

Small Project Supplement: Rules and Regulations of Sewer Use

Definition of a “small project”

1. Gravity Pipe diameter is 6-inches or less and force main diameter is 1-1/4” or less
2. Installation depth is generally less than six (6) feet below grade
3. Project may include individual pumping units

Table of Contents:

1. Permits and Notifications	1-1
1.1 Drain Layer’s Permit	1-1
1.2 Insurance Requirements	1-1
1.3 Notifications	1-1
1.4 Supplemental Requirements	1-1
2. Plan Approval	2-1
3. Acceptable Equipment and Materials	3-1
3.1 Pipe	3-1
3.2 Fittings	3-1
3.3 Grinder Pumps	3-2
4. Pipe Sizing	4-1
5. Slope and Installation	5-1
5.1 Pipe	5-1
5.2 Service Connections	5-1
6. Chimneys	6-1
7. Adjacent Utilities	7-1
7.1 Horizontal Separation	7-1
7.2 Vertical Separation	7-1
8. Backflow Prevention Device	8-1
9. Installation Depth	9-1
9.1 Insulation and Jacketing	9-1
9.2 Buoyancy	9-1
10. Septic Tank Decommissioning	10-1
11. Safety	11-1
12. Service Tie Records	12-1
13. Failure to Conform	13-1
14. Testing and Inspection Prior to Connection	14-1
14.1 Pipe Testing	14-1
14.2 Inspection	14-2

1. Permits and Notifications

1.1 *Drain Layer's Permit*

Any Contractor intending to install a sewer system or sewer service connection that meets any definition included in this Technical package shall secure a Drain Layer's Permit as defined in Article II, Section 4 of the Town of Dighton's "Rules and Regulations of Sewer Use". Fees, warranties, and submittals required by the Town of Dighton are also defined in these rules and regulations.

1.2 *Insurance Requirements*

Any Drain Layer or contractor shall possess the required minimum public liability and property damage insurance, and underground coverage insurance in the amounts of \$100,000.00 and \$300,000.00 each, respectively.

1.3 *Notifications*

The Drain Layer shall notify the Town of Dighton Highway Department Superintendent, DIGSAFE (1-888-344-7233), the Town of Dighton Fire Department, the Town of Dighton Water District Superintendent, and any other appropriate or impacted parties prior to initiating any excavation.

The applicant for the building sewer permit shall notify the Superintendent, in writing, when the building sewer is ready for inspection and connection to the public sewer. The Superintendent shall be notified not less than forty-eight (48) hours in advance of the time any connection is to be made to any public sewer. These notifications shall be made consistent with the conditions in Article II, Section 17 of the Town of Dighton's "Rules and Regulations of Sewer Use".

When it is necessary to make sewer connections in State highways, the applicant shall obtain the necessary permits from the Massachusetts Department of Public Works, prior to the issuance of a sewer connection permit. All work shall then be done in accordance with the requirements set forth in the permit issued by the Massachusetts Department of Public Works.

When ledge is encountered in the excavation, a permit must be obtained from the Town of Dighton Fire Chief for the use of explosives. All blasting shall be done in accordance with the requirements as imposed by the Fire Chief. All blasting must be performed by a person licensed by the Massachusetts Department of Public Safety for this purpose.

1.4 *Supplemental Requirements*

Based on the type and scale of the project being proposed and submitted for review, the Town of Dighton Board of Sewer Commissioners may develop additional technical requirements that shall be satisfied.

All work within 10 feet of the building foundation must conform to the Massachusetts Uniform Plumbing Code and will require a separate plumbing permit.

In general, the size, slope, alignment, materials of construction of a building sewer, and the methods to be used in excavating, placing of the pipe, jointing testing, backfilling the trench, and connecting to the public sewer shall all conform to the requirements of the building and plumbing code or other applicable rules and regulations of the Town. In the absence of Code provisions or in amplification thereof the materials and procedures set forth in appropriate specifications of the American Society for Testing and Materials (ASTM), the WEF Manual of Practice No. 9 (Design and Construction of Sanitary and Storm Sewers), New England Interstate Water Pollution Control Commission (NEIWPCC) TR-16 (Guide for the Design of Wastewater Treatment Works), Title 5 of the Massachusetts State Environmental Code, the Uniform State Plumbing Code, and any and all applicable design or guidance documents.

2. Plan Approval

The Town of Dighton has a project review process in place that establishes a basic framework for the administration of sewerage development project proposals by private developers and property owners in the Town of Dighton, provides for the conceptual and technical reviews of such proposals, and establishes a system for fee assessments at key points of project planning and development.

The key steps in this process are:

- 1) Pre-Application (including review of Preliminary Plans);
- 2) Project Design;
- 3) Application for Proposed Sewer Plan Approval; and
- 4) Application for Sewerage Facility Construction.

Each of the four steps in the review process is defined in the “Requirements” Chapter of the Town of Dighton’s by-law, along with the required elements to be included in Preliminary Plans and in Applications for Approval.

3. Acceptable Equipment and Materials

3.1 Pipe

For gravity sewers, pipe material may be polyvinyl chloride (PVC) or ductile iron. Minimum requirements for each are included below. Alternate materials will be considered on a case-by-case basis by the Town of Dighton.

