the cored hole, it will be flush with the inside face of the sewer wall, or with no more than 1-inch protrusion into the sewer pipe, so that the bell end rests on the sewer pipe.
11. Fill the annular space between the saddle and the sewer pipe with approved caulk or non-shrink mortar.
12. Secure the saddle.
13. Connect the first piece of the lateral pipe to the saddle.
14. Form the outside of the connection joint so that a 12-inch-thick concrete collar could be placed around the connection joint.
15. Place a minimum of 2000 PSI concrete collar extending 12-inch around the joint.

WYE Connection Installation Procedure:

1. Contractor is responsible for controlling the flow during the connection.
2. The Contractor is to obtain information about the flow rate prior to commencing the connection. This may be obtained by opening a manhole and measuring the flow (flow can vary).
3. For high flow rate the contractor shall submit a Bypass method for approval.
4. For low flow rate the contractor may be able to direct the flow through the opened section.
5. The contractor must select the proper size WYE and align the inverts.
6. Excavate safely to expose the existing sewer pipe without damaging it.
7. Excavate a ditch wide enough to accommodate the WYE and the CUT-OFF walls.
8. Contractors should perform the connection in a safe manner and per OSHA regulations.
9. Shoring shall be installed in ditches and trenches per OSHA regulations, or as regulated by PWD. **Violation of this provision will result in a Stop Work Order and/or penalties prescribed by law.** *(Refer to OSHA's Trenching and Excavation resources: https://www.osha.gov/trenching-excavation/resources)*
10. Use a minimum of 2000 PSI concrete for the concrete CUT-OFF wall.
11. Allow at least 24 hours for the concrete to harden before cutting the sewer pipe.
12. Cut the sewer pipe so that the WYE section will fit in tightly.
13. Prevent any debris from flowing into the sewer.
14. Clean the bottom of the opened area from loose and soft soil if no cradle, and place stone in the middle leaving 12 inches below the joints for concrete collar.
15. Insert the WYE section in place immediately, seal the joints and construct a 18-inch concrete collar around both joints.
16. Use a minimum of 2000 PSI concrete collar, the collar shall be 18-inches wide centered around the pipe joints and extend 9-inches around the larger diameter sewer.

J. Backfilling

For more information, please refer to the Streets Department Backfill Notices Site for Professional Plumbers: https://stsweb.phila.gov/plumberbackfill/

The fresh air inlet(s) shall be visible and accessible for inspection at all times.

a. No backfilling shall commence until the sewer connection and/or any drainage system component(s) has been properly installed, inspected, and approved by the City.

b. The Plumber must notify the inspector of the time of backfilling. Failure to notify the WTR inspector of the backfilling schedule may result in a notice of violation and an unapproved connection. The Plumber must coordinate with the inspector should the backfilling schedule change.

c. When the Plumber is finished making the sewer connection or drainage system repair, they must backfill the ditch. See Appendix A4 for connection details.

d. The WTR Inspector may witness the beginning of backfilling, which consists of the completion of backfilling 1-foot over the City Sewer.

e. Ditches must be carefully backfilled with the materials approved by the Streets Department. See Appendix A1 for the definition of "Acceptable Fill."

f. Clean fill may be obtained free of charge at any of the Streets Department Highway Division Yards during business hours. See Appendix A9 for locations and contact numbers. Be advised, documentation will be required to obtain the fill and there will be a limit to the amount of fill to be made available to the customer. Transport and delivery service are not available.

g. The backfill shall be thoroughly compacted in layers of no more than six inches by rolling and tamping with mechanical rammers. Hand tamping with heavy iron tampers is permissible in the footway only.

h. Should the work not be completed by the end of the workday the Plumber must secure the excavation by either backfilling and excavating the next day or using steel plates in accordance with Philadelphia Streets Department Regulations. Please utilize the following link to refer to these Regulations: https://www.phila.gov/documents/department-of-streets-regulations/.

i. The street opening shall be secured by topping the fill with an asphaltic cold mix paving material rolled level with the surrounding roadway surface. Section 11(4) of the Philadelphia Streets Department Regulations outlines proper care and backfilling techniques. Should improper backfilling techniques be found, the PWD inspector will notify the Streets Department immediately. Please utilize the following link to refer to these Regulations: https://www.phila.gov/documents/department-of-streets-regulations/.

j. If the opening is in the street (cartway), the Plumber must notify the Streets Department when backfilling and patching is complete. The Streets Department will then schedule the permanent restoration of the ditch. **The Plumber is responsible for keeping the ditch in a safe condition for 30 days after the backfill notification is received by the Streets Department or until the Streets Department begins the permanent restoration, whichever comes first**. Please refer to the following webpage for backfill notification instructions: https://www.phila.gov/services/streets-sidewalks-alleys/submit-a-plumber-backfill-notification/#:~:text=Contact%20PWD%20at%20(215)%20685,openings%2C%20excavations%2C%20and%20restorations.

k. See Appendix A6 for the typical curb and footway construction detail.

VI. Connection Standards

A. General Requirements for Sewer Connections

Please refer to section 504.6 of the PWD Regulations for General Requirements for Sewer Connections: https://water.phila.gov/regulations/

All sewer connections must be core drilled, unless otherwise approved by the Water Department in writing.

a. Strictly Prohibited Connections and Configurations

Private plumbing connections to the following are strictly prohibited:

- Force mains.
- Inlets.[4]
- Inlet laterals.
- A sewer with insufficient capacity.

The following configurations are strictly prohibited:

- A stormwater lateral or combined stormwater and sanitary lateral connection to a sanitary-only public sewer.
- A sanitary lateral or combined stormwater and sanitary lateral connection to a stormwater-only public sewer.
- A sewer connection from an ejector or pumped system.
- A lateral intruding into the public sewer.

b. Generally Prohibited Sewer Connections

The following types of sewer connections are generally prohibited but may be reviewed and approved by the Water Department on an individual basis if the applicant shows an extreme hardship.

[4] i.e., City Storm inlets

Sewer connections to:

- Intercepting sewers.
- Manholes.
- Dry weather outlet pipes.

c. Enhanced Review and Approval

The following types of drainage system connections require enhanced review and may be approved on a case-by-case basis by the Water Department.

Drainage system connections:

- To a public sewer or private sewer draining to a sanitary pump station.
- To a previously lined public sewer.
- Larger than 6 inches in diameter.

House traps and fresh air inlets shall be installed according to the Philadelphia Plumbing Code.

B. Requirements for Laterals

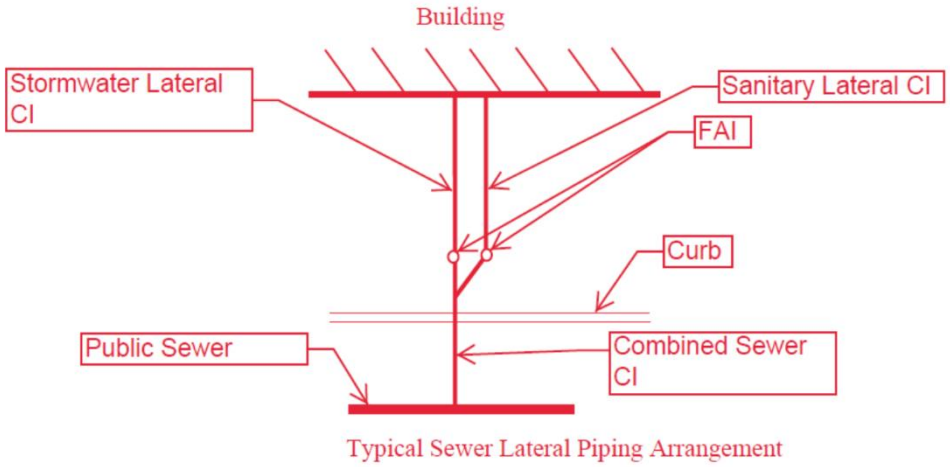
Please refer to section 504.7 of the PWD Regulations for Specific Requirements for Sanitary Sewer and Combined Sewer Laterals: https://water.phila.gov/regulations/

A sanitary lateral shall be no smaller than 5 inches in diameter.

