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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 $\frac{3}{4}$ -inch 57 stone, and the pipe shall be covered by no less than $1\frac{1}{2}$ times the diameter of the pipe with stone. (See Standard Details SD-15 and SD-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 with crusher run stone. (See Standard Detail SD-9.) If a cleanout is required in the paved area, the cleanout will be protected as shown in Standard Detail SD-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-pixelated—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-15 and SD-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-18

SD-GEN-15
SD-GEN-19

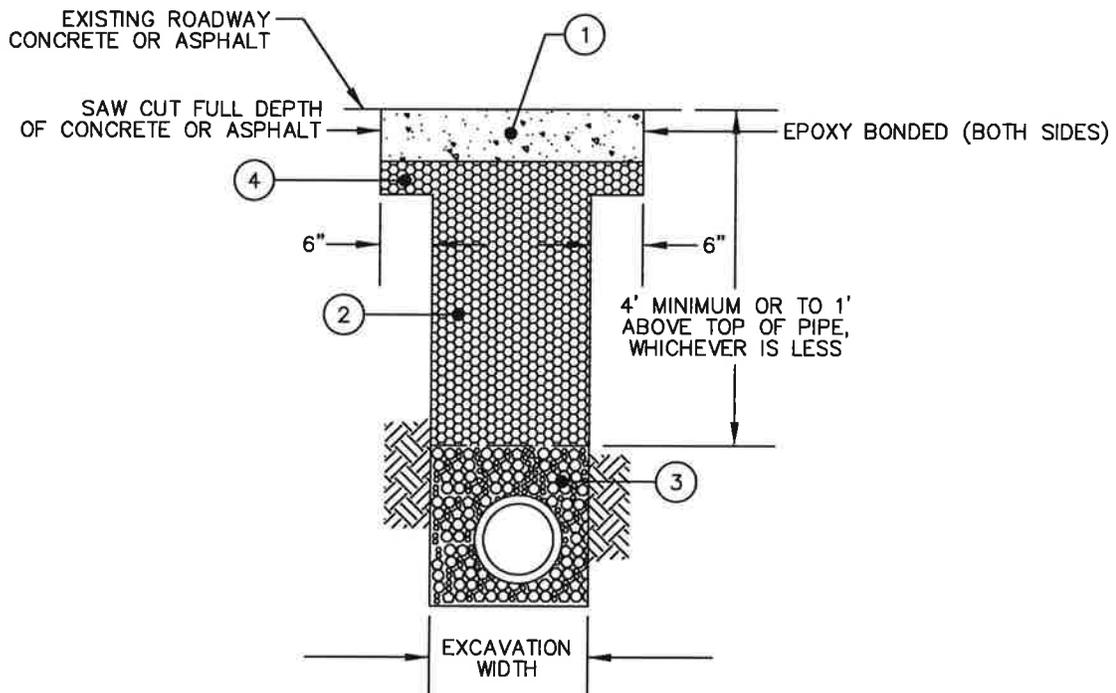
SD-GEN-16 SD-GEN-17
Section 2731

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.

