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July 25, 2023

SUBJECT: SERVICE LATERAL CONSTRUCTION REQUIREMENTS

Pipe Type and Stone-Coverage Bedding

All plastic pipe used in constructing private service laterals for Hamilton County WWTA customers shall meet or exceed pressure rated Schedule 40 pipe. Service laterals shall be supported by 6 inches of ½-inch or 57 stone, and the pipe shall be covered by no less than 1½ times the diameter of the pipe with stone. (See Standard Details SD-GEN-1, SD-GEN-15 and SD-GEN-16.) Additionally, if any portion of the pipe is required to be constructed under pavement, the pipe under the pavement and the last 3 feet of the line, from the pavement edge, shall be bedded and totally backfilled according to the local municipality's standards. (See Standard Detail SD-GEN-9.) If a cleanout is required in the paved area, the cleanout will be protected as shown in Standard Detail SD-GEN-17.

Air Test

Private service laterals constructed within the WWTA service area shall be air tested as required by Section 312 of the International Plumbing Code approved by the Hamilton County Building Inspection Department. The laterals shall hold 5 psi for 5 minutes using a 25-30 pound gauge in 5 pound increments.

Video

A Closed Circuit Television (CCTV) video for a newly constructed service lateral must be submitted to the WWTA before the private service lateral will be accepted. The CCTV video will require the following:

- A camera capable of producing color digital video
- Exact footage with title on video (or text heading)

- Video titler system will have capability of inputting on-screen defect codes and all applicable site information (including date, plumber, lot number & address)
- Digital video is to be non-pixilated—i.e., contain no digital distortion and be sharp demonstrating precise shape and color of the pipe lines and defects
- Defects must be easily recognizable and defined
- Recorded video must be compatible with DVD recordable formats or flash drives and viewable on a standard 21-inch LCD monitor or a 30-inch television
- Video will not be accepted until final inspection just prior to Certificate of Occupancy

Note: Testing and video recording will occur at final inspection. The plumber may choose to perform testing and video work prior to a request for inspection at his or her own choosing.

Cleanouts

A double cleanout shall be provided at the discharge point on the outside private service lateral of the house, and a double cleanout shall be provided on the private service lateral at the property line between the public sewer and the structure being connected. (See Standard Details SD-GEN-15 and SD-GEN-16.) Other cleanouts shall be provided in accordance with the governing plumbing code.

Cleanouts located in non-paved, non-concrete and non-gravel areas shall have a 6" round plastic valve box with the word "sewer" stamped on the cover over the recessed 4" lateral riser and cap.

Cleanouts located under an area used as a drive shall have a 6-inch cast iron box and "SEWER" lid located over the recessed 4-inch service lateral riser and cap to prevent damage from vehicular traffic.

Fittings

NO FERNCO FITTINGS (or other flexible fittings) shall be used for new or the repair of private service laterals.

Separation

It is recommended that the private service lateral be located 10 feet from any water line and 5 feet away from any gas line. In no case should the private service lateral be located within 5 feet of a water or gas line once the lines are 5 feet from the structure. If the sewer line crosses the water or gas line, it is recommended that the private service lateral be located 18 inches below the water or gas line. In no case should the private service lateral be located less than 12 inches of separation below the water or gas line.

Depth

Once the private service lateral is 5 feet from the building, the line must be a minimum of 24 inches below the present surface of the yard with the tie-in at the service stub-out a minimum of 30 inches.
When it is impractical to obtain proper horizontal or vertical separation or depth, the Wastewater Manager shall be contacted prior to construction of the private service lateral. In the event of reduced separation, additional testing of the private service lateral may be required to insure water-tightness.

Connection to WWTA Sewer System

A private service lateral shall **not** be connected to the WWTA sewer system (gravity, grinder, step, or small diameter) until the structure is ready for **FINAL INSPECTION** by the Hamilton County or city building department without prior approval from the Wastewater Manager. If the service lateral is **installed** before the structure is ready for final inspection, a gap must be left in the service lateral somewhere between 5 feet from the structure and the connection at the sewer main. The gap must be removed at final inspection of the structure before the service lateral can be given final approval.

Notes

- A specific appointment may not be requested on a first inspection. The Resident Project Representative (RPR) has a 24-hour notice called in by the plumber at WWTA (423) 209-7842. The entire lateral must be exposed at the first inspection.

- All service lateral installations and connections must be inspected and approved by the Wastewater Manager or RPR before the line is backfilled.

- No service lateral connection shall be made to a sewer that has not been accepted by the Hamilton County WWTA.

- Change of direction no greater than a 45-degree bend shall be installed at each change of direction of the private service lateral.

If you have any questions, please call our office at (423) 209-7842.

Michael Patrick, P.E.
Executive Director

Attachments: SD-GEN-9 SD-GEN-15 SD-GEN-16 SD-GEN-17
SD-GEN-18 SD-GEN-19 Section 2731 SD-GEN-1

Service Line Inspection Procedure

1st inspection: call WWTA 423-209-7842

Inspections are initiated by the plumber's call to the WWTA Office. (Note: A call must be made to the WWTA Office to request all/any inspections.) The call for the 1st inspection shall not be placed until the ditch is completely dug with the 6" of ½" or 57 stone as bedding in place, and the Schedule 40 pressure rated PVC has been placed in the ditch adhering to all applicable standards. You must notify the WWTA office that you are ready for an inspection and leave your contact information. You will receive a call from the WWTA RPR to arrange inspection details.

Note:

1. Assuming that the lateral passes the 1st inspection,
2. If the plumber makes the request ahead of time, and
3. The RPR's schedule permits,