A storm water lateral shall be no smaller than 6 inches in diameter.

A combined sanitary and storm water lateral shall be no smaller than 6 inches in diameter.

When connecting to a combined sanitary and stormwater public sewer, separate sanitary and stormwater laterals within a drainage system may only be combined after the approved house traps. Combined lateral arrangements are restricted to a 5-inch sanitary lateral and a 6-inch stormwater lateral (the 5-inch sanitary must WYE into the 6-inch stormwater lateral to form the 6-inch combined lateral, *as seen in the image below*) for one- and two-unit residential buildings only, and where approved by the Department.



Typical Sewer Lateral Piping Arrangement

When connecting a sanitary lateral to a sanitary-only public sewer and a stormwater lateral to a stormwater-only public sewer, the sewer connection of the sanitary-only lateral shall be downstream of the sewer connection of the stormwater-only lateral, in relation to the flow of the public sewer. When connecting to separate sanitary-only and stormwater-only public sewers, combining laterals is prohibited.

New stormwater connections subject to PWD Regulations Chapter 6 (Stormwater Management), lateral pipe, including any pipe providing slow release or overflow drainage from a stormwater management practice, and connecting to any type of sewer shall, if applicable, shall be designed in accordance with PWD Regulations Chapter 6.

C. Core Drilling Required

The existing sewer must be core-drilled for all new saddle connections (standard and modified). The notation of core drilling must be included on the Utility Plan for PWD Pre-Permit review.

A core drill, associated with a saddle connection, is the only method of connection in which the outer diameter of the connecting pipe is less than 50% of the inner diameter of the existing sewer. Please note that certain materials, such as VCP and RCP, significantly increase the size of the outer diameter and may affect the permitted connection method.

Should a brick sewer be field verified as single ply, the interest of the Department is protecting the integrity of the sewer. A connection of 5- or 6-inches may utilize a freehand coring machine, while a larger connection would require a modified saddle connection. This would include encasing the sewer in concrete prior to core drilling, thus protecting the integrity of the sewer.

Any means of connection to public sewer other than a core-drilled saddle connection must be specifically reviewed and approved by the Department on a case-by-case basis.

D. Connection Type

The connection size and type must not jeopardize the normal operation and integrity of the public sewer. In the event of adjacent connections, the distance between them must be greater than two diameters of the larger proposed connection. Example: The distance between two 6-inch connections must be greater than 12-inches.

Acceptable connection types include:

- Standard saddle
- Modified saddle
- Prefabricated WYE branch
- Use of a stub / slant

See Appendix A4 for connection details.

Connections will not be permitted at the pipe joints or bells.

The City has authority to reject a proposed connection to an available stub / slant and require a field change submission to Utility Plan Review.

E. Materials

Please refer to section 504.9 of the PWD Regulations for Material requirements: https://water.phila.gov/regulations/

1. Lateral pipe shall be constructed of ductile or cast iron, pre-cast reinforced concrete (RCP), or vitrified clay (VCP), conforming to the following standards:

    - Cast iron pipe: ASTM A74; ASTMA 888; CISPI 301
    - Ductile iron pipe: ANSI/AWWA C150 /A 21.50-81, Class 56 wall pipe
    - Reinforced concrete pipe: ASTM C14; ASTM C76; CAN/CSA A257.1M; CAN/CSA A257.2M
    - Vitrified clay pipe: ASTM C 4; ASTM C 700

2. All lateral pipe sections shall be joined with bell and spigot joints, made tight with oakum, cement, rubber O-ring or other joint compounds or materials approved by the Water Department. No hub pipe connections are prohibited.

    - Plastic pipe, including ABS and PVC, shall not be used for lateral construction in the cartway.

3. The Master Plumber shall be responsible for establishing the suitability of the alternative material to the Water Department prior to approval and use.

Portions of laterals constructed outside of the street (cartway) shall be constructed in accordance with the Philadelphia Plumbing Code, as approved by L&I.

VII. Enforcement

The City is authorized to revoke a Sewer Connection Permit when:

1. The Sewer Connection Permit was issued in error or was issued based on incorrect, inaccurate, or incomplete information in the application.
2. The Sewer Connection Permit was issued based on false statement or misrepresentation of fact in the application.
3. Any plumbing work for which the permit was granted is done in violation of Philadelphia Code or any regulations promulgated pursuant thereto or fails to pass any inspection or test conducted by City.
4. Work is being conducted in an unsafe manner.
5. A stop work order or cease operations order has been issued.

Failure to comply with the requirements of the Sewer Connection Regulation, or to maintain in good working order any portion of the property's drainage system, shall evidence an immediate hazard to health or public or private property and shall result in the issuance of a notice of violation in accordance with the procedures of the Philadelphia Administrative Code, and/or may result in the assessment of such other penalties as may be provided by law. In addition, as a result of the continuing violation and as stated in the notice of violation, the City may suspend water service at any time to prevent an immediate hazard to health or public or private property, in accordance with the Philadelphia Administrative Code.

If a violation of the Sewer Connection Regulation as described in an issued Notice of Violation is not corrected, or if public health, safety, or public or private property is in jeopardy, the City may correct the violation itself or by contract. The property owner(s) shall be responsible for the full cost of repair and shall be billed for such costs by the City. If the property owner(s) fails to pay the bill in the time allowed, the City may take all additional enforcement measures permitted by law.

If a Plumber fails to meet his or her obligations under the Sewer Connection Regulation, the City may enforce the penalty provisions of Philadelphia Code § 9-1003(8) (license suspension and revocation). The City may also require the Plumber to correct improper or unsatisfactory work. If, after notice from the City, a Plumber fails to correct unsatisfactory work, the City may correct the violation and invoice the Master Plumber for time and materials. The Water Department may withhold permits from a Master Plumber who fails to pay such an invoice, or who fails to resolve a legitimately disputed invoice.

APPENDIX

A-A. Definitions

Acceptable Fill: A natural subsoil comprised of gravel, crushed stone, sand, clayey sand, silty sand, or any combination of these materials. The soil shall be free of any material that could negatively affect the performance of the soil, including but not limited to: organic soils and organic materials, refuse/trash, rocks or concrete larger than two inches, pipe or pieces of pipe, or asphalt and asphaltic materials. Excavated soils can be reused, provided they meet the criteria for acceptable fill, are not overly wet, and can be compacted as per the Department's requirements. [5]

Curb Trap: see House Trap.

Drainage System: The piping within *public* or *private* premises but outside of a building or dwelling which conveys sewage, rainwater or other liquid wastes from a property to a point of disposal.

Fresh Air Inlet: A connection to the Drainage System to permit the circulation of air through the system. May also be referred to as a vent.

Green Stormwater Infrastructure (GSI): A range of soil-water-plant systems that reduce stormwater pollution and combined sewer overflows by intercepting stormwater, infiltrating a portion of it into the ground, evapotranspirating a portion of it into the air, and in some cases releasing a portion of it slowly back into the sewer system.

House Drain: That part of the lowest horizontal piping of the drainage system that receives the discharge from soil, waste, or other drainage pipes in the building or on the premises and conveys it to the existing lateral, sewer, cesspool, or septic tank.

