



DIVISION 3

Standards for Sewer Installation

Division 3

Standards for Sewer Installation

Table of Contents

3-1.000	SANITARY SEWER INSTALLATION	4
3-1.010	General	4
3-1.020	Construction Standards	4
3-2.000	MATERIALS AND INSTALLATION	4
3-2.010	General	4
3-2.020	Pipe Materials	4
3-2.030	Pipe Installation	5
3-2.040	Lampholes.....	8
3-2.050	Sewer Laterals	8
3-2.060	Precast Concrete Manholes	9
3-3.000	TESTING.....	12
3-4.000	Early Sewer System Access.....	14
3-4.010	Existing Buildings	14
3-4.020	Model Home Sewer Permit(s) for Single Family Recorded Plats	14
3-5.000	Bypassing Sewer Flows	15
3-5.010	Bypass Flow Through Plugs.....	15
3-5.020	Bypass Pumping or Hauling	15
3-6.000	Abandoning Existing Sewer System	16

DETAILS

Open	S-1
Open	S-2
Standard Precast Manhole	S-3
Saddle Manhole	S-3A
Polypropylene Ladder & Manhole Steps	S-4
Manhole Frame and Cover	S-5
Shallow Manhole	S-6
Open	S-7
Drop Manhole Connection	S-8
Force Main, Drop Manhole Connection	S-8A
Lamphole/Cleanout	S-9
Sewer Lateral - New Construction	S-10
Alternate Sewer Lateral – New Construction	S-10A
Standing Sewer Lateral – New Construction	S-10B
Sewer Lateral – Existing Mains	S-11
1-Inch Ai/Vacuum Release	S-12
Valve Marker Post	S-13

3-1.000 SANITARY SEWER INSTALLATION

3-1.010 General

Any extension of the District sanitary sewer system shall be completed in accordance with the terms of the Agreement or Contract. The developer will be required to extend sewer service to the neighboring properties unless approved otherwise by the District.

All sanitary sewer extensions shall conform to the "Criteria for Sewage Works Design" prepared by the Washington State Department of Ecology (Ecology), the District's Standards and other local authority requirements. Prior to construction, the District may require an approved set of plans from Ecology (WAC 173-240-030) to be filed in the District offices.

3-1.020 Construction Standards

All materials, installation and workmanship shall be in accordance with the latest District Standards, the latest edition of the State of Washington's Standard Specifications for Road, Bridge and Municipal Construction as amended by the District, American Water Works Association(AWWA) guidelines, and the governing jurisdictional authority as determined by the District.

3-2.000 MATERIALS AND INSTALLATION

3-2.010 General

The Contractor shall furnish all materials noted and as listed on the Construction Drawings and required to complete the work. All materials shall be manufactured with premium materials.

3-2.020 Pipe Materials

Sewer Material	Standard
Type PSM, Polyvinyl Chloride (PVC) Sewer Pipe	ASTM D 3034 SDR 35
Ductile Iron	ANSI/AWWA C151/A21.51, AWWA C116 ceramic epoxy lined. Class 50 for 6"-16" up to 28 feet deep Class 51 for 18"-20" up to 28 feet deep Class 52 for 24" up to 28 feet deep
Polyvinyl Chloride (PVC) Pressure Pipe C-900 4" - 12" C-905 12" - 24"	ANSI/AWWA C-900 & C-905, DR 18
High Density Polyethylene Pipe (HDPE)	ASTM D3350 SDR 9 Force Mains, SDR 11 Gravity Sewer
Cast in Place Pipe (CIPP)	ASTM F1216 or ASTM F1743

- As a general rule, ductile iron shall be used:
 1. at depths under 5 feet (3 foot minimum cover)*
 2. at depths over 16 feet*
 3. when sewer mains follow lot lines within easements
 4. at stream crossings
 5. through casing pipes
 6. in areas of fill
 7. for pipe diameters 18 inch and greater; and
 8. other instances when the District determines ductile iron pipe is warranted.
- Where Ductile Iron Pipe is being installed, pipe shall be lined with Protecto 401 Ceramic Epoxy Lining or an approved equal lining.
- C 900 or C 905 may be used:
 1. at depths under 5 feet (3.5 foot minimum cover)*
 2. at depths 6 – 20 feet*
 3. for diameters 18 inch and greater up to depths of 20 feet
- HDPE pipe may be used:
 1. in areas of fill
 2. for sewer force mains
 3. in steep slopes
 4. at stream crossings
 5. through casing pipes
- CIPP may be used in rehabilitation of existing lines only when upsizing in the future will not be necessary and upon approval by the District. Refer to Division 6, Trenchless Installation.