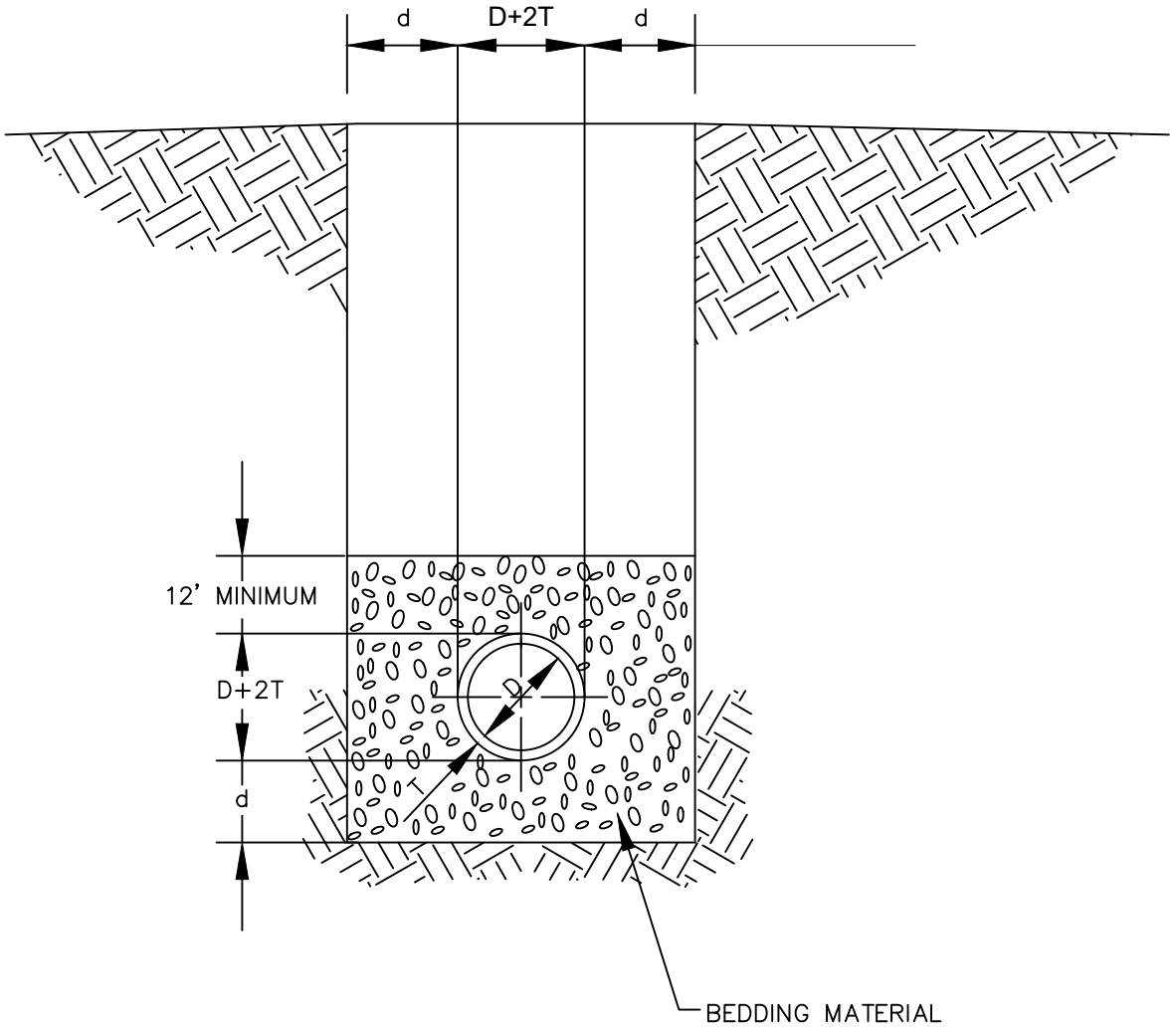
The RPR may watch the back fill procedure during the 1st inspection.

Otherwise, the plumber must notify the WWTA Office that you are ready for a subsequent inspection. The plumber shall call the office to request an inspection, leaving his/her contact information, so an arrangement may be made to meet with the WWTA RPR on site.

If, during a subsequent inspection, the structure, which must be in place, is not ready for the Certificate of Occupancy (CO) then the WWTA's cut, cap, and cover procedure will apply. The service line should have a short section left unconnected from the house along the line. Prior to a request for a cut, cap, and cover, the structure will be built. Foundations or partly framed structures shall not have a service connection run and will not be approved.

Final inspection: call WWTA 423-209-7842

Notify the WWTA office that you are ready for a final inspection. Note: Final inspections shall include air testing and TV'ing. As with any inspection, the plumber must notify the WWTA office that he/she is ready for an inspection and leave his/her contact information. You will receive a call from the WWTA RPR to arrange inspection details to coordinate a time to watch the air test and CCTV inspection. Both air test equipment and CCTV equipment will be on site and ready to go at the agreed upon time. The maximum amount of pipe ditch line will be filled to final grade prior to any air test. The final inspection will be green tagged once the recorded video is submitted to the RPR on site.



D	d
< 4"	4"
4–6"	6"
8"	6"
10"	8"
12"	8"
15"	8"
18"	8"
21"	10"
24"	10"

TRENCH BEDDING (CLASS "I", ASTM D 2321)

MATERIAL SHALL BE ½" or 57 STONE. PAYMENT FOR THE BEDDING SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT PIPE FOR VARIOUS TYPES, SIZES, AND DEPTHS LISTED IN THE BID SCHEDULE.

TYPICAL TRENCH AND BEDDING FOR GRAVITY AND FORCE MAIN

HAMILTON COUNTY WATER & WASTEWATER TREATMENT AUTHORITY

SD–GEN–1

GENERAL REQUIREMENTS

1. ALL STREET CUTS MUST BE REPAIRED IMMEDIATELY AFTER BACKFILLING AND ACCORDING TO THIS STANDARD.
2. A ROAD CUT PERMIT AND AN APPROVED TRAFFIC CONTROL PLAN ARE REQUIRED FOR ALL CUTS IN STREETS.
3. WHERE LONGITUDINAL CUTS ARE MADE, THE OWNER RESERVES THE RIGHT TO REQUIRE ADDITIONAL RESURFACING BEYOND THE LIMITS OF THE REPAIR TO ENSURE THE PROPER RIDING CHARACTERISTICS AND THE STABILITY OF THE PAVEMENT.