House Trap: A running trap installed in the House Drain to prevent circulation of gases between the Drainage System of a premises and the Public Sewer; also known as a curb trap when installed on the footway.

Lateral: The portion of the drainage system that extends from the Public Sewer to the House Trap.

Licenses and Inspections (L&I): The Department of Licenses and Inspections, an operating department of the City of Philadelphia.

Manual: The current version of the Philadelphia Water Department Sewer Connection and Repair Manual.

Master Plumber: A person who has obtained an active Master Plumber license from the City of Philadelphia, and who is regulated under Philadelphia Code § 9-1003.

[5] The Philadelphia Streets Department Amendments to Regulations Governing Street Openings, Excavations, and Restoration.

Plumber: A Master Plumber, journeyman Plumber, or apprentice Plumber registered and/or licensed to install plumbing in the City of Philadelphia, and who is regulated under Philadelphia Code § 9-1003.

Private Sewer: A sewer that is not part of the City's Public Sewer system and is owned and maintained by the connected property owner(s).

Public Sewer: A sewer main and associated Sewer Appurtenances owned by the City of Philadelphia and maintained by the Water Department.

Sewer Appurtenances: The various accessories on the public sewerage system necessary for the efficient operation of the system. Sewer Appurtenances include manholes, lampholes, street inlets, catch basins, and inverted siphons.

Sewer Connection: The point of connection between the Drainage System of a building or premises and the Public Sewer, or the point of connection between a Private Sewer and a Public Sewer.

Sewer Connection Permit: A permit authorizing a Sewer Connection and/or Lateral Repair, which shall distinguish between the installation of a new Sewer Connection and/or Lateral and the repair or reconnection of an existing Sewer Connection and/or Lateral.

Sewer Connection Regulation: The current version of Section 504.0 of the Philadelphia Water Department Regulation - Requirements for Sewer Connections.

Slant: The prefabricated fitting connecting the Lateral to the Public Sewer.

Stormwater: Any flow occurring during or following any form of natural precipitation and resulting therefrom.

Stormwater Management Practice (SMP): Any man-made or natural structure, system, landscape feature, channel, or improvement designed, constructed, installed, and/or used to detain, infiltrate, or otherwise control stormwater runoff quality, rate, or quantity.

Street Opening Permit: The permit required by the Philadelphia Code and/or Philadelphia Streets Department Regulations and issued by the Streets Department to open or excavate within the City right-of-way.

Streets Department: The Philadelphia Department of Streets, an operating department of the City of Philadelphia.

Trap: A fitting or device that provides a liquid seal to prevent the back passage of sewer gases without materially affecting the flow of sewage or wastewater through it.

Utility Plan: A full-size engineering plan to be submitted to the Utility Plan Review group for their review and approval. This plan must show the scope of the whole development project, a project description, all existing and proposed private and public infrastructure, etc.

Wastewater: The liquid and waterborne wastes from dwellings, commercial buildings, industrial facilities, utility structures, institutions and construction sites, together with any groundwater, surface water and stormwater that may be present.

Water Department: The Philadelphia Water Department, an operating department of the City of Philadelphia.

PWD Permit Desk: Water Department unit in the basement floor of the Municipal Services Building (MSB) that provides permits related to water and sewer connections. May also be referred to as “PWD Counter” or “Water Desk.”

Water Transport Records: A unit within the Water Department responsible for the management of water, sewer, and green infrastructure records. Its personnel also assist in the Pre-Permit approval processes of connection and Sewer Access Permits.

A-B. New Sewer Connection Inspection Report

Date: _____

Time: _____

Project Address: _____

Connection Permit Number: _____

Plumber Name: _____

Plumber Address: _____

Telephone Number: _____

Contractor: _____

In witness that inspection is taking place (Please Sign and Print):

Inspector: _____ **Plumber:** _____

Please note if any of the information above is missing, the connection cannot proceed

Connection Size: _____

Is this connection correctly represented on the Connection Permit? □ Yes □ No

In the case the above answer is no, work cannot continue until the WTR reviewer is contacted

Connection Type: □ Saddle □ Modified Saddle□ WYE

Connection Location: _____

Connecting Pipe Material: □ RCP □ CIP □ DIP □ VCP

Sewer Pipe Size & Depth: _____ **Condition:** □ Good □ Poor

Sewer Pipe Material: □ RCP □ CIP □ DIP □ VCP □ BRICK

Is excavation shored properly? □ Yes □ No □ N/A

Is the connection core drilled? □ Yes □ No □ N/A (WYE connection)

Is there less than 1" of penetration inside the sewer? □ Yes □ No

Was concrete placed properly (12" concrete collar)? □ Yes □ No □ **S**mall Connection

Was the connection installed as per drawings? □ Yes □ No

Date and time for backfilling inspection: _____

Was the backfill tamped? □ Yes □ No □ Other: _____

Is the backfill material 'acceptable'? □ Yes □ No □ Unknown

Was Streets Department Notified: □ Yes □ No (*Means of Notification*: □ E-mail □ Phone call)

□ **CONNECTION COMPLIES** □ **CONNECTION <u>DOES NOT COMPLY</u>**

Comments:_____

_____

A-C. Lateral Repair Inspection Report

Date: _____

Time: _____

Project Address: _____

Connection/ Repair Permit Number: _____

Plumber Name: _____

Plumber Address: _____

Telephone Number: _____

Contractor: _____

In witness that inspection is taking place (Please Sign and Print):

Inspector: _____ **Plumber:** _____

Please note if any of the information above is missing, the connection cannot proceed

Repair Type: □ House Drain (incidental only) □ Vent □ Lateral / Slant □ Curb Trap

Is this repair correctly represented on the Connection Permit? □ Yes □ No □ Emergency**

In the case the above answer is no, work cannot continue until the Permit is corrected

Repair Location: _____

Pipe Material: □ RCP □ CIP □ DIP □ VCP

Is excavation shored properly? □ Yes □ No □ N/A

Date and time for backfilling inspection: _____

Was the backfill tamped? □ Yes □ No □ Other: _____

Is the backfill material clean? □ Yes □ No □ Unknown

Was Streets Department Notified: □ Yes □ No (*Means of Notification*: □ E-mail □ Phone call)