* Depths are measured from top of pipe to finish grade

Force mains shall be ceramic epoxy coated and lined with Protecto 401 Ceramic Epoxy or an approved equal lining, restrained joint Class 53 Ductile Iron or High Density Polyethylene SDR 9 unless approved otherwise by the District. Testing of force mains shall be in accordance with pressure testing for water mains. No TV inspection will be required.

3-2.025 Survey Staking

Survey line and grade shall be established to successfully install the District's utilities at the correct horizontal and vertical locations. At a minimum, all manholes, lampholes, side sewers, and other appurtenances shall have field staking installed under the supervision of a licensed land surveyor to provide sufficient horizontal and vertical control. Sewer main line shall have additional staking for alignment and grade at 25 feet and 50 feet out of each manhole, in the direction of installation, typically traveling upstream.

3-2.030 Pipe Installation

- A. General Standards: All pipe shall be unloaded from delivery vehicles with mechanical equipment. Dropping of pipe onto the ground or mats shall not be permitted. All pipe and fittings shall be carefully lowered into the trench in such a way as to prevent damage to sewer main and protective coatings and linings. Under no circumstances shall materials be dropped or dumped into the trench.

Trench widths at the bottom of the excavation shall meet the minimum width as shown in Division 7, Standard Detail TBR-1 for the pipe diameter. In the event that these widths are exceeded, a stronger grade of pipe, higher pipe class and/or a greater amount of bedding material may be required by the District.

Bell holes shall be excavated in the bedding material to allow for unobstructed assembly of the joint. Care should be taken that the bell hole is no larger than necessary to accomplish proper joint assembly. When the joint has been made, the bell hole should be carefully filled with bedding material to provide for support of the pipe throughout its entire length.

Immediately upon beginning pipe installation, the Contractor shall place and secure a heavy duty watertight plug in the sewer main at the new or existing manhole as directed by the District; plug shall be secured with a chain and attached to the ladder inside the manhole. The plug shall remain in place throughout the project until such time as the project is accepted by the District. Failure to place the plug or removal of a plug prior to District acceptance shall be grounds for District issued penalties as established by resolution. Contractor is responsible to remove plug upon final acceptance of the sewer.

Under no circumstances shall the Contractor be allowed to discharge flows from the new sewer main into the District system until or unless approved by the District.

Gravity sewers shall be designed and installed in a straight alignment with uniform grade and pipe type between manholes. Variance from established line and grade can be up to one-inch (1"), provided that it falls within a localized area not to exceed 20 feet or one pipe length. Variation in the invert elevation between adjoining ends of pipe due to non-concentricity of joining surface and/or pipe interior surfaces (in the direction of flow only) shall not exceed one-inch (1") maximum.

In addition, the allowable gap "wide joint" from spigot to bell transition shall be 1-inch maximum.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being installed. After placing a length of pipe in the trench, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. The pipe shall be secured in place with pipe bedding tamped under it. Precaution shall be taken to prevent dirt from entering the joint space. At times when pipe laying is not in progress, the open ends of pipe shall be sealed by a water-tight plug or other means approved by the District. If water is in the trench when work resumes, the plug shall remain in place until the trench is dewatered as specified. Tee branches shall be blocked and sealed with the same joint and pipe material used for pipes.

All lines shall be flushed clean of all debris. Water for this purpose may be furnished by the District through a water use permit.

All sewer mains shall be a minimum of 8-inches in diameter.

Sewer mains shall not be installed under curbs, sidewalks or driveways unless approved by the District.

Sewer mains and fittings in areas where the piping is placed on compacted fill shall be

restrained joint as directed by the District.