DRAWING NOTES

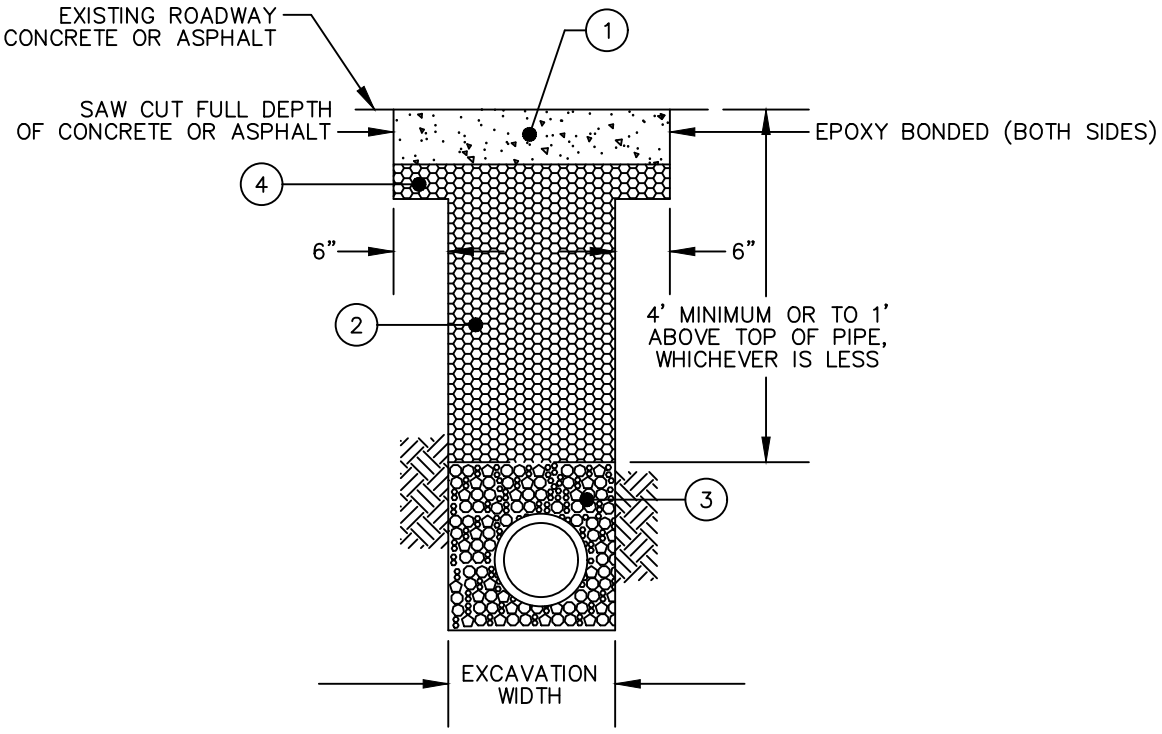
(1) CLASS "A" CONCRETE PAVEMENT (4,000 PSI MINIMUM), 8" MINIMUM THICKNESS, COARSE BROOM FINISH THE CONCRETE SHALL BE COLORED AND STAMPED TO MATCH THE ADJACENT CONCRETE AS REQUIRED.

(2) FLOWABLE FILL

(3) BEDDING MATERIAL – SEE SD–GEN–1

(4) MINERAL AGGREGATE BASE, TYPE A, GRADING D (33–P*) COMPACTED TO A DENSITY OF 95% STANDARD PROCTOR. THE THICKNESS SHALL BE THE GREATER OF 4' OR THE EXISTING DEPTH OF BASE MATERIAL.