□ **REPAIR COMPLIES** □ **REPAIR <u>DOES NOT COMPLY</u>**

Comments:_____

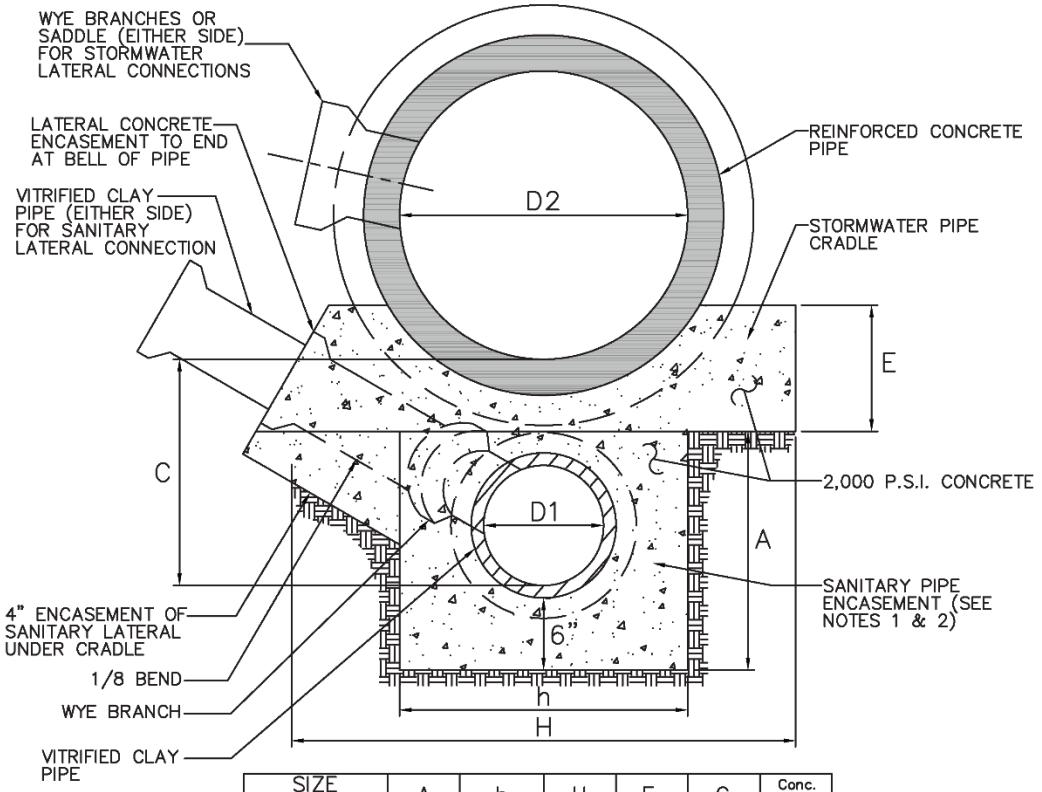
_____

** Permit must be obtained within 3 days of repair or replacement. Must be a **true** emergency.

A-D. Connection Details

Please refer to the **Standard Details and Specifications for Sewers** to locate the detail applicable to your development project: https://water.phila.gov/design/sewer-standard-details/

SEPARATE SEWER CONNECTION CROSS SECTION

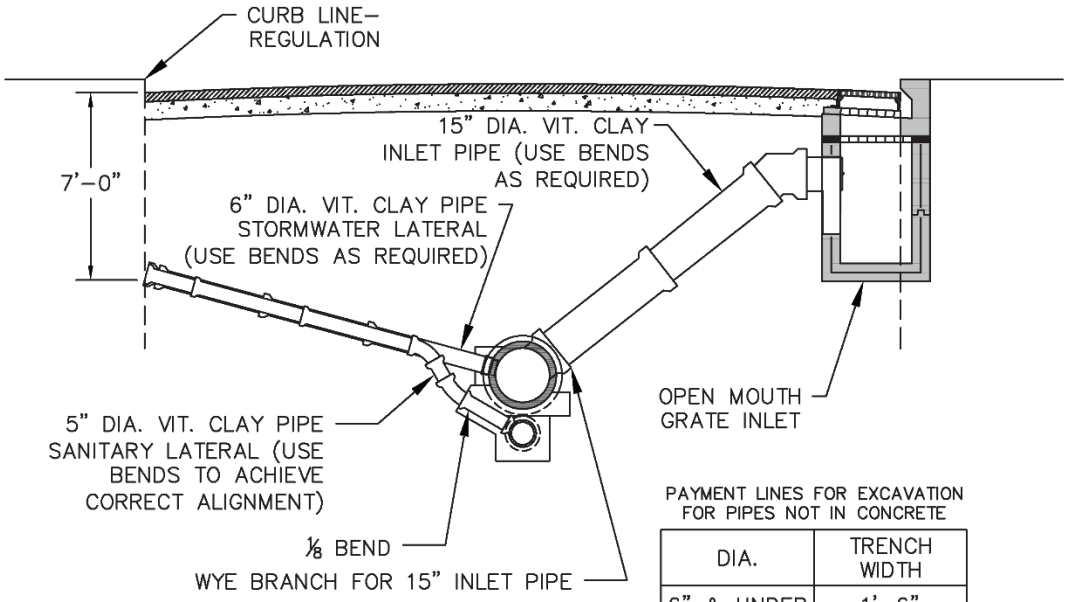


SIZE D1	SIZE D2	A	h	H	E	C	Conc. C.Y./L.F.
10"	18"	1.66'	2'–0"	3'–0"	9"	1.53'	0.154
10"	21"	1.66'		3'–3"	10"	1.55'	0.163
10"	24"	1.66'		3'–6"	10½"	1.57'	0.171
10"	27"	1.66'		3'–9"	11½"	1.59'	0.181
10"	30"*	1.68'		4'–1"	13½"	1.63'	0.194
10"	36"**	1.66'		4'–8"	15"	1.65'	0.217
10"	42"	1.92'		5'–4"	17"	2.04'	0.287
10"	48"	1.92'		6'–0"	19"	2.04'	0.322
10"	54"	1.86'		6'–8"	20½"	2.06'	0.358
12"	24"	1.84'	2'–2⅜"	3'–6"	10½"	1.74'	0.185
12"	27"	1.84'		3'–9"	11½"	1.76'	0.195
12"	30"*	1.86'		4'–1"	13½"	1.79'	0.208
12"	36"**	1.83'		4'–8"	15"	1.81'	0.230
12"	42"	2.10'		5'–4"	17"	2.21'	0.302
12"	48"	2.06'		6'–0"	19"	2.21'	0.338
12"	54"	2.04'		6'–8"	20½"	2.23'	0.375
12"	60"	2.00'		7'–2"	22"	2.23'	0.402
12"	66"	1.88'		7'–9"	25"	2.23'	0.457

NOTES:
1. SANITARY PIPE ENCASEMENT MUST CURE FOR 48 HOURS PRIOR TO SECOND POUR
2. HIGH EARLY STRENGTH (HES) CONCRETE MAY BE USED IF PROVEN TO NOT EXCEED 2000 PSI

*FOR 30" STORMWATER PIPE THE MAXIMUM BELL DIAMETER IS 39" TO AVOID IMPACT TO THE SANITARY PIPE
**FOR 36" STORMWATER PIPE THE MAXIMUM BELL DIAMETER IS 46" TO AVOID IMPACT TO THE SANITARY PIPE

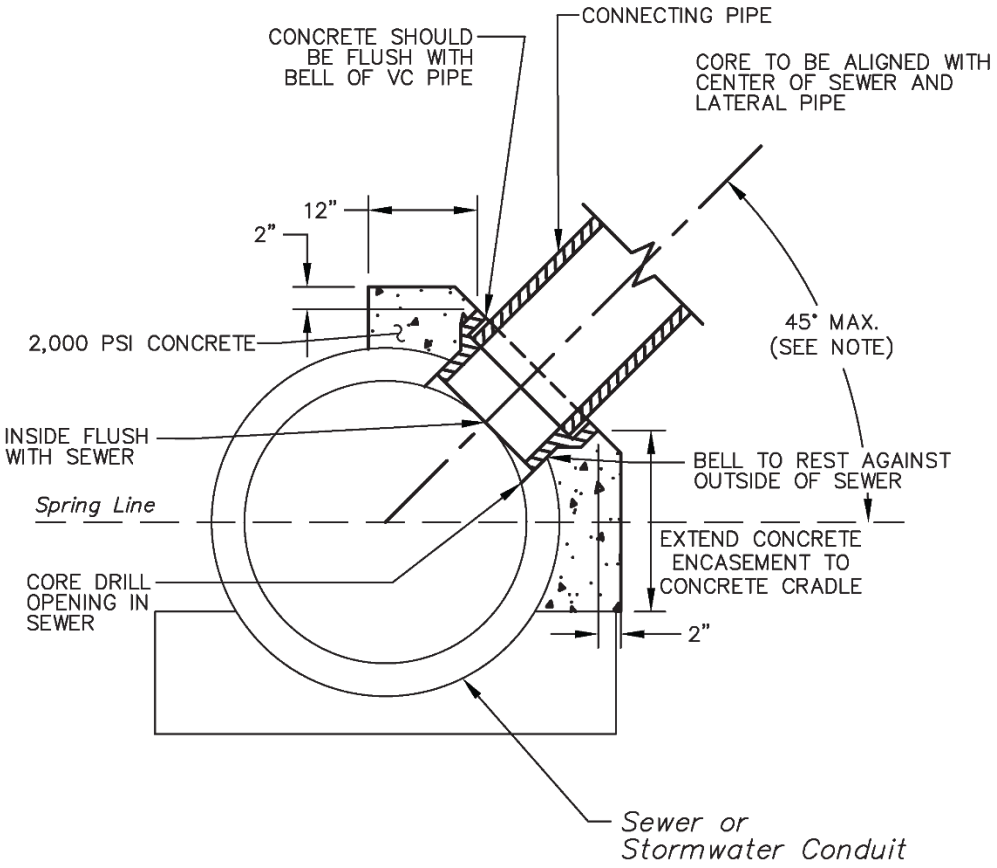
SEPARATE SEWER CONNECTION CROSS SECTION (CONT.)