PVC pipe shall conform to ASTM D3034 and have an SDR of 35. Joints for PVC pipe shall be push-on joints using permanently bonded elastomeric ring joints. Such joints shall be installed in accordance with the pipe manufacturer's written instructions.

Ductile Iron pipe shall be Thickness Class 52, centrifugally cast and conform to ANSI A21.51 and ANSI A21.50. All pipe shall be made of ductile iron equal to grade 60-42-10. The pipe shall be in nominal laying lengths of 18-20 feet. Joints shall be mechanical or "push-on" type with rubber gaskets and shall conform to ANSI A21.11. Fittings shall be ductile iron with mechanical joints conforming to all requirements on ANSI 21.10. The pipe shall be coated on the outside and inside in accordance with the requirements of ANSI A21.51. As an alternative, with no additional cost to the Owner, the pipe may be cement lined to twice the thickness specified in ANSI A25.51 and ANSI 21.4 and shall be asphalt seal coated twice.

All building sewers, ties, and fittings shall be constructed utilizing PVC SDR-35 material and be installed in a watertight manner.

Buried Polyvinyl Chloride Pressure Sewer Pipe, couplings and fittings shall conform to ASTM 2241, with an SDR of 21. Joints for PVC pipe shall be push-on joints using permanently bonded elastomeric ring joints conforming to ASTM F477. Such joints shall be installed in accordance with the pipe manufacturer's written instructions. Pipe utilized for service connections shall be manufactured of PVC. Service pipe shall conform to ASTM 2241, with an SDR of 21. Joints for PVC pipe shall be push-on joints using permanently bonded elastomeric ring gaskets. As an option, SDR11 HDPE I.P.S. butt-fused pipe or SDR 7 HDPE I.P.S. pipe with compression fittings and insert stiffeners may be substituted for the SDR 21 PVC gasketed pipe for pressure main and services. All couplings, fittings, adapters, valves, reducers, wyes and tees shall be compatible with the type of pipe used. HDPE pipe shall be pressure rated for 200 psi and shall conform to ASTM D1248, ASTM D3350, ASTM D2239, and NSF-14. Compression fitting shall be brass.

3.2 Fittings

Wye branches or tees shall be of the same material and of the class and type so as to be compatible with the pipe with which they are used.

Mechanical couplings with stainless steel clamps shall be used for couplings to the public sewer from the building.

3.3 *Grinder Pumps*

For individual pumping situations, the Board of Sewer Commissioners encourages the use of self contained grinder pumps, 2000 series, as manufactured by E|One. Solids are ground into fine particles that pass easily through the pump, check valve and small-diameter pipe lines, including plastic, rubber, fiber, wood, etc. Each pump shall be of a semi-positive displacement type such that the output capacity is essentially independent of the discharge pressure. The pump shall be designed to deliver 11 GPM at a total dynamic head of 92 feet (40 psig) and 9 GPM at 138 feet (60 psig) of total dynamic head. At zero head the pump output shall not be more than 15 GPM. The pump shall be capable of intermittent operation (three minute minimum) at any head. The pump speed shall be 1,725 RPM. Power requirements shall be 1 horsepower maximum, 230 V, Single Phase, 60 Hertz.

4. Pipe Sizing

Gravity sewer pipe shall be a minimum of eight (8) inches in diameter. Pipe shall be selected to minimize settling of solids within the pipe. The Town of Dighton will not approve using larger-diameter pipe than required in order to justify pipe installation with less slope.

Service connection pipe shall be a minimum of six (6) inches in diameter for single family dwelling and such larger size for multiple family dwelling or other type of building as the Superintendent or his agent may determine. Pipes and fittings less than six (6) inches in diameter shall be allowed only under special conditions approved by the Superintendent and Board of Sewer commissioners.

5. Slope and Installation

5.1 *Pipe*

All gravity sewers should be designed to produce a wastewater velocity of at least 2.0 feet per second based on Manning's equation, using an 'n' value appropriate for the pipe material proposed.

All pipe shall be installed with uniform slope between manholes. Pipe alignment shall be checked both visually (manhole to manhole) and with a laser beam.

Pipe installed on grades exceeding 15% shall be anchored to prevent displacement. When pipe is installed in within areas impacted by high groundwater tables, impervious dams shall be built every 300 feet within the trench.

When different pipe diameters are joined, the invert of the larger diameter pipe shall be lowered by placing the 0.8 depth point of both sewers at the same elevation. This will encourage continuous flow without turbulence within the pipe.

Service connections in excess of one hundred (100) feet in length shall be subject to review and such other requirements as may be found necessary to assure a "functional connection" by the Superintendent/Board of Sewer Commissioners.

All pipes and fittings shall be laid in an envelope of 3/8-inch crushed stone or sand with not less than six (6) inches surrounding the pipe. No wooden blocks, bricks, stones or other unsuitable material shall be allowed directly under or above the pipe.

5.2 *Service Connections*

Service connections shall be installed with a minimum slope shall be 1.67 feet per 100 feet unless otherwise directed by the Town of Dighton. The extreme end of the service connection shall be capped unless it is to be connected to an existing service. Connections made to the building drain shall be upstream of any septic tank or cesspool, and done only under the supervision, inspection, and approval of the Town of Dighton Plumbing Inspector.

A service connection shall not have more than two (2) angle points, or a total angular deviation of one hundred and eighty (180) degrees. Cleanouts shall be installed within six (6) feet prior to the second deflection point and at every 100 feet of developed length, unless determined by the Board of Sewer Commissioners that a manhole is required.