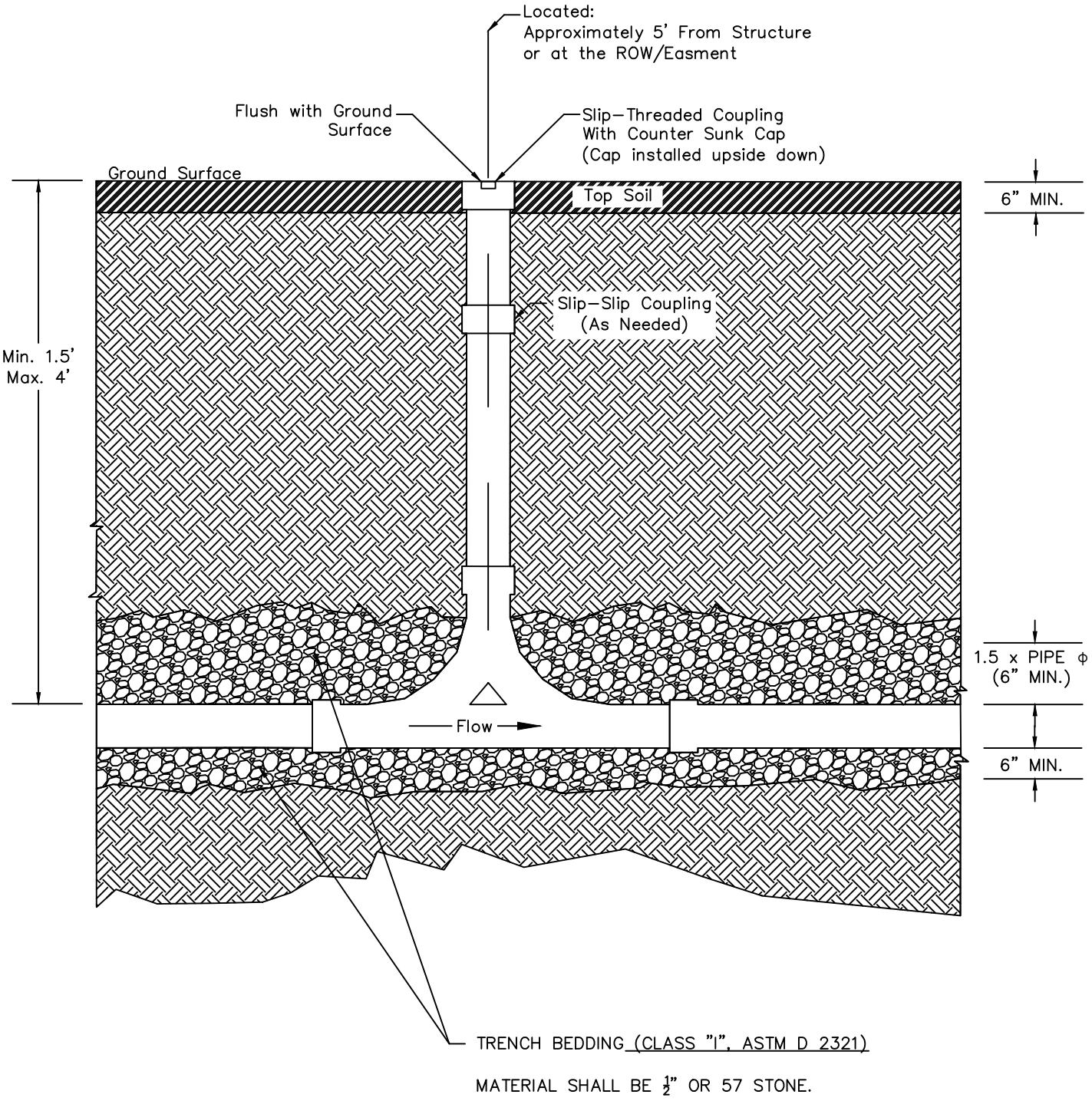
*LOCAL MUNICIPALITIES RULES FOR ROAD REPAIR MUST BE FOLLOWED



TRENCH WIDTH PAVEMENT REPAIR

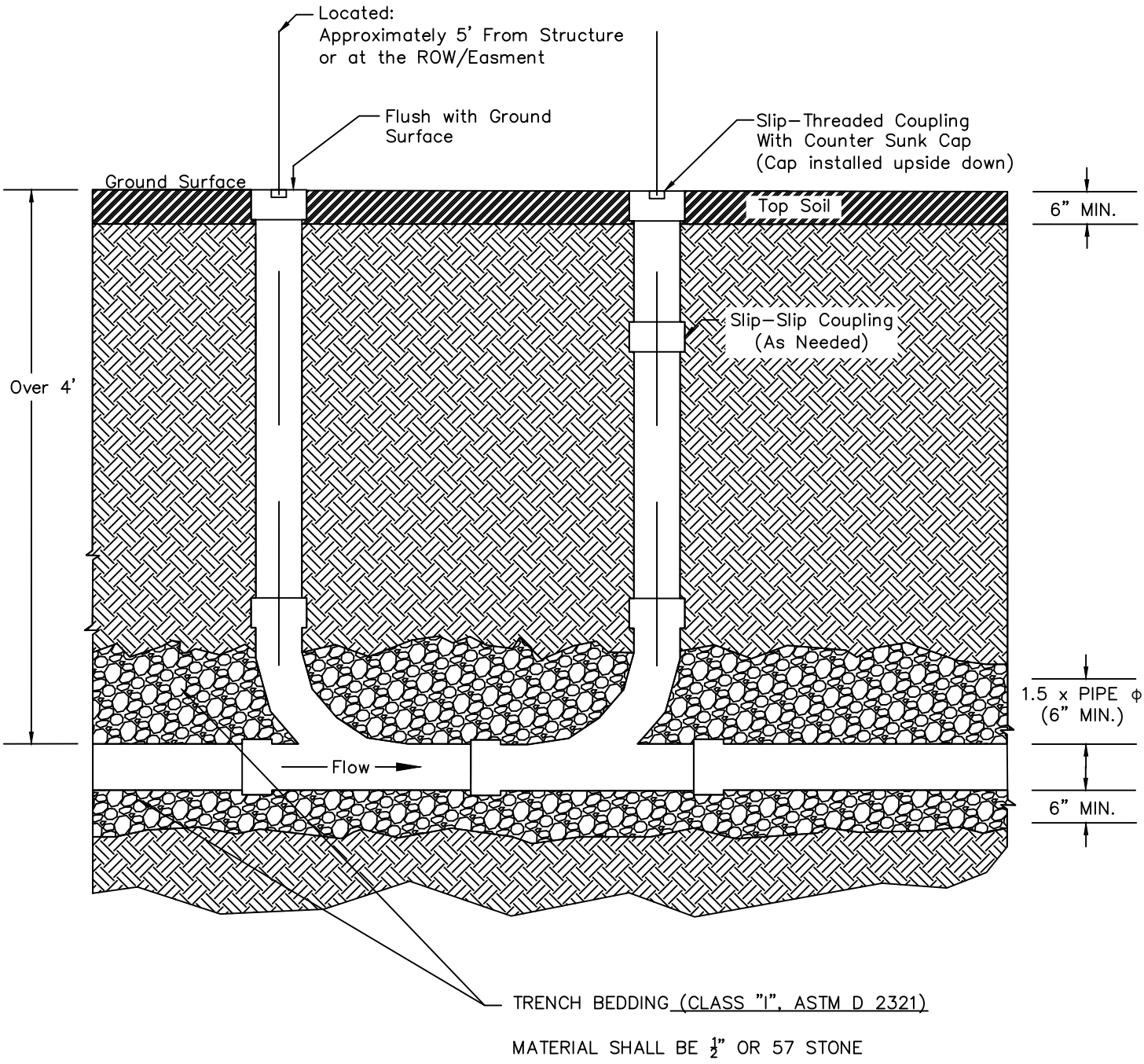
HAMILTON COUNTY WATER & WASTEWATER TREATMENT AUTHORITY

SD–GEN–9



SERVICE CONNECTION
SHALLOW CLEANOUT (TYPICAL)