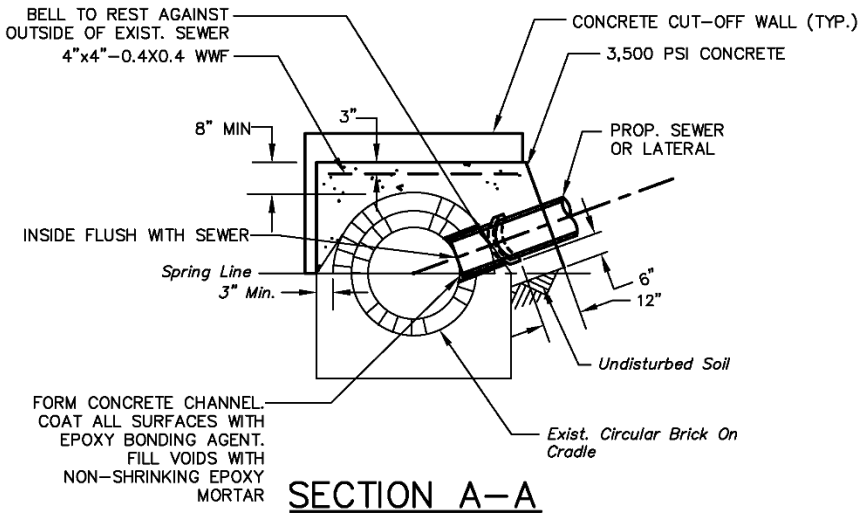
PAYMENT LINES FOR EXCAVATION FOR PIPES NOT IN CONCRETE

DIA.	TRENCH WIDTH
6" & UNDER	1'–6"
5" WITH 6"	2'–8"
8" TO 21"	ID + 16"
24" & OVER	ID + 24

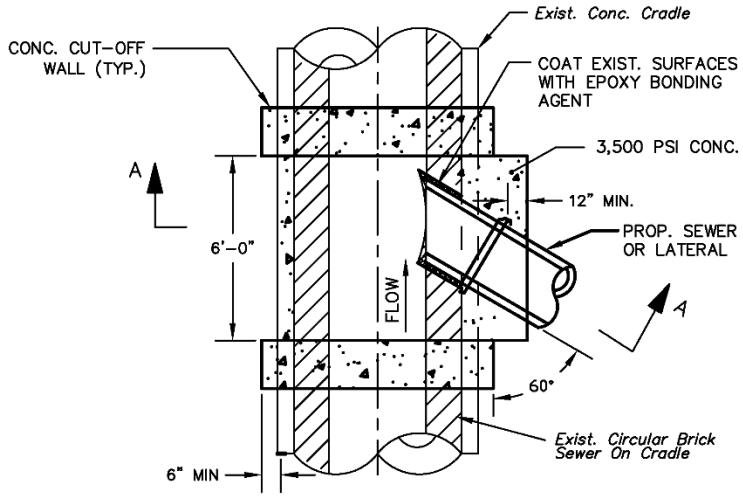
SADDLE CONNECTION



MODIFIED SADDLE CONNECTION TO CIRCULAR BRICK SEWER



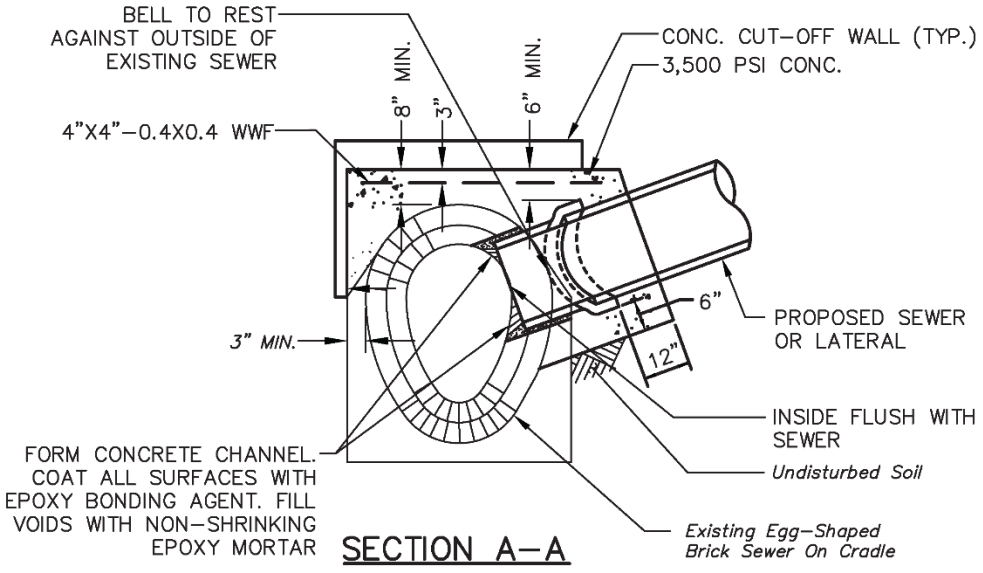
SECTION A–A

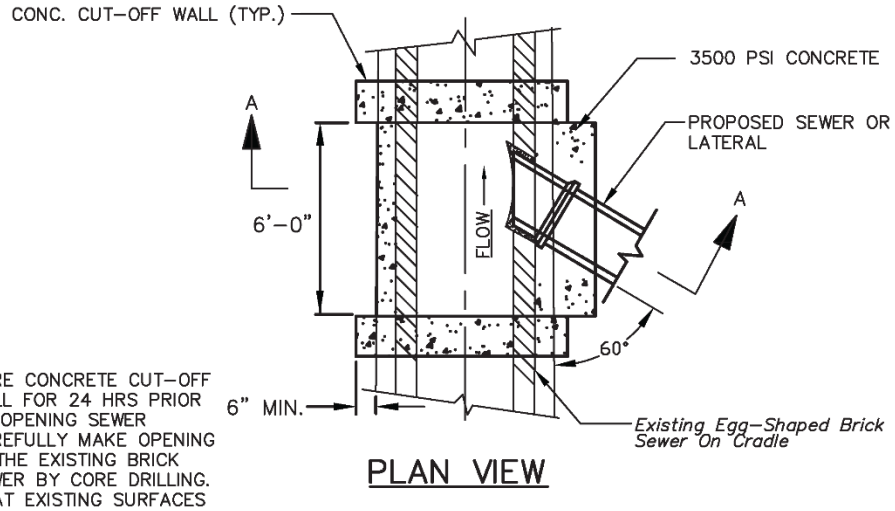


PLAN VIEW

NOTES:
1. CURE CONCRETE CUT–OFF WALL FOR 24 HRS PRIOR TO OPENING SEWER
2. CAREFULLY MAKE OPENING IN THE EXISTING BRICK SEWER BY CORE DRILLING
3. COAT EXISTING SURFACES WITH EPOXY BONDING AGENT