All sewer mains shall have a minimum slope of 0.005 ft/ft. Under unique circumstances, sewer mains greater than 12-inch may be allowed to be installed at a lesser slope. The minimum slope shall meet criteria provided in the Washington Department of Ecology's "Criteria for Sewage Works Design".

All sewer main end runs shall be 0.010 ft/ft slope or greater if no further extension is needed or planned. Sewer main slope through easements shall be 0.010 ft/ft unless approved by the District. Slopes greater than 0.20 ft/ft shall be anchored as shown in Division 7 Standard Detail TBR-5.

- B. Ductile Iron Pipe: The pipe and fittings shall be inspected for defects before installation. All lumps, blisters and excess coating shall be removed from the bell and spigot ends of each pipe, the outside of the spigot and the inside of the bell shall be wire-brushed and wiped clean and dry, and be free from oil and grease before the pipe is laid. All pipe coatings shall be checked prior to being laid. All coatings shall be repaired or the pipe replaced as directed by the District.

The cutting of pipe for inserting fittings or closure pieces shall be done in a neat and workmanlike manner, without damage to the pipe or coating and so as to leave a smooth end at right angles to the axis of the pipe. Field kit epoxy shall be applied to all cut pipe. Pipe shall be laid with bell ends facing uphill.

For connection of mechanical joints, the socket, plain end of each pipe and gasket shall be cleaned of dirt before joining, and shall be joined according to manufacturer's directions. Bolts shall be tightened alternately at top, bottom and sides, so pressure on gasket is even.

When metallic pipes are installed in locations of active or abandoned sewer drain fields, the metallic pipe shall be wrapped using American V-Bio Poly Encasement or equal and the pipes bedded and covered with 6" of clean, imported material.

- C. PVC Pipe and Fittings, SDR 35 and C-900/905: Care shall be taken to properly align, clean and lubricate the spigot and socket area of the pipe before joining. The pipe spigot shall be forced into the socket until the reference mark on the spigot is flush with the bell end. Forcing the pipes together beyond this point prevents proper contraction and expansion at the joints.

The cutting of pipe for inserting fittings or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe.

All connections to an existing sewer pipe or different materials from PVC shall be made with sleeves or adapters which are specifically manufactured for this purpose, and shall use elastomeric gasket joints, unless otherwise specifically authorized by the District.

- D. HDPE, See Division 6 for pipe installation. Follow specifications for fusing, and reaming when applied to open cut installation.
- E. CIPP, See Division 6 for pipe installation.

- F. Aggregate, Trenching, Backfill and Restoration: See Division 7.
- G. Trench Dams: See Division 7.
- H. Installation on Steep Slopes: See Division 7 Standard Detail TBR-5.

3-2.040 Lampholes

A. Materials

Lampholes shall be the same material as the sewer pipe.

For lamphole frame and cover, see Standard Detail S-9.

Lamphole frames and covers shall be made from superior quality cast iron. The iron shall be of such character as to make castings that will be tough, strong, sound and of even grain and shall conform to the requirements of ASTM Designation A48, Class 30. Lamphole frames and covers shall be of uniform quality, free from blow holes, porosity, shrinkage, distortion, cavities, cracks or other defects. They shall be smooth and well cleaned and continuously machined to prevent rocking and rattling. Welded or caulked repairs shall not be permitted. Covers shall be easily removable.

B. Installation

Install lampholes as shown on the Construction Drawings and in accordance with Division 3 and Standard Detail S-9.

Lampholes shall only be installed on sanitary sewer runs less than 200 feet where the main will be a minimum .01 ft/ft (1%), and extended in the future or as directed by the District.

Lamphole rings and covers shall be set carefully to the lamphole cover grade in a full bed of cement grout. The lamphole cover elevation shall be set flush with the existing pavement or grade in paved and improved areas. In unimproved areas, lamphole cover elevations shall be set two (2) inches above grade unless otherwise shown on the Construction Drawings to be set higher. Install lamphole marker posts on easements and offsite construction in areas where lampholes are located outside of paved areas. Lamphole marker posts shall be composite fiberglass maker posts as manufactured by Hansen Supply (Green 66 inch Hansen Tri-Flex, TF-66-06) or equal and shall be clearly marked "Sewer".