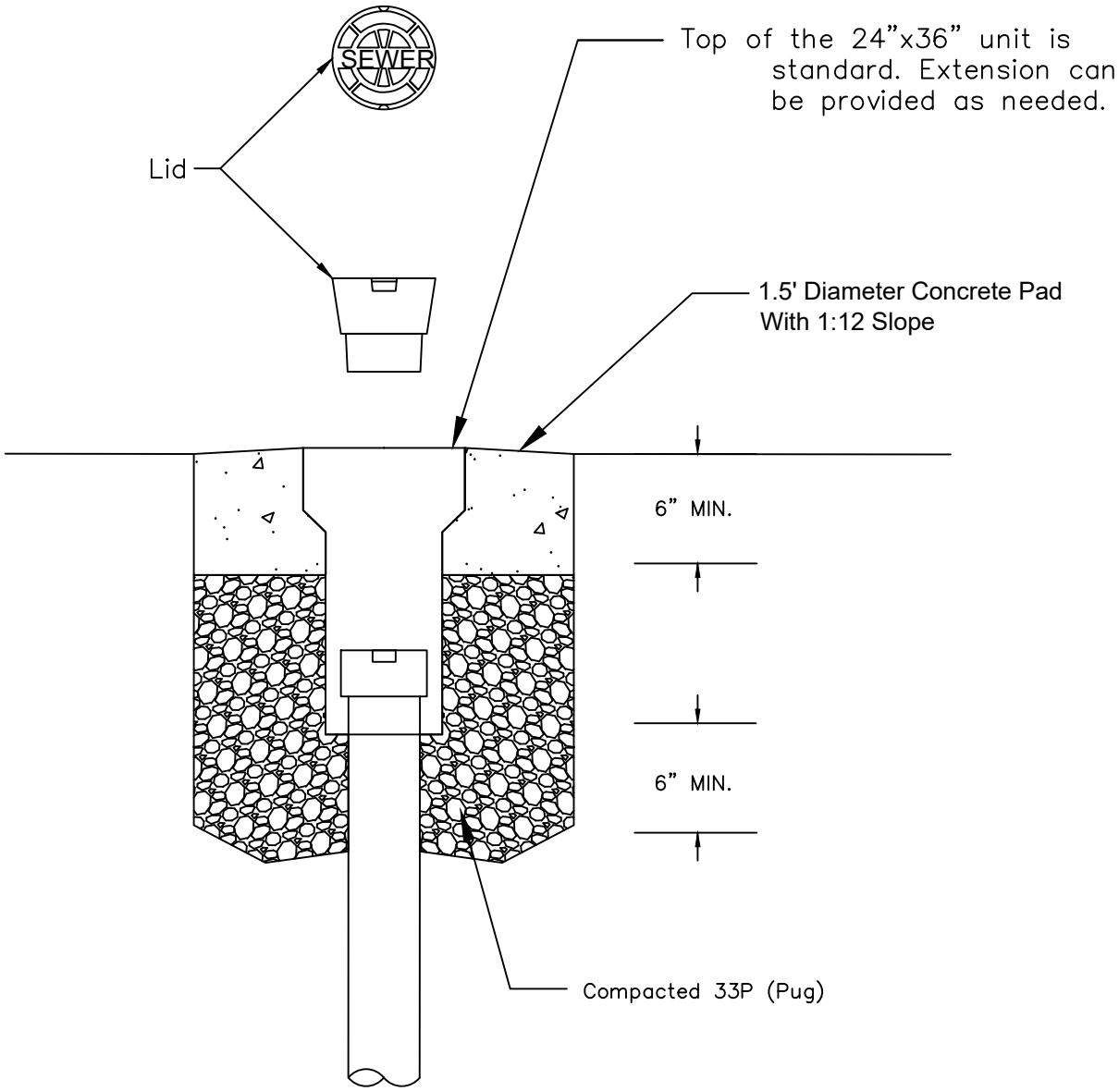
HAMILTON COUNTY WATER & WASTEWATER TREATMENT AUTHORITY
SD–GEN–15



Note: The sweeps should constructed to avoid a "blind spot" in the lateral.

SERVICE CONNECTION
DEEP CLEANOUT (TYPICAL)

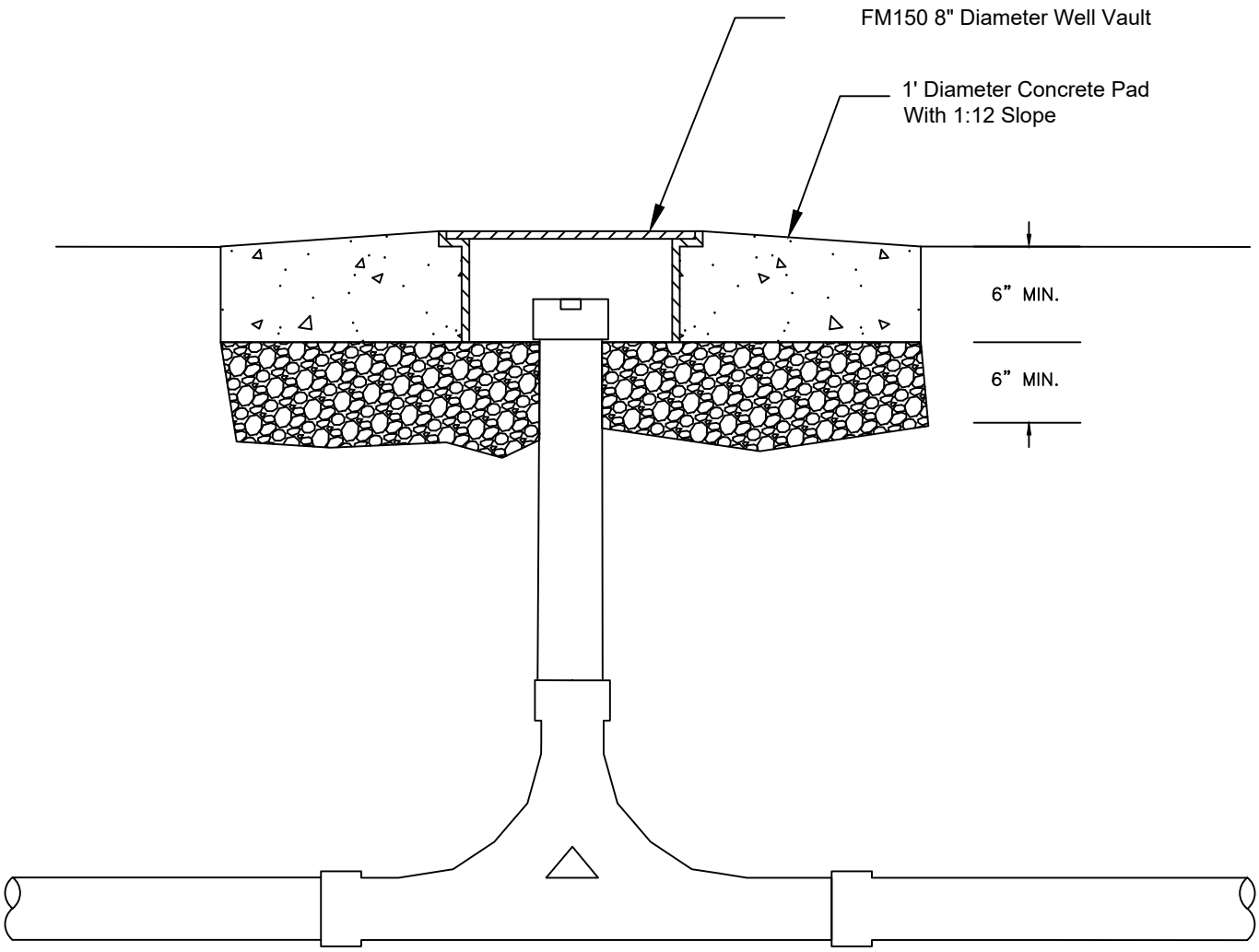
HAMILTON COUNTY WATER & WASTEWATER TREATMENT AUTHORITY
SD–GEN–16



Note: This detail is used for cleanouts required at drives and roadways. If the cleanout can be shifted to avoid a driveway or roadway, it should be.