An inspection tee and riser and/or cleanout, constructed of PVC, with lockable metal cover shall be required for each public sewer connection (refer to the attached figure for

details) and shall be installed near the building's sewer at the property line for access and inspection by the Town of Dighton. When new building construction is set back from the property line, the owner shall install an inspection tee and riser and/or cleanout on the service connection at the property line for access and inspection by the Town of Dighton.

In new construction, and where practicable in existing buildings, when the public sewer is sufficiently deep, the building sewer shall be laid directly without deflection, from the building plumbing vent stack to the connection provided at the public sewer.

Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage carried by such building drain shall be lifted by means approved by the Superintendent and discharged to the building sewer.

6. Chimneys

Chimneys (vertical pipe encased in concrete) shall be installed when the vertical distance between the sewer main and the service connection is at least three (3) feet, or when the sewer main is twelve (12) or more feet below grade. When required, the concrete utilized for the encasement of chimneys shall have a minimum compressive strength of 3,000 psi. Ends of the wye branch shall be capped with standard caps.

Connection of services to public sewers shall be made only with a “wye” branch or “chimney”; direct stub-ins through the wall of the sewer pipe shall not be permitted. Whenever possible, the service connection shall be made at the top of the sewer pipe with a smooth bend in the service pipe not exceeding forty-five (45) degrees (to prevent clogging).

7. Adjacent Utilities

7.1 *Horizontal Separation*

Gravity sewers shall be placed at least ten (10) feet, horizontally, from any existing or proposed water main, unless otherwise approved by the Town of Dighton. Other utilities shall be treated in a similar fashion, when possible. Whenever sewer lines are required to be within five (5) feet of water lines, the sewer lines must be constructed of durable corrosion resistant materials with water-tight joints, preferably below the water lines, and encased in concrete.

The minimum distance of a service connection from a water line shall be 10 feet and from a water supply well shall be 50 feet.

7.2 *Vertical Separation*

Sewers shall be placed below water mains whenever possible. When this is not possible, gravity sewers shall be placed with at least twelve (12) inches between the top of sewer and the bottom of the water main, unless otherwise approved by the Town of Dighton, with a sand "cushion" between the pipes. Exceptions to this shall include additional protection provided by flowable fill or other encasement. If sewer pipe will be placed over a water main, one full-length section of sewer pipe shall be centered so that joints will be as far from the water main as possible.

8. Backflow Prevention Device

At the Town's discretion, all existing or new building drains from plumbing fixtures subject to backflow from the Town's sewerage system or a private sewer shall be required to have a backflow prevention device installed at the owner's expense. Any plumbing fixture located at an elevation below the top of a manhole located in the Town's sewerage system shall be considered to be subject to backflow conditions. Backflow prevention devices shall be installed in compliance with the Uniform State Plumbing Code, and Section 248 of the Code of Massachusetts Regulations (248 CMR).

9. Installation Depth

All sewers, fittings, and service connections shall have a minimum of five (5) feet of cover to top of pipe. When this is not possible, pipe and fittings shall be insulated and jacketed.

9.1 *Insulation and Jacketing*

Pipes requiring insulation shall be insulated by the void-free rigid polyurethane foam, factory applied, with an outer polyethylene jacket, UV inhibited. The minimum thickness of the insulation shall be 50 mm (2 inches); the minimum thickness of the jacket shall be 1.27 mm (50 mils).

Polymer coated, form fitting insulation kits shall be used to insulate elbows, tees and other fittings, according to the manufacturer's recommendations.

9.2 *Buoyancy*

If the pipes are to be installed in areas prone to high groundwater conditions, buoyancy of the pipe must be taken into consideration.

10. Septic Tank Decommissioning

Upon connection of the building sewer to the public sewer, existing septic tanks and cesspools shall be pumped and completely filled with suitable material under the supervision and inspection of the Town of Dighton Health Department or shall be removed. Under no circumstances shall septic or cesspool wastes be discharged to a public sewer. Verification of septic tank and cesspool abandonment shall be submitted in writing by the licensed drain layer or contractor to the Board of Sewer Commissioners.

All septic systems must be abandoned in accordance with 310 CMR 15.354 (Abandonment of Systems). This means that before a septic tank or cesspool that contains sewage is disconnected, the entire contents of the tank or cesspool must be pumped by a licensed septage hauler. All components that hold water (i.e., septic tank, pump chambers) must be broken in place or removed so that liquid can not collect in the future. All empty voids in the system (including the tank hole) must be filled with clean sand.

Leaching beds and leaching trenches are unlikely to collapse and may be left in place.

Sewage-contaminated soil around septic components is not required to be removed in order for the septic system to be abandoned unless a new sewer pipe or service connection is to be installed in or near that soil.

11. Safety

All Drain Layers and contractors working in the Town of Dighton are expected to satisfy all federal, State, and local safety requirements. This includes OSHA Confined Space Entry procedures and trenching and excavation practices, and traffic management methods that keep the work zone safe. The Town of Dighton reserves the right to shut down (temporarily or permanently) any work practices that it determines pose a hazard to persons in or near the work area.

12. Service Tie Records

For PVC pipes, a magnetic marking tape shall be installed on the top of the pipe to facilitate locating it in the future.