Lampholes located outside of paved areas but which are subject to traffic loads shall be constructed in accordance with Division 3 Standard Detail. S-9.

3-2.050 Sewer Laterals

All sewer laterals shall be a minimum of 6 inches in diameter and be extended to the property line/edge of easement or the dry utilities whichever is furthest. Install a cap with gasket at end point as shown in Division 3 Standard Detail S-10.

The depth of each sewer lateral shall be indicated in the field by the Contractor using 2-inch black stenciled numerals on a white 2-inch by 4-inch marker post. In general, the lateral

shall be a minimum depth of 6-feet at the property line.

No vertical or horizontal bends shall be allowed in the public right-of-way or sewer easement without specific approval by the District.

Side sewers outside the public right-of-way or public easement shall be the responsibility of the property owner to maintain.

Measurement from the downstream manhole to each lateral shall be shown on the record drawings

See Division 5 for installation of a side sewer outside the public right-of-way or public easement and installation for connecting side sewers to existing laterals.

3-2.060 Precast Concrete Manholes

A. Materials

1. Precast manhole components shall conform to the requirements of ASTM Designation C478. All Portland Cement used in the manufacture of the precast sections shall conform to the requirements of ASTM Designation C150, Type II or Type V unless otherwise approved by the District. Standard manhole depth is between 5 feet and 19 feet. Depths less than or greater than the standard depth shall be as approved by the District.

Precast base sections shall conform to the requirements for precast riser section. The base shall be a minimum six (6) inches thick under the pipe invert. Openings for pipes shall be circular, tapered toward the inside of the section, and shall be of the minimum size possible to accommodate the pipe to be inserted and effectively seal the joint.

Standard precast riser sections shall consist of circular sections in standard nominal inside diameter of 48 inches and shall be in accordance with ASTM C478. Minimum height of a riser section shall be one (1) foot. The base sections and risers shall be arranged so no pipes pass through manhole joints.

The taper section (cone) shall be eccentric, tapering from 48-inches inside diameter to 24-inches inside diameter. Joining to the riser sections shall be similar to joining between riser sections, but the top surface shall be flat and at least 5-inches wide radially to receive grade rings.

Grade rings above the taper section shall be 24-inches inside diameter and 2- or 4-inches high. Grade ring combined height shall be a minimum of 8 inches and shall be a maximum of 20-inches.

2. Manhole frames and covers shall be made from superior quality cast or ductile iron. The iron shall be of such character as to make castings that shall be tough, strong, sound and of even grain and shall conform to the requirements of ASTM A48, Class 30. Manhole frames and covers shall be of uniform quality, free from blow holes, porosity, shrinkage, distortion, cavities, cracks or other defects. They shall be smooth and well cleaned and continuously machined to prevent rocking and rattling. Welded or caulked

repairs shall not be permitted. Covers shall be easily removable and shall be interchangeable. Frame and cover shall be in accordance to Division 3 Standard Detail S-5. The manufacturer's name shall be cast into and not stamped on an exposed surface.

3. Water tight seals shall be provided in areas where the manhole lid may be inundated with water or where odor is a concern. Provide and install $\frac{3}{4}$ " strip of Conseal CD-101 manhole ring and cover sealant on the frame immediately under the manhole lid and bolt the lid down.
4. Polypropylene manhole steps shall be made of a copolymer polypropylene superior in its resistance to corrosiveness, meeting the requirements of ASTM D4101 and shall completely encapsulate a deformed 1/2-inch steel reinforcing rod, conforming to ASTM A615, Grade 60. Steps shall be Lane International Corporation Manhole Step, or equal. Polypropylene steps shall be factory installed in complete accordance with the manufacturer's instructions. This shall be accomplished by pre-drilling two (2) parallel 1-inch holes, 3-3/4-inch deep and 13-inches on center in the cured concrete base, riser and taper sections of the manhole. The insertion ends of the step shall be fully coated with non-shrink epoxy grout then driven into the holes to the prescribed depth. In no case shall the pre-driven hole be allowed to penetrate through the wall of the manhole section.
5. Channels and benches shall be cast using low shrinkage class 3000 concrete with pea gravel or aggregate up to 5/8 inch (max size). Manholes with pre-cast channels conforming to this minimum standard will also be accepted.
6. Drop manhole interior wall shall be coated with Raven 400 lining system or an approved equal unless approved otherwise by the District, (based on high flows or turbulence).