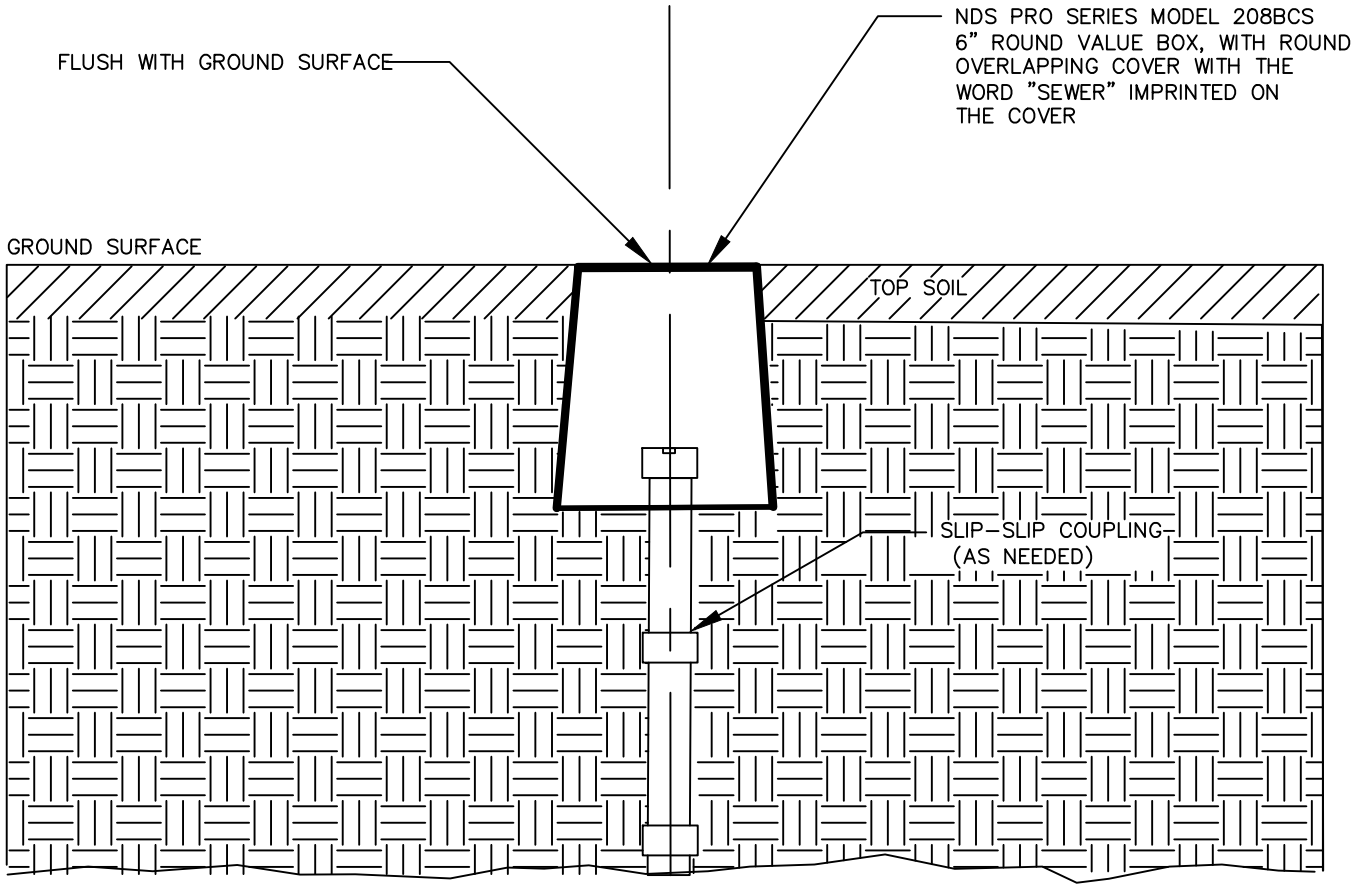
CAST IRON TWO-PIECE ADJUSTABLE VALVE BOX (TYPICAL)

HAMILTON COUNTY WATER & WASTEWATER TREATMENT AUTHORITY
SD-GEN-17



MANHOLE
VALVE BOX (TYPICAL)

HAMILTON COUNTY WATER & WASTEWATER TREATMENT AUTHORITY
SD-GEN-18



TYPICAL CLEANOUT ACCESS BOX DETAIL (FOR USE IN NON-PAVED, NON-CONCRETE, AND NON-GRAVELED AREAS)

HAMILTON COUNTY WATER & WASTEWATER TREATMENT AUTHORITY

SD-GEN-19

SECTION 02731
POLYVINYL CHLORIDE (PVC) GRAVITY SEWER AND SERVICE PIPE

PART 1 - GENERAL

1.01 SCOPE

The work covered by this section includes furnishing all labor, equipment, and materials required to install and test polyvinyl chloride (PVC) pipe, including accessories, as shown on the Drawings and/or specified herein.

1.02 QUALITY ASSURANCE

A. The Contractor, at the Engineer's request, shall furnish a certificate from the manufacturer of the pipe and fittings that the manufacturer is fully competent and capable of manufacturing PVC sewer pipe, fittings, and accessories of uniform texture and strength that will fully comply with these Specifications and have so manufactured this class of pipe in sufficient quantities to be certain that it will meet all normal field conditions of usage. The manufacturer must have adequate equipment and quality control facilities to be sure that each extrusion of pipe is uniform in texture, dimensions, and strength.

B. Pipe shall be tested when requested by the Engineer and all pipe so designated shall be tested in accordance with ASTM D 2412 “Standard Method of Test for External Loading Properties of Plastic Pipe by Parallel Plate Loading.”

C. Each length of pipe and each fitting shall have the following data clearly marked on each piece:

1. Manufacturer's name or trademark
2. Manufactured date
3. Nominal pipe size
4. PVC compound used
5. ASTM material code designation
6. ASTM specification designation

The text should be set so that it is visible to the RPR at the time of observation (i.e. the text should be facing up when the pipe is set in the trench.)

1.03 SHOP DRAWINGS AND ENGINEERING DATA

Complete shop drawings and engineering data shall be submitted to the Engineer in accordance with the requirements of Section 01300, “Submittals” of these Specifications.

1.04 STORAGE AND PROTECTION

A. PVC pipe and fittings shall be stored under black plastic cover.

B. All pipe and accessories shall be stored aboveground and fully supported so as not to bend or deflect excessively under its own weight.

1.05 GUARANTEE

A. The Contractor shall provide a guarantee against defective equipment and workmanship in accordance with the requirements of the Section 01740, “Guarantees and Warranties” of these Specifications.

PART 2 - PRODUCTS

2.01 PVC PIPE AND FITTINGS

A. The pipe and fittings shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. The pipe shall be as uniform as commercially practical in color, opacity, density, and other physical properties.

B. The manufacturer shall provide waterstops, acceptable to the Engineer, which shall be applied to the outside of the plastic pipe when the pipe is to be enclosed in any structure where concrete or mortar is used which will prevent leakage along the outer wall of the barrel of the pipe.

C. No single piece of pipe shall be laid on any project covered by this Specification unless it is found to be generally straight. Such pipe shall have a maximum ordinate as measured from the concave side of the pipe not to exceed 1/16 inch per foot of length. If the deviation exceeds this requirement, then the particular piece of pipe shall be rejected from the use until it can comply with this provision.