The drain layer or contractor is required to submit an "as-built" plan within 30 days of job completion or within 10 days of completion of final inspection and testing of the sewer in a development, the owner thereof shall file with the Board "as built" plans which are acceptable to the Board's engineer on reproducible paper which shall be 24 inches by 36 inches in size. These as-built plans shall be certified by the installing contractor's engineer, licensed to practice in the Commonwealth of Massachusetts. The Drain Layer or contractor shall submit the "as built drawings electronically and shall also provide a scaled electronic layer in a format acceptable to the Board for use in updating the Town of Dighton's sewer system map. In addition, the submittal shall include all testing results.

Manhole tie records shall be tied into a minimum of three points including, if possible, the permanent corners of a nearby building and/or permanent utility poles. These tie records shall be made part of the Project Record Documents.

For service connections, a steel marker shall be installed at the end and tied into a minimum of three points including, if possible, the permanent corners of the building which is to be served. The depth of cover from the ground surface to the top of the pipe at the cap shall be recorded. The depth and tie information shall be made part of the Project Record Documents. The depth of cover from the road surface to the top of the branch and the distance from the downstream manhole shall also be recorded. No wyes and tees shall be backfilled before the location measurements are taken.

13. Failure to Conform

Should the Board of Sewer Commissioners find that any Drain Layer or contractor has failed to conform to the requirements of the Town's rules and regulations and to the conditions of any permit issued there under, or that such drain layer or contractor has not been faithful in the performance of work or furnishing of materials under his license, the Board of Sewer Commissioners may suspend, cancel, or revoke such license and/or permit, or may extend the suspension of such license and/or permit for such period, or limit the activities of such drain layer or contractor in such manner as may appear to be to the public interest. Suspension, cancellation, or termination of a permit shall not entitle the permittee to any compensation or reimbursement from the Town or its agents for any alleged loss or expense incurred thereby, and licenses and permits shall be issued only on this condition.

14. Testing and Inspection Prior to Connection

14.1 Pipe Testing

All pipe shall be tested in the presence of the Town of Dighton Superintendent or his designated agent.

The Town inspector may require either infiltration testing or pressure testing of new sewer lines. Where lines are installed in areas having a high groundwater level, an infiltration test shall be conducted for at least four hours under the supervision of the Town of Dighton Superintendent or his designated agent. The infiltration leakage shall not exceed 100 gallons per inch of pipe diameter per mile of pipe for sewers 24-inches in diameter and smaller. The leakage test using low-pressure air shall be made on each manhole-to-manhole section of pipe. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be tested. Pneumatic plugs shall resist internal test pressure without requiring external bracing or blocking. All air shall pass through a single control panel.

Water leakage tests (i.e., exfiltration tests) may also be performed on installed sewer lines. The exfiltration leakage shall not exceed 100 gallons per inch of pipe diameter per mile per day for any section of the pipe system for sewers 24-inches in diameter and smaller. Exfiltration tests shall be performed with a minimum positive head of two (2) feet. Various sections of the sewer shall be isolated by watertight plugs and the quantity of water exiting the pipe during a predetermined time shall be measured.

Low-pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psig greater than the maximum pressure exerted by groundwater that may be above the invert of the pipe at the time of the test. The internal air pressure in the sealed line shall not exceed 8 psig. At least two (2) minutes shall be allowed for the air pressure to stabilize in the section being tested. After the stabilization period, the low-pressure air supply hose shall be quickly disconnected from the control panel. The time required in minutes for the pressure in the section under test to decrease from 3.5 to 2.5 psig (greater than the maximum pressure exerted by the groundwater that may be above the invert of the pipe) shall not be *less than* that shown in the following table:

Pipe Diameter (inches)	Time (minutes)
6	4.0
8	5.0
10	6.5
12	7.5
14	9.0
15	9.5
18	11.5
Greater than 18	7.7 x Pipe Diameter (ft)

These tests shall include losses or gains through manholes as well as through pipe walls and joints, as well as through house connection fittings and joints. In case the leakage

exceeds the specified amounts, the contractor shall locate the leaks and shall repair the pipe at his own cost. After repairs have been made, the line shall be re-tested and the processes of repairing and re-testing shall be repeated until the results are within the specified limits. No sewer shall be connected until the piping has been satisfactorily tested.

When the sewer section to be tested contains more than one size of pipe, the minimum allowable time shall be based on the largest diameter pipe in the section.

After completion of each installation in a development and before connection is made, the newly constructed lines shall be cleaned, flushed and tested for deflection. The amount of deflection in all sewer lines shall be tested in the presence of the Town of Dighton Superintendent or his designated agent. This testing shall be done by the use of a deflectometer, calibrated television or photography, or a properly sized "go, no go" mandrel or sewer ball. All sewer lines with a deflection angle of greater than 5 percent shall be repaired by re-bedding or replacement of the pipe.