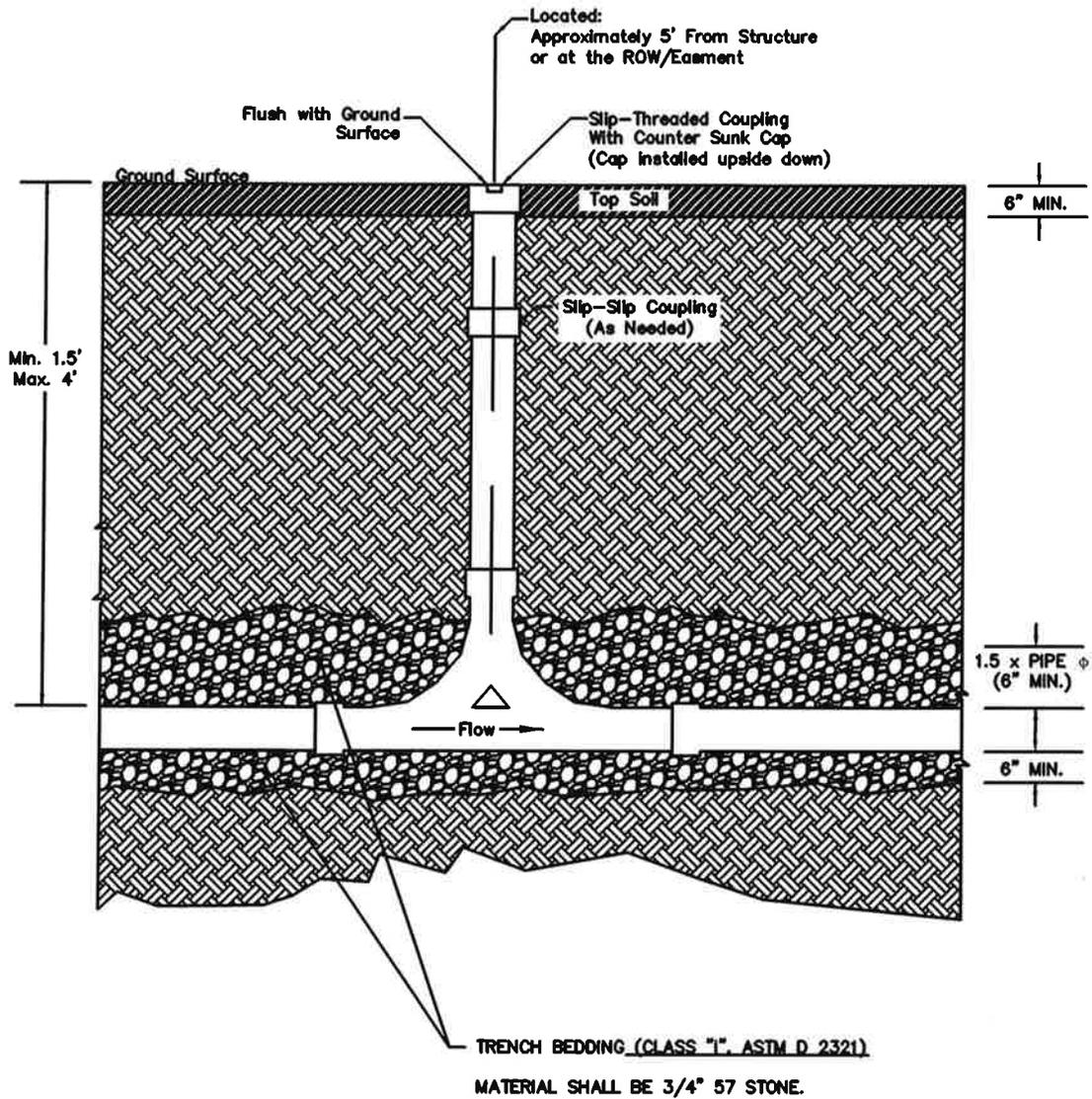
DRAWING NOTES

- 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 MINERAL AGGREGATE BASE, TYPE A, GRADING D (33-P*) COMPACTED IN 8" LIFTS AND TO A DENSITY OF 95% STANDARD PROCTOR.
- 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.