B. Installation

Manhole installation shall be as detailed on the Construction Drawings and in accordance with the Standard Details. Precast sections with damaged joint surfaces, cracks, or damage shall not be installed.

Precast base sections shall be set on a prepared bedding material. Before the precast base is set in place, the bedding material shall be carefully leveled to provide full bearing for the entire base section.

Precast riser sections and cones shall be set using the specified joint sealant or gasket. Priming and preparation of surfaces and installation of jointing material shall be in strict conformance with the manufacturer's instructions. Grade rings shall be set in a full bed of cement grout.

All connections to manholes shall be made with manhole adapters providing a transition from the manhole to pipe material and providing a watertight leak proof seal. All voids around manhole adapters shall be thoroughly grouted and sealed inside and outside of the manhole walls and installed in accordance with manufacturer recommendations. Minimum fall across the channel shall be 0.10-foot.

Connections to an existing manhole where a suitable stub does not exist shall be core

drilled and a water tight boot style adapter installed.

Manhole frames shall be set carefully to the established surface grade in a full bed of cement grout. The manhole rim elevation shall be set flush with the existing pavement or finished grade in paved and improved areas. Wood shims are not allowed. In unimproved areas, manhole rim elevations shall be set 2- inches above grade unless otherwise shown on the Construction Drawings to be set higher. Install manhole marker posts on easements and offsite construction in areas where manholes are located outside of paved areas. Manhole marker posts shall be fiberglass marker posts as manufactured by Hansen Supply (Green 66 inch Hansen Tri-Flex, TF-66-06) or equal and shall be clearly marked "Sewer".

Manholes located outside of paved areas but which are subject to traffic loads shall be set within a 6-foot diameter by 4-inch thick concrete protective pad.

The Contractor shall provide paved vehicular access to all manholes, either within the public right-of-way or within easements, except as approved otherwise by the District. For sanitary sewers, the guiding criteria shall be that the upstream and downstream manholes shall be accessible and within 300 feet of an inaccessible manhole to allow for the clearing of blockages within all lines.

Manholes set in paved streets or other paved areas shall be adjusted to finished grade after paving and when required, the manhole frame shall be tilted to conform to the slope of the paved surface.

Channels shall be given a smooth finish, or equivalent, and channel landings shall be sloped to drain into the channels. Bottom and sides shall be given a trowel finish. Benches shall receive a light broom finish. Unless precast channeled bases are used, notify the District when channeling is scheduled and provide a copy of the concrete mix ticket.

Ladders shall be installed in base sections. Steps shall be installed in riser sections and taper sections so that the completed manhole shall have a continuous vertical ladder with equally spaced rungs as shown on the Standard Details. Steps shall be firmly cast or grouted in place. Infiltration around steps shall not be allowed.

Manholes shall not be located in curbs and gutter lines or low points. Manholes shall not be located in sidewalks or crosswalks unless otherwise approved by the District.

Maximum spacing between manholes is 400 feet.

The minimum inside diameter of manholes shall be 48 inches. For incoming pipes larger than 24 inches in diameter, the manhole shall be 54 inches or greater. Manholes with invert elevations greater than or equal to 19 feet below finished grade shall be a minimum 60 inches in diameter.

Manholes are mandatory when connecting significant commercial or industrial facilities to the sanitary sewer system and shall be of adequate size to provide for monitoring and sampling equipment.

3-3.000 TESTING

A. General

Prior to testing, the Contractor shall flush and thoroughly clean all lines. All dirt, sand and other debris shall be completely removed.