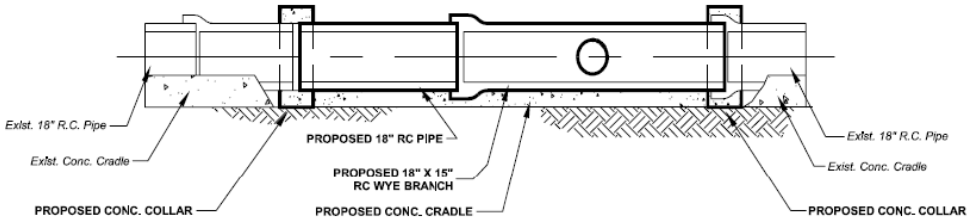
MODIFIED SADDLE CONNECTION TO EGG-SHAPED BRICK SEWER



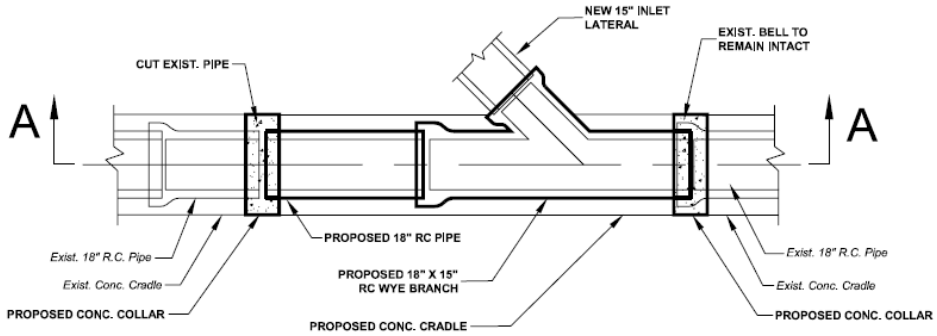


NOTES:
1. CURE CONCRETE CUT–OFF WALL FOR 24 HRS PRIOR TO OPENING SEWER
2. CAREFULLY MAKE OPENING IN THE EXISTING BRICK SEWER BY CORE DRILLING.
3. COAT EXISTING SURFACES WITH EPOXY BONDING AGENT.

WYE CONNECTION

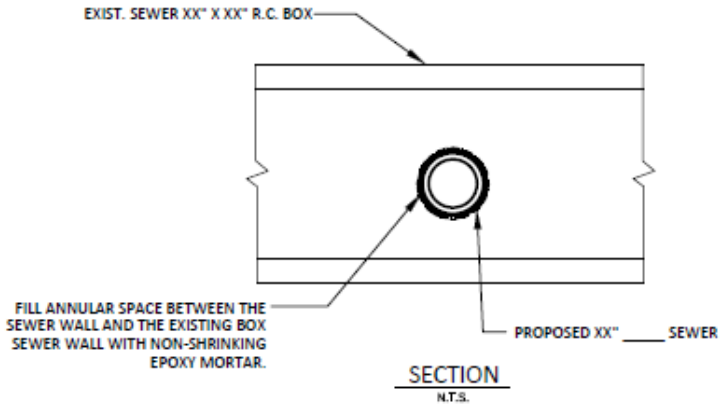


SECTION A-A
N.T.S.

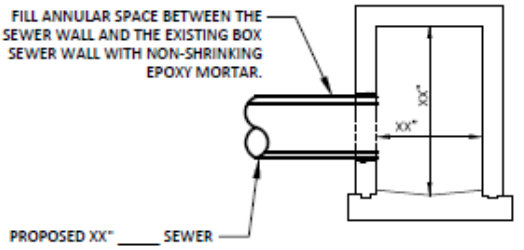


PRECAST WYE BRANCH CONNECTION DETAIL
N.T.S.

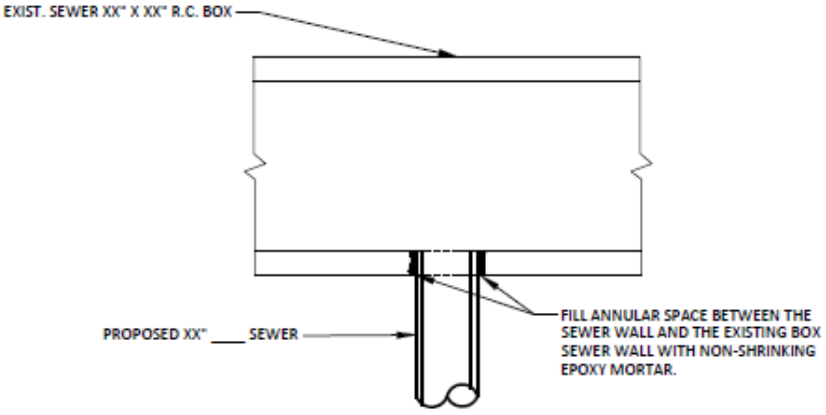
BOX SEWER CONNECTION



SECTION
N.T.S.



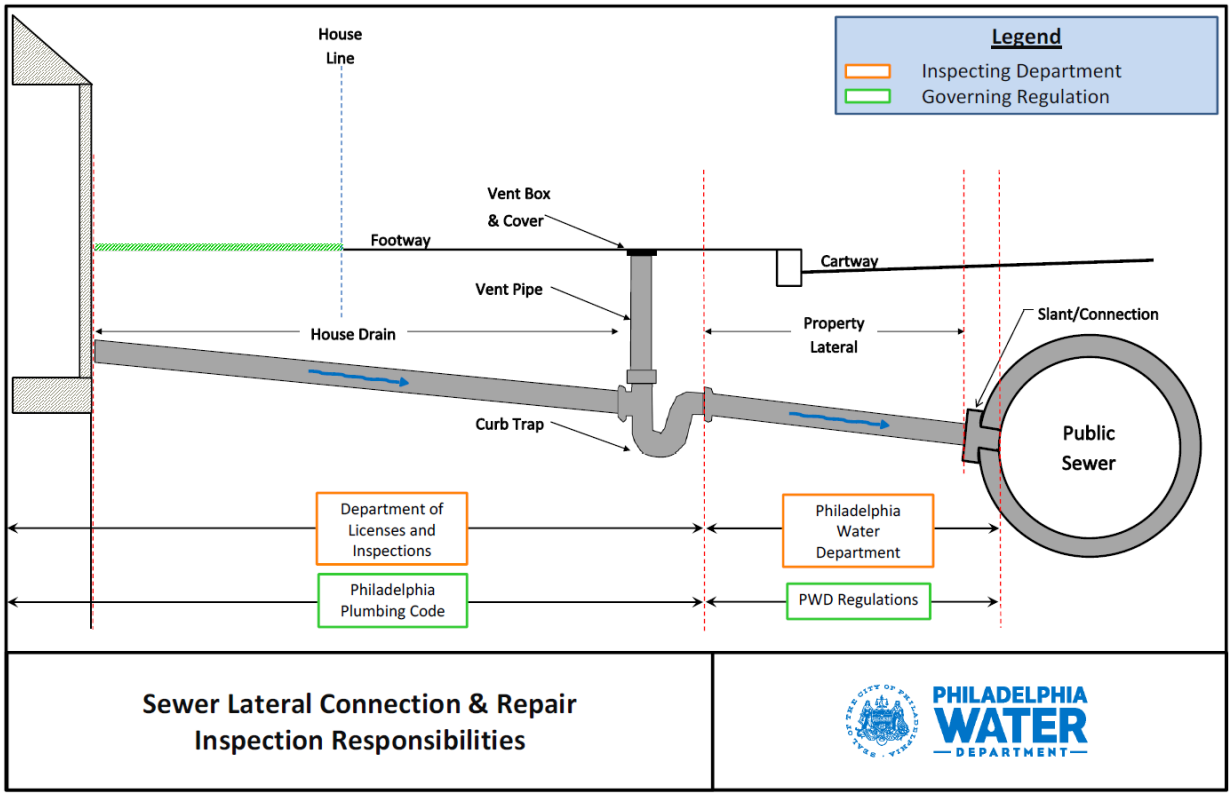
CROSS SECTION
N.T.S.