D. Wyes, tees, bends, adapters, and any other fittings required shall be provided. Engineering data for such fittings showing cross-sectional views with dimensions shall be provided and such data and fittings shall be approved by the Engineer prior to their use. The materials used in the manufacture of fittings shall conform

to the requirements for the pipe with which they shall be used and any variation of such requirements shall be subject to the approval of the Engineer. Fittings shall have wall thickness equal to or greater than that of the pipe to which they are joined.

2.02 PIPE

A. PVC piping and accessories shall be made from Virgin Type I, Grade 1 PVC compounds with physical and chemical properties conforming to those defined and described in ASTM D 1784 for “Rigid Poly (Vinyl Chloride) Compounds and Chlorinated Poly (Vinyl Chloride) Compounds”.

B. The PVC pipe and accessories shall be manufactured in accordance with the requirements of ASTM D 3034, Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.

C. Minimum pipe size for gravity mains shall be 8-inch diameter and shall be SDR 26 or less.

D. Pipe for service lines and house connections shall be a minimum of 4-inch diameter for gravity connections:

- 4-inch and 6-inch diameter shall be Schedule 40.
- 8-inch to 24-inch diameter shall be SDR 26 or less.

E. Under certain conditions, if large diameter pipe, 21" to 48", is required, it shall be closed profile pipe with an integral bell and elastomeric seal joints which meet the requirements of ASTM F-794. Pipe and fittings shall be made from polyvinyl chloride compounds, which comply, with the requirements for a minimum cell classification of 12364A as defined by ASTM D-1784. Use of large diameter closed profile pipe must be approved by the WWTA Chief Engineer or Executive Director.

F. When the depth of the pipe is greater than 14 feet then the pipe is to be made of ductile iron in accordance with the requirements of section 15062, “Ductile Iron Piping, Ductile Iron and Cast Iron Fittings” of these specifications.

G. All materials must be inspected by an inspector designated by WWTA before used for construction.

2.03 JOINTS

A. PVC pipe joints shall be the bell and spigot types subject to the approval of the Engineer.

B. When required, joints shall be sealed with a rubber O-ring gasket, and shall be of a composition and texture which is resistant to common water, and which will endure permanently under the conditions likely to be imposed by this usage. The gasket installation shall be done in accordance with the pipe manufacturer's instructions using all the necessary materials, lubricants and equipment recommended by the manufacturer.

C. PVC pipe joints for service laterals shall be solvent weld/glue. Solvent cements shall meet the requirements of ASTM D-2564.

PART 3 - EXECUTION

3.01 PIPE INSTALLATION

A. In accordance with ASTM D-2321.

B. Before sewer pipe is placed in position in the trench, the bottom and sides of the trench shall be carefully prepared and bracing and sheeting installed where required. Each pipe shall be accurately placed to the exact line and grade called for on the Drawings.

C. The Contractor shall use the laser beam method of setting a line and grade for the sewer by using the laser beam coaxially through the center of the sewer being laid. The laser beam projector is to be rigidly mounted to its support platforms, with a two-point suspension, or equivalent, assuring that all ground and equipment vibrations are kept to an absolute minimum. All equipment including equipment necessary to control atmospheric conditions in the pipe to keep line and grade to acceptable standards of accuracy shall be furnished by the Contractor. The laser beam system must be operated by competent experienced personnel who have been properly trained to operate the equipment used.

D. The Contractor shall stake check pegs at all manholes throughout the job. Check pegs midway between manholes and any other check point deemed necessary to assure accuracy of the equipment shall be provided by the Contractor.

E. Each piece of pipe and special fitting shall be carefully inspected before it is placed and no defective pipe shall be laid in the trench. Pipe lying shall proceed upgrade, starting at the lower end of the grade and with the bells uphill. At the

discretion of WWTA, if the first line section is not at minimum grade slope then pipe laying will begin at the first new manhole. When this applies the first line section connecting to the existing sewer shall be the last section of sewer installed. No pipe shall be covered until observed by an RPR. Trench bottoms found to be unsuitable for foundations after pipe laying operations have started shall be corrected and brought to exact line and grade with approved compacted materials.

F. Bell holes shall be of sufficient size to allow ample room for making the pipe joints properly. Bell holes shall not be cut out more than ten joints ahead of pipe laying. The bottom of the trench between bell holes shall be carefully graded so that the pipe barrel will rest on a solid foundation for its entire length as shown on the Drawings. Each joint shall be laid so that it will form a close concentric joint with adjoining pipe in order to avoid sudden offsets or inequalities in the flow line.

G. Water shall not be allowed to run or stand in the trench while pipe laying is in progress or before the joints are completely set or before the trench has been backfilled. At no time shall the Contractor open up more trench than his available pumping facilities are able to dewater. Where sewer pipelines are located in or across stream beds or drainage ditches, the Contractor shall divert the stream flow and dewater each section as the work progresses.

H. No joints shall be made where pipe or joint materials have been soiled by earth in handling until such soiled surfaces are thoroughly cleaned by wire brushing and wiping until all traces of the earth are removed.

I. As the work progresses, the interior of all pipe shall be kept thoroughly clean. After each line of pipe has been laid, it shall be carefully inspected and all earth, trash, rags, and other foreign matter removed from the interior.

J. Backfilling of trenches shall be started immediately after the pipe in place has been inspected and approved by the Engineer or his inspector and backfill shall be deposited and compacted as provided under section 02220"Earthwork" of these Specifications.

K. Minimum slope of gravity sewers:

Pipe Diameter (inches)	Minimum Slope (ft per 100ft)
8”	0.40
10”	0.30
12”	0.25

L. Any stub outs of manholes for future use must be approved by WWTA and be at least 10 feet in length.

M. Plugged stubs shall be closed with PVC caps held securely in place.

N. Connections to existing manholes or inlets where no plugged stubs exist shall be made by coring the wall of the existing structure, inserting a length of sewer pipe and approved boot into the hole, and trowelling the inside and outside surfaces of the joint to a neat finish. The bottom of the manhole shall be shaped to fit the invert of the sewer pipe as specified under section 02605 "Manholes" of these Specifications.

O. Contractor to keep plug at downstream manhole until all testing is complete and sewer is accepted. Contractor required to remove plug. If plug is removed prior to final inspection, contractor will be held responsible for downstream system and shall be required to clean and repair.

3.02 INSTALLATION OF SERVICE PIPE AND TEES

A. Installation of service pipe shall conform to the appropriate requirements as shown on the drawings, including standard details SD-GEN-15, SD-GEN-16, and SD-GEN-17.