14.2 Inspection

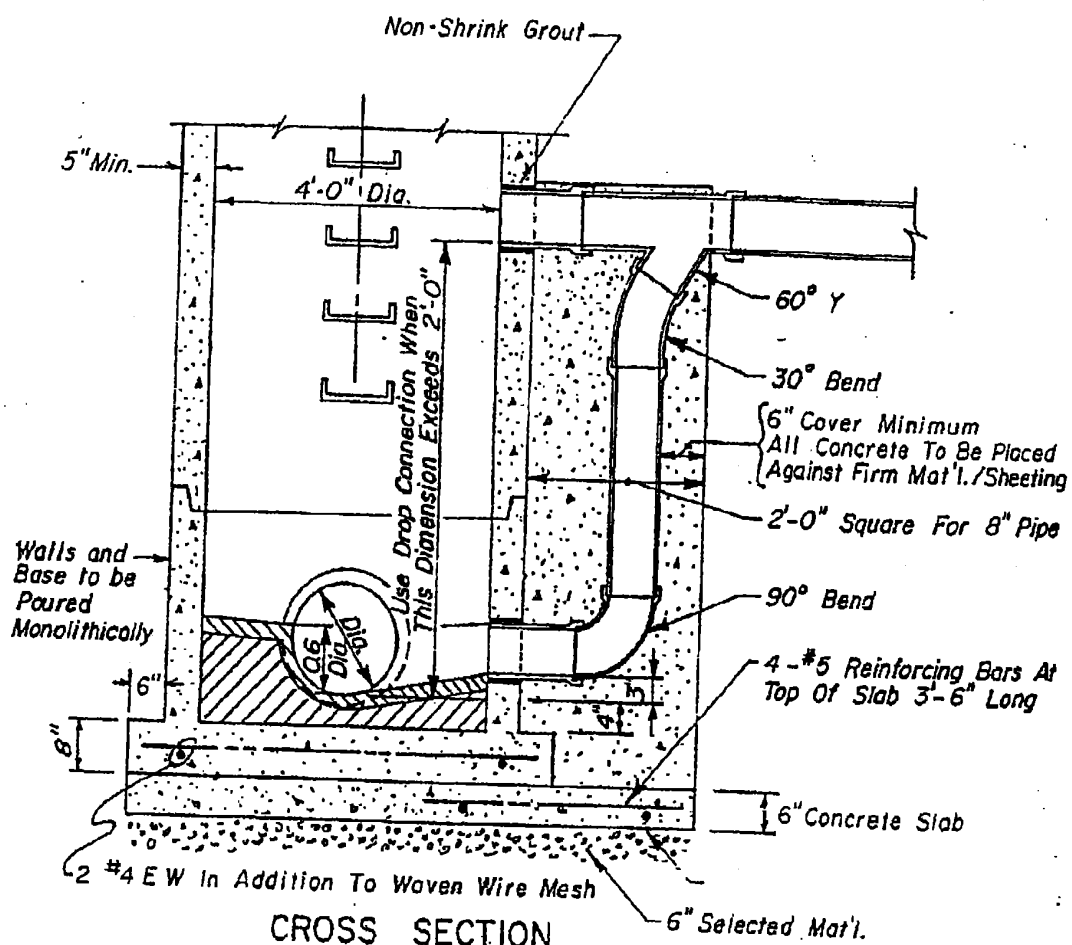
Sewers and service connections within developments shall be installed at the expense of the builder and/or owner, and shall be subject to inspection and acceptance by the Town of Dighton.

Tests shall be conducted under the supervision of the Superintendent or his designated representative. Final inspection and observation of all testing shall be done by an engineer appointed by the Board, and the owner will be required to reimburse the Board for the expense of said final inspection and testing.

Service connections shall not be backfilled beyond the hardened gravel envelope until the work has been inspected and approved by the Superintendent or his designated agent. The licensed drain layer or contractor shall arrange his work in a manner to minimize the required services and time of the Superintendent.

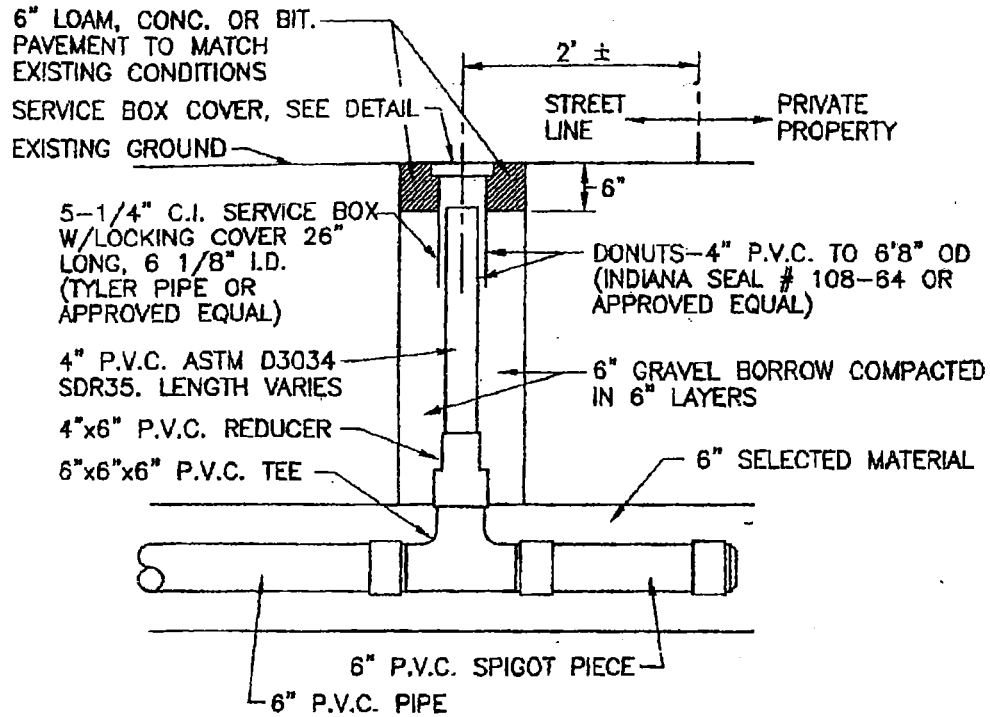
Pipes and fittings within trenches shall not be backfilled until the work is inspected and approved by the Superintendent.