PLAN VIEW
N.T.S.

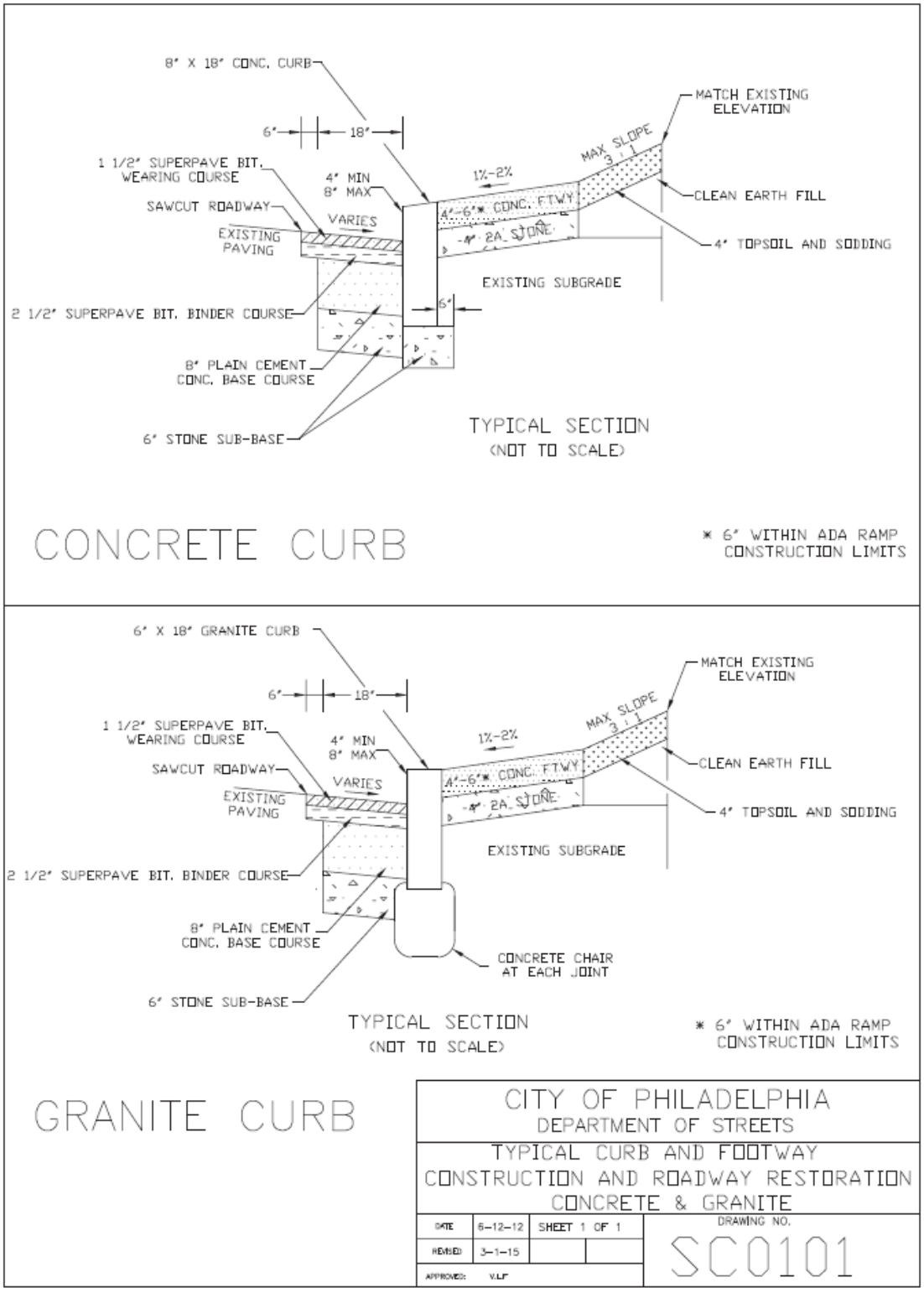
NOTE:
TO ACCOMMODATE THE NEW SEWER, THE CONTRACTOR SHALL DRILL 1" DIA. HOLES THROUGH THE BOX SEWER WALL IN A CIRCULAR PATTERN AROUND THE OUTSIDE DIAMETER OF THE NEW SEWER PIPE. THE HOLES SHALL BE DRILLED ON 2" CENTERS. ONCE THE HOLES HAVE BEEN DRILLED, THE EDGE CAN E KNOCKED OUT AND THE NEW PIPE INSTALLED. THE ANNULAR AREA BETWEEN THE NEW SEWER AND THE EXISTING SEWER WALL SHALL BE FILLED AND SEALED WITH A NON-SHRINK EPOXY MORTAR.

A-E. Inspection Responsibility Cross Section



A-F. Curb and Sidewalk Restoration Detail

Please refer to the Department of Streets Standards and Guidelines for the most up to date version of this resource: https://www.phila.gov/departments/department-of-streets/design-construction/standards-and-guidelines/#/



A-G. PWD Contacts

Unit	Phone Number
PWD Main Number	215-685-6300
Utility Plan Review	215-685-1126
Stormwater Plan Review	215-685-6387
Flow Control	215-685-2004
Water Transport Records (WTR) (1101 Market St., 2nd Fl.)	215-685-6271
WTR Supervisor	215-685-6270
PWD Permit Desk at MSB (1401 JFK Blvd, basement floor)	215-686-2577
Connection Inspection & Emergency Repair Inspection	267-455-4460
Sewer Maintenance	215-685-2034
Customer Field Service	215-685-9652

A-H. Streets Department Highway Division Yard Contacts

1st District 48th & Parkside	4th District Stenton & Sylvania
4800 Parkside Avenue, 19131 215-685-0170	4521 Stenton Avenue, 19144 215-685-2193
2nd District 63rd & Essington	**5th District Whitaker & Luzerne**
3033 S. 63rd Street, 19153 215-685-4281	4040 Whitaker Avenue, 19124 215-685-9819
3rd District 22nd & York	**6th District State & Ashburner**
2121 W. York Street, 19132 215-685-9776	8401 State Road, 19136 215-685-8271

A-I. GSI FAQs

The Philadelphia Water Department is installing hundreds of stormwater drainage structures in streets, sidewalks, and at other locations. These structures, known as green stormwater infrastructure (GSI), are often not visible from the surface.

What is GSI?

GSI is a surface and/or subsurface drainage system that stores, filters, and conveys stormwater runoff. GSI decelerates the flow of stormwater into sewers, and natural features such as soil and plants remove pollutants.

Where is GSI located?

GSI is located throughout Philadelphia in sidewalks, streets, parks, and community centers. Visit https://water.phila.gov/projects/ to locate many of our planned and completed projects. This map is not a comprehensive list of projects and is not a substitute for calling the Philadelphia Water Department or PA One Call (811).