B. Connections of service lines to the main sewer shall be made with bends of the proper degree to make the service run perpendicular to the main sewer. No greater than a 45-degree bend shall be installed at each change of direction of the sewer service lateral. Pipe shall be laid to a uniform line and grade. Minimum grade shall be 1 percent.

C. A double clean out shall be provided at the discharge point on the outside sewer service line of the house, and a double clean out shall be provided on the sewer service line at the property line between the public sewer and the structure being connected. Other clean outs shall be provided in accordance with the governing plumbing code.

D. The end of all service lines shall be plugged with a PVC plug or cap and a wooden 2” x 4” shall extend above existing and/or final grade.

E. When a service line is installed under the roadway, it shall be backfilled with stone. The top three (3) feet shall be backfilled with crusher run (33P) stone and the last three (3) feet of the line, from the pavement edge, shall be bedded and totally backfilled with crusher run (33P) stone. (See Standard Detail SD-GEN-9).

F. Riser connections shall be installed at the locations shown on the Drawings or directed by the Engineer. A magnetic marking tape shall be placed 12 inches over the top of each riser during backfilling to mark the location of the riser. The marking tape shall be heavy gauge metallic film (.004 inch thick). Tape shall be standard green color imprinted with the words "Warning - Buried Sewer Line Below."

G. When a new service line is installed to connect an existing building sewer; when the building sewer is cast iron, concrete, or clay, a Fernco fitting may be approved. Otherwise, NO FERNCO FITTINGS (or other flexible fittings) shall be used for new or the repair of private service laterals.

H. Service lines shall not be placed under driveways, patios, or other permanent structures.

I. Service lines shall be bedded and supported completely with washed stone 6" under and 1.5 times pipe diameter over the pipe.

J. If the sewer service line crosses a water or storm line, there shall be a minimum of 18-inches between the top of the bottom pipe and the bottom of the top pipe.

K. When it is impractical to obtain proper horizontal or vertical separation or depth, the WWTA shall be contacted, prior to construction of the sewer service line. In the event of reduced separation, additional testing of the sewer service line may be required to insure water-tightness or additional measures may be required. Refer to standard detail SD-GEN-11.

3.03 CONNECTIONS

A. If the work consists of the construction of a sewer that is to replace an existing sewer, all of the existing service lines shall be kept in operation and connected to the new line.

B. Unauthorized connections as determined by WWTA shall have their service lateral disconnected and/or have their water shut off.

C. When existing service line connections include materials or installation methods other than that which is currently approved by the WWTA, the service line shall be removed and replaced properly with currently approved materials and methods.

D. Connections of service lines shall be made in a neat and professional manner, and approved by WWTA. Cleanout plugs shall be installed, wherever feasible, by using a standard wye or tee.

3.04 INSPECTION AND TESTING

A. After completion of any section of sewer, the grades, joints, and alignment shall be true to line and grade. Joint surfaces shall be smooth. There shall be no visual leakage and the sewer shall be completely free from any cracks and from protruding joint materials, deposits of sand, mortar, or other materials on the inside.

B. One hundred percent of all PVC pipe 8 inches in diameter and greater shall be deflection tested in the presence of the Engineer's Inspector. The maximum allowable deflection for PVC is 5 percent. After the PVC pipe has been installed and backfilled, the Contractor shall check the deflection by pulling a rigid ball or an engineer approved 9-arm mandrel having a diameter equal to 95 percent of the actual inside diameter of the pipe through the pipe. Deflection tests shall not be conducted before the elapse of 24 hours after backfilling. Any pipe not passing the mandrel shall be replaced and rechecked.

C. All sewer pipe shall be tested using low pressure air testing in accordance with the procedures and standards listed below. Contractor shall furnish all supplies, material, labor, services, etc., needed to make the test at no extra cost to the Owner, including a gauge that reads in 5 pound increments.

    1. Clean pipe to be tested by propelling a snug-fitting jet wash ball (approved by inspector) through pipe with water.

    2. Plug all pipe outlets with suitable test plugs. Brace each plug securely to prevent blowouts. As a safety precaution, pressurizing equipment shall include a regulator set at slightly above test pressure to avoid overpressurizing and damaging an otherwise acceptable line. No one shall be allowed in the manhole during testing.

    3. Service laterals shall be tested at 5 psi for 5 minutes.

D. If no ground water is present in the sewer trench, the beginning test pressure shall be 5.0 psig. If the elapsed time for a 0.5 psig pressure drop equals or exceeds those listed in Table 1, the section being tested shall have passed.

TABLE 1

Pipe Dia. (in)	Min. Time (min/sec)	100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft
8	5:00	5:00	5:00	5:00	5:00	5:00	5:00	5:00	5:42
10	5:00	5:00	5:00	5:00	5:00	5:56	6:55	7:54	8:54
12	5:40	5:40	5:40	5:42	7:08	8:33	9:58	11:24	12:50
15	7:05	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02
18	8:30	8:30	9:37	12:49	16:01	18:14	22:26	25:38	28:51
21	9:55	9:55	13:05	17:27	21:49	26:11	30:32	34:54	39:16
24	11:20	11:24	17:57	22:48	28:30	34:11	38:53	45:35	51:17
27	12:45	14:25	21:38	28:51	36:04	43:16	50:30	57:42	64:54

E. No drop in PSI during the test will be allowed. Any leakage, including active seepage, shall be corrected by removal and replacement of pipe or joint where such leakage exists until the pipelines meet the requirements of the allowable leakage specifications.

F. All sewer pipe shall be videoed using Close Circuit Television (CCTV). CCTV will require the following: CCTV equipment must possess a color camera capable of producing color digital video with on screen accurate footage and video titler. Color digital video is to be non-pixilated, sharp image, representing the true shape and color of the pipe with defects being easily recognizable. Digital records shall be submitted to WWTA in an accessible manner. Footage will be displayed on the digital recorded video image. Video titler system will have capability of inputting on screen defect codes, and all applicable site information.

3.05 CLEANUP

A. After completing each section of the sewer line, the Contractor shall remove all debris, construction materials, and equipment from the site of the work, grade and smooth over the surface on both sides of the line and leave the entire construction area in a clean and neat condition. Unless otherwise called for on the Drawings, the Contractor shall restore all disturbed areas to as good as or better than its original condition. Restoration shall include but not be limited to grassing, replacing shrubbery, trees, fences and other improvements which have been disturbed.

B. Cleanup and restoration of each yard shall be completed no later than 7 calendar days after each section of sewer line is installed.

C. Upon final inspection, if any foreign matter is present in the system, flush and clean the sections of line as required.

END OF SECTION 02731