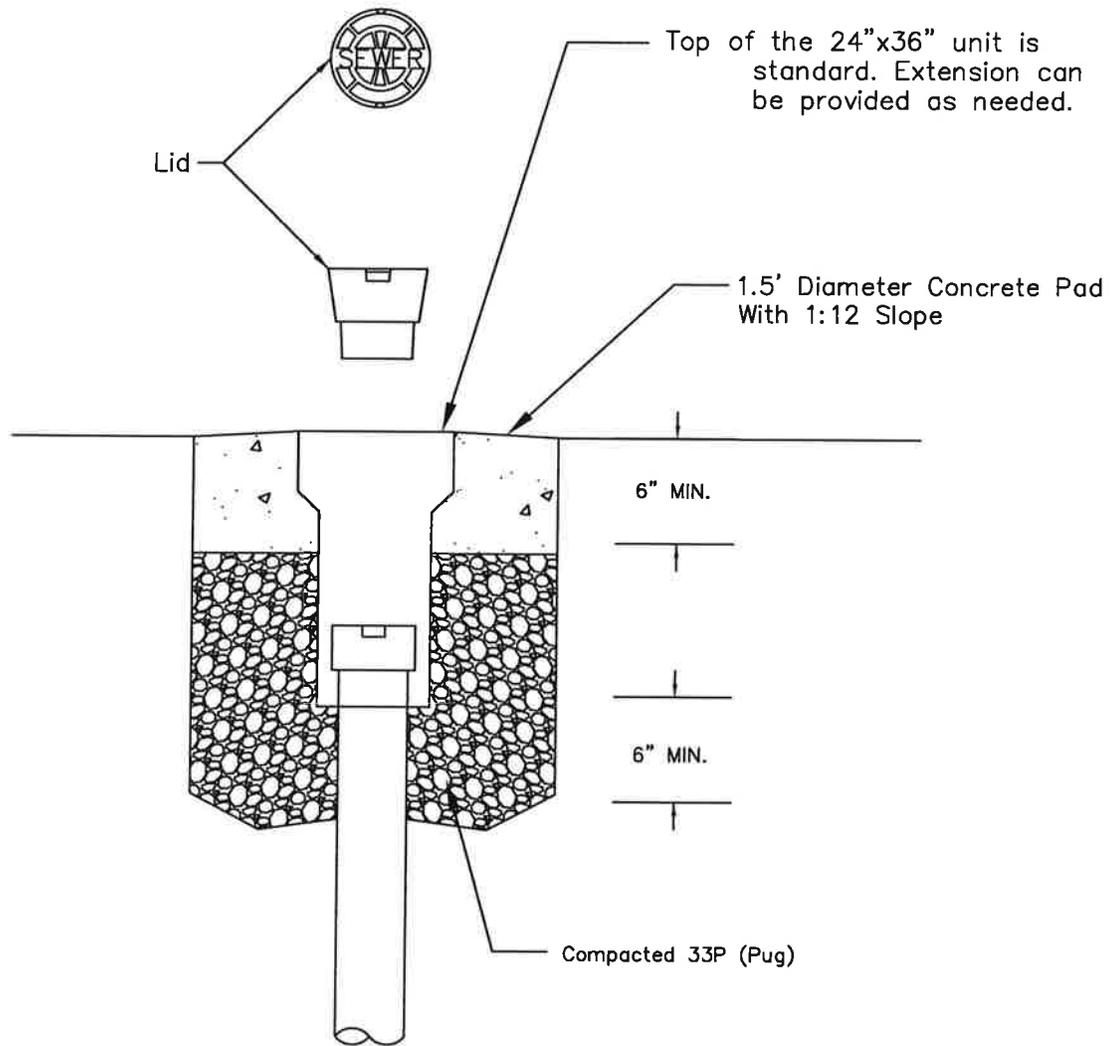
TRENCH WIDTH PAVEMENT REPAIR

HAMILTON COUNTY WATER & WASTEWATER TREATMENT AUTHORITY
SD-GEN-9



SERVICE CONNECTION
SHALLOW CLEANOUT (TYPICAL)

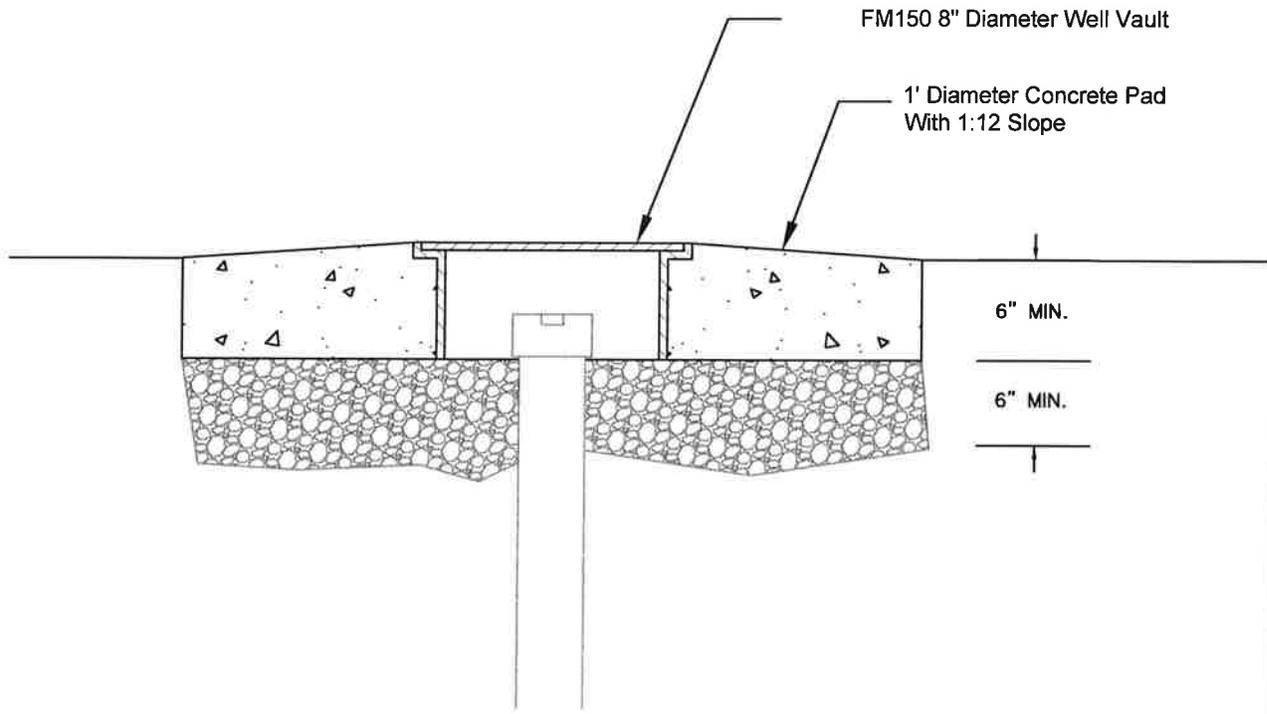
HAMILTON COUNTY WATER & WASTEWATER TREATMENT AUTHORITY
SD-GEN-15



Note: 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.