In addition to the requirements for testing the sewer pipe, all lines shall be visually free from leakage. If the pipe installation fails to meet these requirements, the Contractor shall determine, at his own expense, the source or sources of leakage and shall repair (if the extent and type of repairs proposed by the Contractor appear reasonable to the District) or replace all defective materials or workmanship. The completed pipe installation shall meet the requirements of the visual test, and shall meet the requirements of the air test or the alternative water exfiltration test before District acceptance.

If deemed necessary by the District, the first section of pipe installed, at least 100 feet in length, installed by the each crew, shall be tested, in order to qualify the crew and/or the material. A successful installation of this first section shall be a prerequisite to further pipe installation by the crew. At the Contractor's option, testing may be performed at any time during the construction process after at least two 2 feet of backfill has been placed over the pipe. The District shall require testing after backfilling is complete.

B. Closed Circuit Television Inspection (CCTV)

All videos shall be provided on DVD format. The video camera shall have a swivel head lens capable of turning and rotating 180 degrees to provide inspection of side sewer connections. The camera shall have a 1-inch ball placed immediately in front of the camera mounted such that the ball contacts the pipe bottom at all times.

Television inspections shall be conducted following trench backfill; compaction, and cleaning, after all manholes are channeled, and invert elevations, are received, reviewed and accepted by the District. Water shall be poured into the system immediately preceding the television inspection and shall be visible on the DVD recording.

The District shall be notified two working days prior to any televised inspection. All lines not clean shall be re-flushed, cleaned and re-videoed. The Contractor shall provide to the District a DVD with a separate written report for each sewer line segment.

C. Air Testing

In areas where other underground utilities will be installed, (power, communications, gas, etc.) that may conflict with the sewer installation, the District shall witness the air test after those utilities are installed. The Contractor may choose to pre-test their lines prior to this.

Surveyed, as-constructed inverts shall be submitted to the District and approved prior to scheduling air testing with the District. The pipe installation shall be tested with low pressure air. Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches 4.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe. At least two minutes shall be allowed for temperature stabilization before proceeding further.

The time interval required for the internal pressure to decrease from 4.0 to 3.0 pounds per square inch must be equal to or greater than the time that is indicated on the following table:

Length of Pipe (ft)	Length of 6-inch Pipe (ft)									
	0	50	100	150	200	250	300	350	400	
8-inch										
12-inch										
0	0	1:19	2:39	3:59	5:19	6:39	7:59	9:19	10:39	
50	2:22	3:42	5:01	6:21	7:41	9:01	10:21	11:41	11:52	
100	4:44	6:04	7:24	8:43	10:03	11:23	12:29	12:22	12:16	
150	7:06	8:26	9:00	11:06	12:25	13:00	12:50	12:42	12:35	
200	9:28	10:48	12:08	13:28	13:29	13:16	13:06	12:57	12:50	
250	11:50	13:10	14:14	13:56	13:41	13:29	13:19	13:10	13:02	
300	14:12	14:41	14:21	14:04	13:51	13:39	13:29	13:26	14:12	
350	15:06	14:44	14:26	14:11	13:58	13:47	14:02	14:48	15:33	
400	15:06	14:47	14:30	14:16	14:04	14:37	15:23	16:09	16:54	

Time in Minutes and Seconds

Plugs used to close the sewer pipe for the air test shall be securely braced to prevent the unintentional release of a plug which can become a high velocity projectile. Gauges, air piping manifolds and valves shall be located at the top of the ground. No one shall be permitted to enter a manhole where a plugged pipe is under pressure. Air testing apparatus shall be equipped with a pressure release device such as a rupture disk or a pressure relief valve designed to relieve pressure on the pipe at 6 psi, or as recommended by the manufacturer.