Why is the Philadelphia Water Department installing GSI?

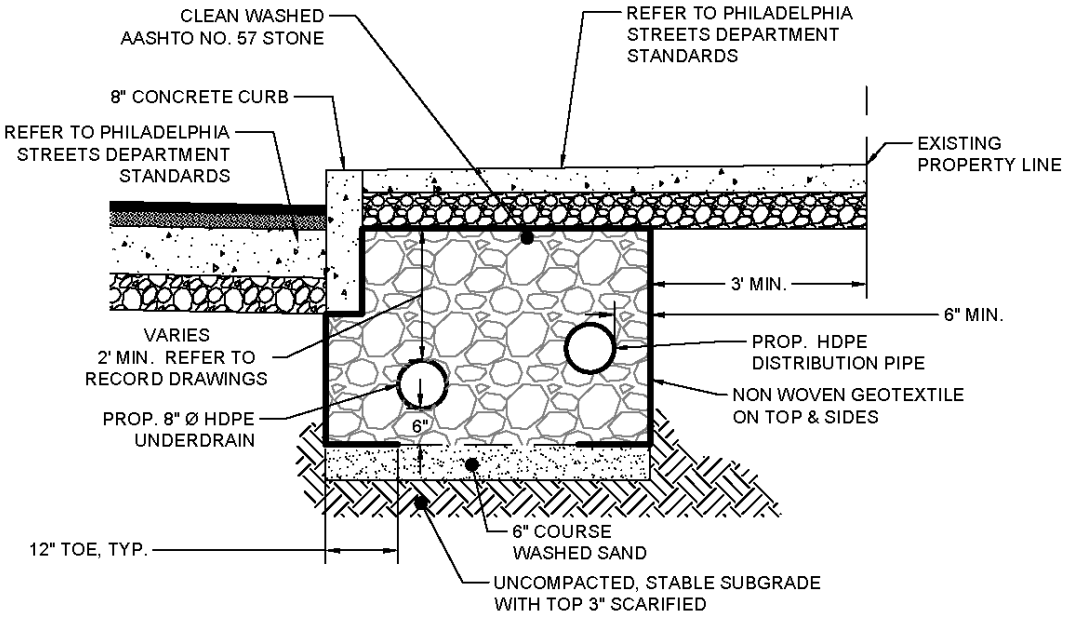
State and federal regulations require the City to reduce the amount of sewage discharged into our rivers when it rains. PWD is taking many steps to meet these obligations, including installing GSI in areas served by a combined sanitary and stormwater sewer. Our combined sewer overflow prevention program, *Green City, Clean Waters*, launched in 2011 and full implementation is projected through 2036. More on Green City, Clean Waters is available at: https://water.phila.gov/green-city.

What does GSI look like?

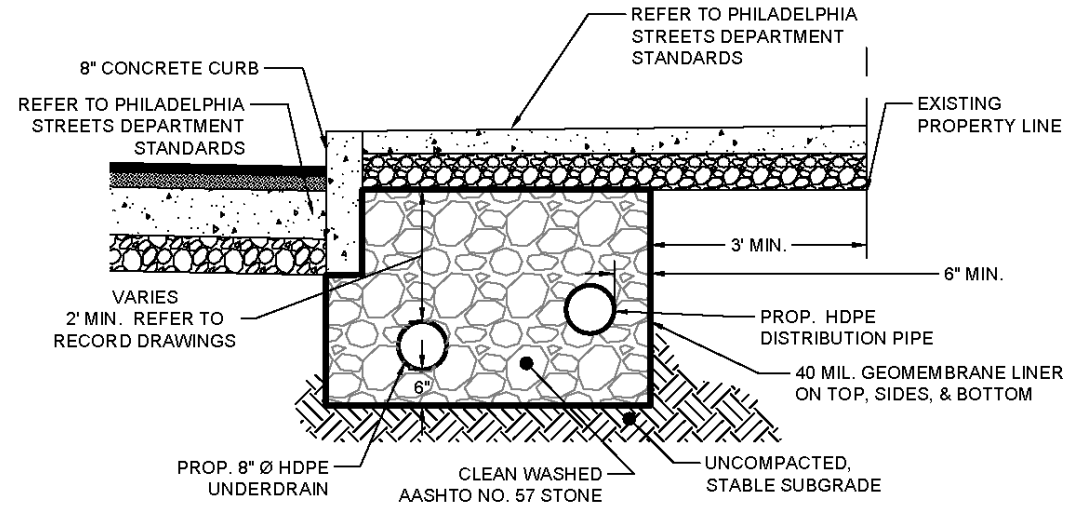
GSI takes a variety of forms. Typically, there are surface and underground stormwater storage areas. Surface storage can include rain gardens, tree plantings, and stormwater planters. Subsurface storage is typically a trench comprised of clean-washed AASHTO No. 57 aggregate wrapped in non-woven geotextile or a high-density polyethylene geomembrane liner. Some subsurface storage has modular storage products to increase storage capacity. Subsurface storage trenches can run several hundred feet under the sidewalk. GSI often blends into its surroundings, and even installations that appear to be standard street trees can have extensive underground infrastructure.

Typical Trench Cross Sections

The image below is an example of a typical tree trench. To view more comprehensive details, please refer to the **Green Stormwater Infrastructure Typical Details**: https://water.phila.gov/gsi/planning-design/resources/



TYPICAL INFILTRATION TRENCH CROSS SECTION
N.T.S



TYPICAL LINED TRENCH CROSS SECTION
N.T.S

Why should I care about GSI?

GSI is necessary for the City to meet its environmental obligations to the state and federal governments. GSI is fragile and a disturbed system may collapse. If you damage GSI, please notify PWD GSI Maintenance at 215-300-9079 immediately. You will be required to repair any damage caused to GSI, or the City will do so, and bill you. You may also be fined.

What do I do if I have proposed work near GSI?

If a private lateral must run through GSI, or if you must dig near GSI, PWD will provide specific requirements. Plumbers and contractors must contact PWD for any proposed work in the immediate vicinity of GSI. A PWD inspector must be on-site during construction and must give final approval after appropriate GSI restoration.

What can I do to avoid damaging GSI?

- Call PA One Call at 8-1-1
- Get GSI drawings from PWD Records: 215-685-6271

PWD will provide record plans showing locations, type of GSI, GSI footprint area/extent, and critical elevations (top of storage, bottom of storage, invert elevations of connection points). We will mark out the extent of GSI during field PA One Calls. Emergency exceptions may be made.

How does GSI get marked out in a One-Call?

During One Calls, GSI is marked out in a green color. The perimeter of the underground storage area is delineated. Digging is not permitted within this area unless PWD has given prior approval. A PWD representative must be on-site during any disturbance.

What else I should know?

Sediment can damage GSI and is generally not permitted in the sewer system. GSI is designed to filter and clean stormwater, and sediment runoff from construction or excavation sites can clog GSI and negatively impact performance. Always install appropriate erosion and sediment (E&S) controls.

Where can I learn more?

More information about Green City, Clean Waters and GSI is available at https://water.phila.gov/green-city/.

Design standards for GSI are published online at https://water.phila.gov/gsi/planning-design/resources/.

Philadelphia Water Department GSI Contact List

For GSI drawings, contact WTR at 215-685-6271.

To schedule work near GSI or report damage, contact GSI Maintenance at 215-300-9079.

Email general questions to: questions@phillywatersheds.org.

EXAMPLES OF GSI:

Stormwater Planter	Rain Garden
	
Stormwater Bumpout	**Tree Trench**