The Town of Dighton also reserves the right to require inspection of the new sewers by closed-circuit television inspection. When required by the Town, copies of this inspection shall be provided on digital video disks (DVDs), compact disks (CDs) or VHS tapes.

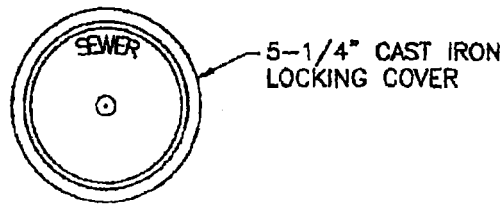


SANITARY SEWER DROP MANHOLE

**TOWN OF DIGHTON
SEWER DEPARTMENT**



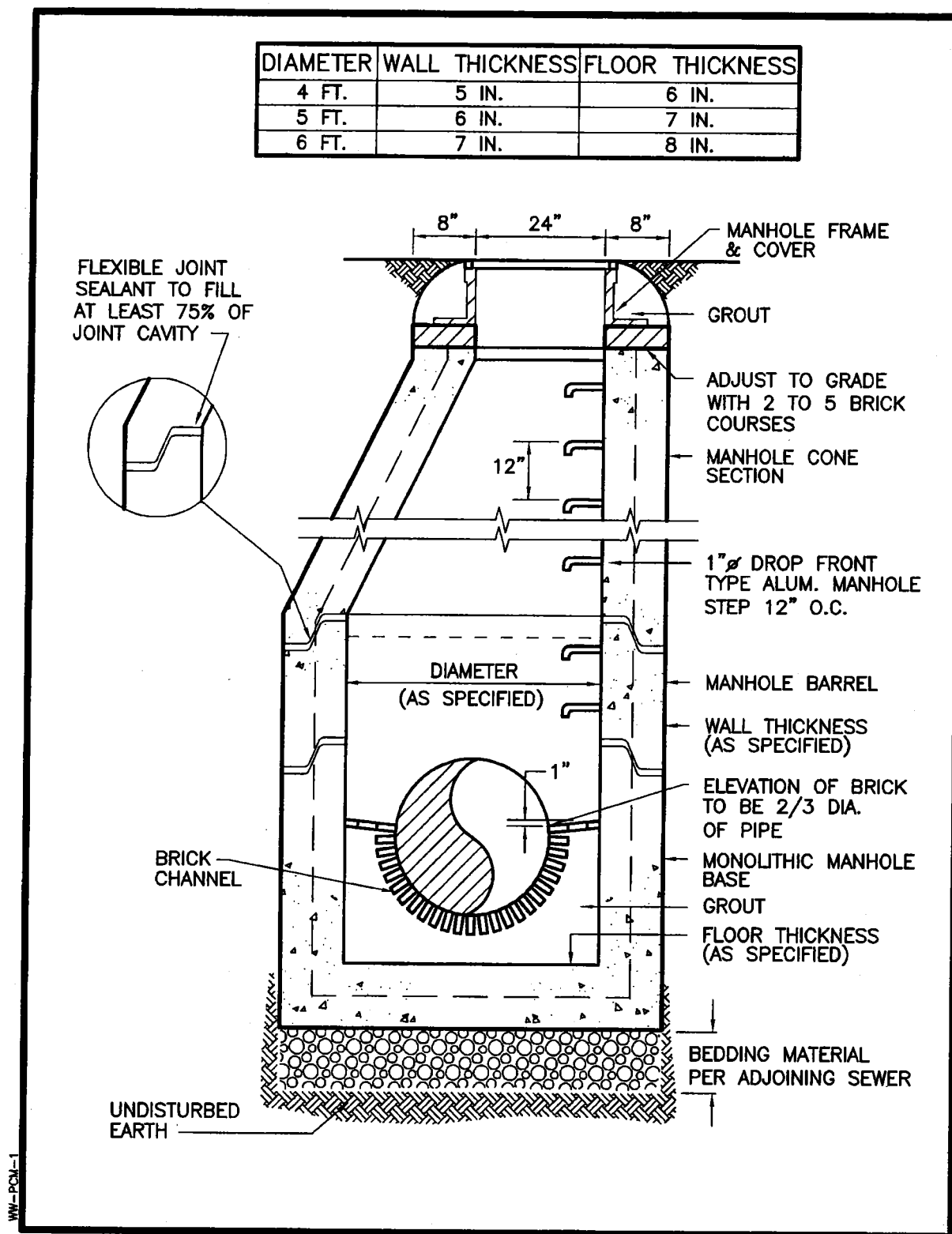
SECTION
NOT TO SCALE



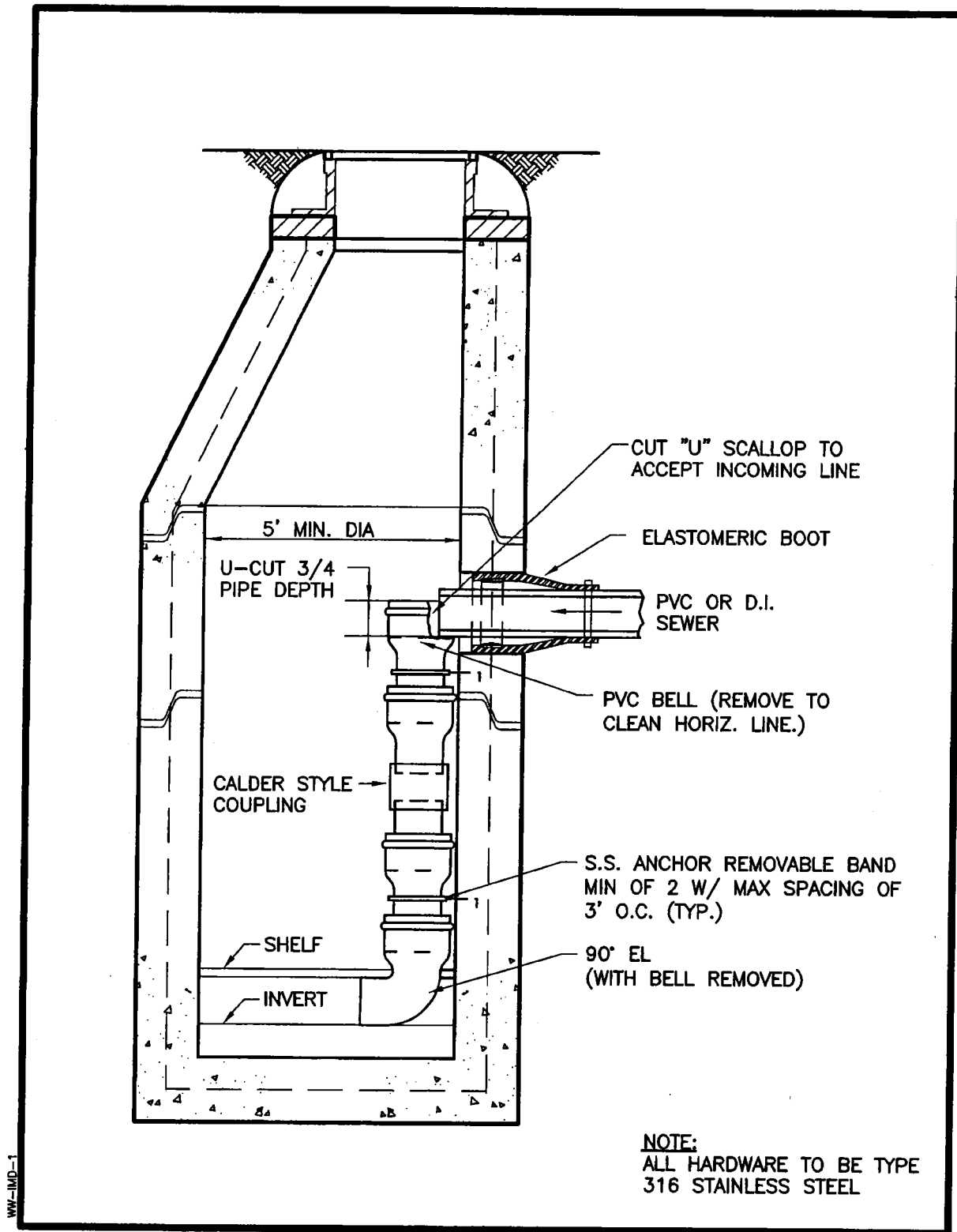
SERVICE BOX COVER DETAIL
NOT TO SCALE

INSPECTION TEE AND RISER

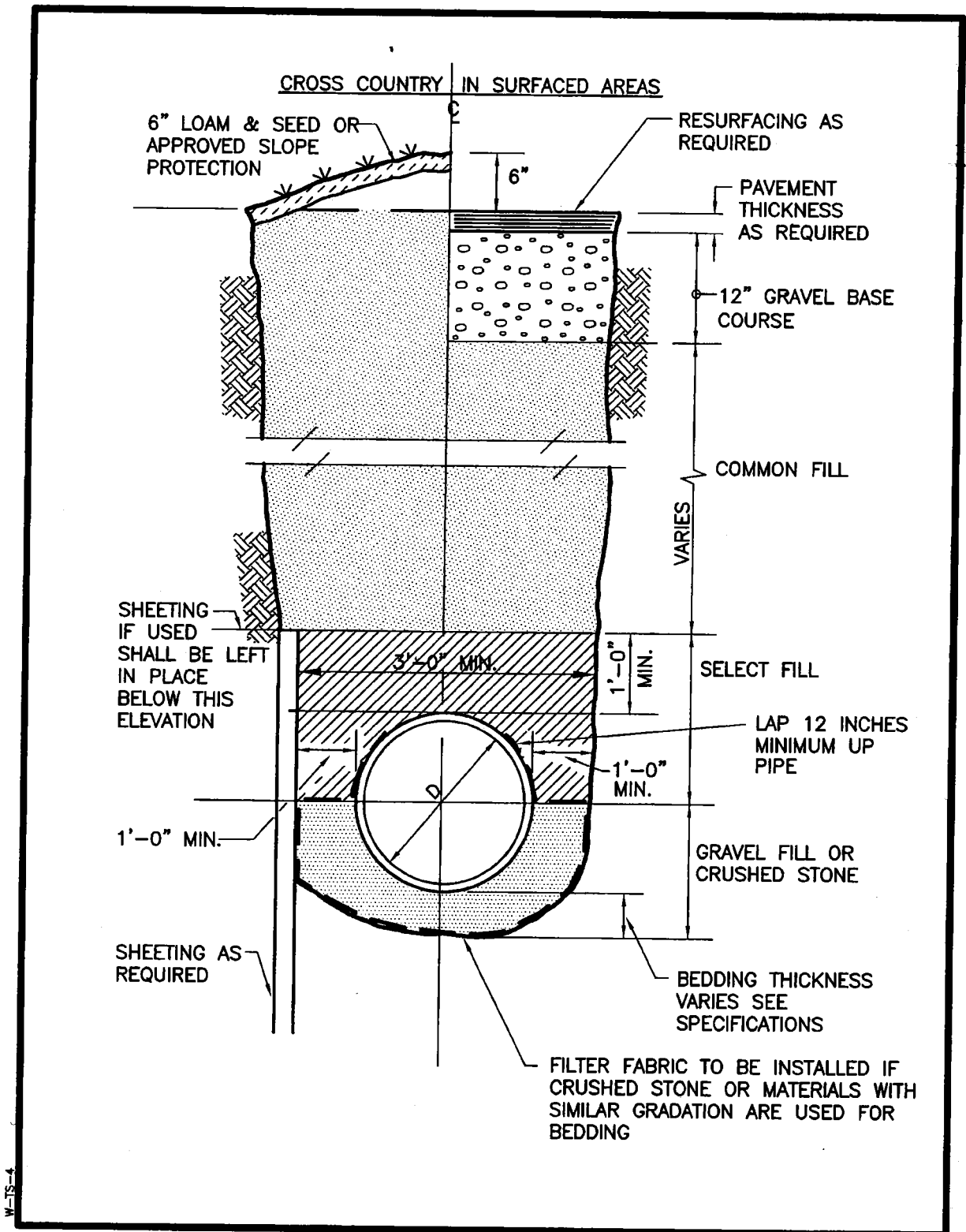
TOWN OF DIGHTON
SEWER DEPARTMENT