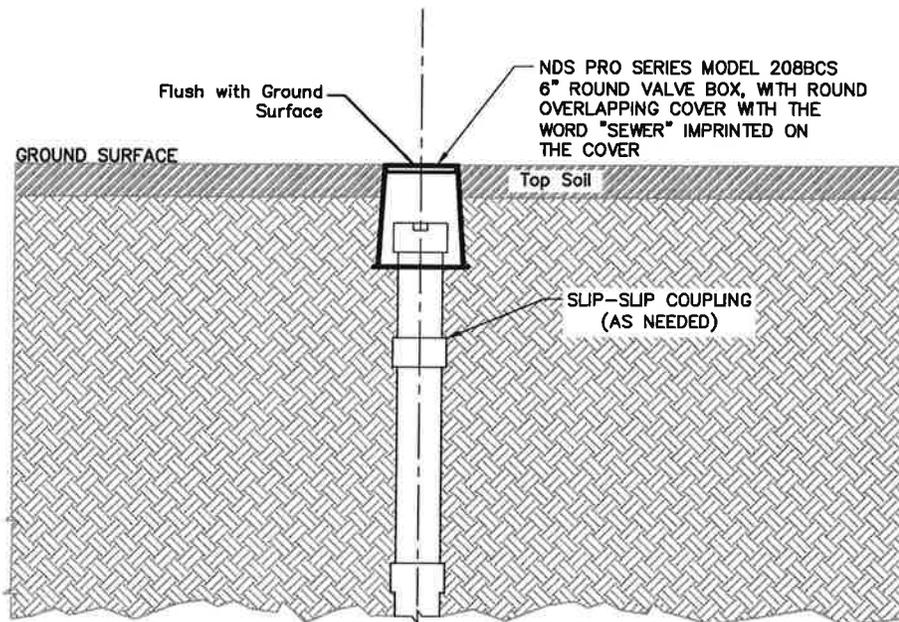
CAST IRON TWO-PIECE ADJUSTABLE VALVE BOX (TYPICAL)

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 Master Plumber, 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, or the Engineer's Resident Project Representative (RPR), 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

This 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 the Section 1300, "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

The Master Plumber shall provide a guarantee against defective equipment and workmanship in accordance with the requirements of the Section 01340, "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. Pipe for service lines and house connections:
 - 4-inch diameter shall be Schedule 40.
 - 6-inch diameter shall be Schedule 40. Schedule 35 may be approved.
- D. 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.

2.03 JOINTS

- A. 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. Pipe will be placed in the trench so that the required text is up.
- C. Before sewer pipe is placed into 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.
- D. The Master Plumber shall ensure that the lateral is sloped in accordance with Section 704 of the International Building Code.
- E. The Master Plumber will inspect each piece of pipe and special fitting carefully before it is placed and no defective pipe shall be laid in the trench. Pipe laying shall proceed upgrade, starting at the lower end of the grade. 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 Master Plumber open up more trench than his available pumping facilities are able to dewater.
- 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 in Section 3.02 below – Installation of Service Pipe and Tees.

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 SD-GEN-15, SD-GEN-16, and SD-GEN-17.
- B. Connections of service lines to the main sewer if required 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. 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 ½ inch washed stone (See Standard Detail SD-GEN-9).

- E. 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.
- F. Service lines shall be bedded and supported completely with washed stone 6" under and 1.5 times pipe diameter over the pipe.
- G. If the sewer service line crosses a water line, there shall be a minimum of 18-inches between the top of the bottom pipe and the bottom of the top pipe.
- H. When it is impractical to obtain proper horizontal or vertical separation or depth, the WWTA shall be contacted, prior to replacing 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.

3.03 CONNECTIONS

- A. Unauthorized connections as determined by the WWTA shall be disconnected from the service lateral.
- B. 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.

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. All PVC sewer laterals shall be tested using low pressure air testing in accordance with the procedures and standards listed below. Evaluation Contractor shall furnish all supplies, material, labor, services, etc., needed to make the test at no extra cost to the Owner, including an air pressure gauge capable of reading up to 10 psi accurately.
 - 1. 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.
 - 2. Service laterals shall be tested at 5 psi for 5 minutes.

- C. Any leakage, including active seepage, shall be reported to the WWTA representative for correction by the lateral repair Master Plumber.
- D. All PVC sewer laterals 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-pixelated, sharp image, representing the true shape and color of the pipe with defects being easily recognizable and defined on a standard 21" LCD computer monitor, or 30" TV. Digital recorded format should be such that the media file can be easily viewed through a DVD+/- player or DVD+/- drive on a computer and transferred into the WWTA video storage device. 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 Master Plumber 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. The Master Plumber 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

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 washed stone as bedding is 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.