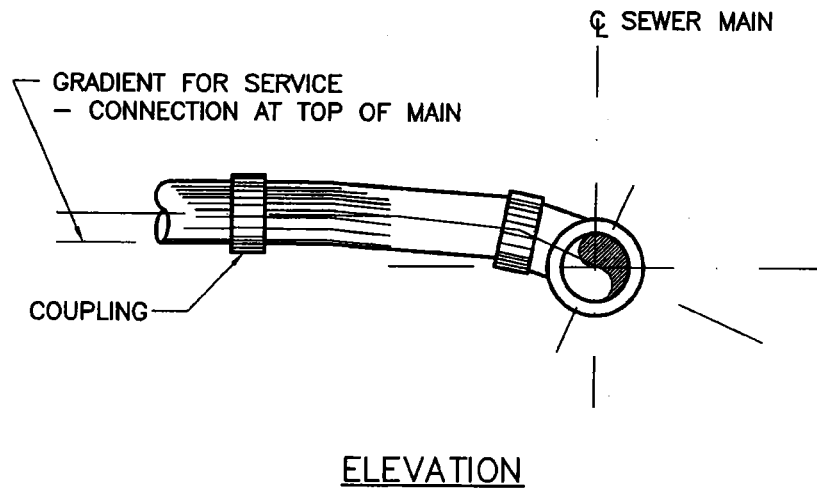
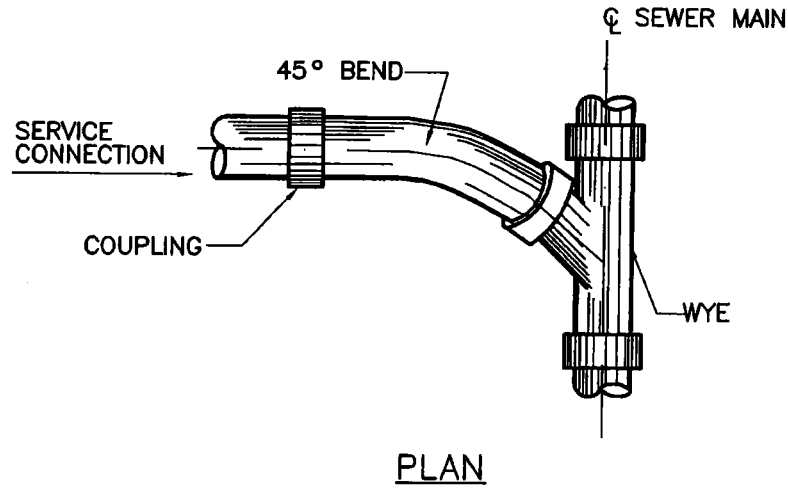
PRECAST CONCRETE MANHOLE
NOT TO SCALE



TYPICAL INTERIOR MANHOLE DROP
NOT TO SCALE



TYPICAL TRENCH SECTION
NTS



SEWER SERVICE CONNECTION DETAIL
NOT TO SCALE

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