3-4.000 Early Sewer System Access

3-4.010 Existing Buildings

When an existing onsite septic system fails, is damaged, removed, or does not meet health standards, the Developer may be allowed to connect the existing structure to the new sewer system at the discretion of the District. At a minimum, the following criteria must be met:

- The newly installed sewer system must be satisfactorily tested as stated in previous sections of this chapter and approved by the District for use
- Developer of Record signs the " Early Sewer System Access Agreement"
- Manhole castings and lids must be anchored or collared to prevent movement
- Developer shall be responsible to remove all plugs and isolation equipment from manholes where sewage will be present
- Only the structures approved will be permitted to connect under request
- The Owner of the property shall obtain side sewer permit(s) and execute all appropriate forms
- All sewer fees and permitting must be paid for
- Safety measures for entering confined spaces with sewage discharge shall be followed

3-4.020 Model Home Sewer Permit(s) for Single Family Proposed Recorded Plats

At the sole discretion of the District, a limited number of model homes under construction may be able to obtain water meters and permitted side sewer connections if the water and sewer system is complete and able to provide service. The Developer must have the water and sewer system tested and acceptable to receive or give service in accordance with these standards and:

- Complete the Punchlist except for Plat Recording
- Sign the Early Water or Early Sewer Access Agreement
- Provide easements over the water and sewer system for the District to hold in a format acceptable to the District, which will be returned to the developer once recording is complete
- Provide copies of the building permits issued by the authority
- Provide future legal addresses and billing information on the District's Service Connection Application form.
- Provide \$5,000 deposit cash or assignment)for each set of Model Home connections approved, to be returned at Use and Operations

Once the above items are submitted and approved;

- Purchase both the meter and side sewer permit as a set
- Pay all deposits and fees for the meter and side sewer connection

The number of Model Homes allowed to obtain meters and side sewer permits are based on the size of the proposed plat and are limited to:

<u>Plat Size by Lots</u>	<u>Allowed Connections (up to)</u>
3-9	2
10-25	3
26-50	4
51 & up	5

The District reserves the right to terminate this option, reduce the allowed connections, or lock off and suspend service if the intent of this allowance is not met. Homes may not be sold to or occupied by, permanent residents, nor anyone living in a model home that has been granted temporary service until official acceptance from the District. Daily use is allowed. If occupancy is granted before plat recording, the District must be notified.

Tampering or removing District meters is not permitted and doing so could revoke the right to obtain meters. The developer is responsible for their agents, builders, and all onsite personnel in this matter.

For other types of single family development, dry side sewer pipe extensions to within eighteen (18) inches of the building may be allowed up to the limit provided in this section following the same criteria, at the discretion of the District.

3-5.000 Bypassing Sewer Flows

When work will affect the existing flow of sewage, the developer/contractor shall provide for the bypassing of all sewage flow.

3-5.010 Bypass Flow Through Plugs

A method for bypassing sewer flow is to use flow through plugs that allow sewer flows to continue during rechanneling of a manhole base. The flow through plugs shall be sized to accommodate existing peak flows and allow solids to pass through. Sewer bypass plugs shall be removed as soon as possible. The Developer/Contractor is responsible for the success of this bypassing work.

3-5.020 Bypass Pumping or Hauling

Another method for bypassing sewer flows is to use bypass pumping and/or hauling sewer flows to a downstream manhole. The minimum criteria for bypass pumping or hauling are listed below. Specific site conditions may require additional activities by the Developer/Contractor to successfully complete the bypassing.

- Prepare and submit a sewer bypass system plan to the District for review at least 10 working days prior to start of Work. The bypass plan, at a minimum, shall include bypassing anticipated peak daily flow, a schematic showing the pumps and pump sizing, the pipes and pipe sizing, and power source. Sewage bypassing shall not commence until the District has confirmed the success of the sewage bypass operation.
- Pumps shall be non-clog sewage pumps capable of pumping spherical 3-inch solids. The Contractor shall provide at least two pumps, each capable of pumping the peak daily flow. The standby pumps shall be in place ready for operation and connected to power. Bypass pressure pipe shall be in good condition with watertight joints. Bypass pressure pipe shall be 4-inch diameter minimum. Flexible hoses are not permitted. Provide H20 rated ramps over pipe for vehicle access if needed. Higher rated ramps may be required where exposed to commercial traffic.
- The Contractor may use electrical generators to power the pumps. However these generators must be equipped with noise suppression features that satisfy the jurisdictional noise ordinance requirements for night and weekend work if necessary. It will be the Contractor's responsibility to secure a noise variance if required as a result of its operations.
- The Contractor shall notify affected property owners at least three business days prior to installing the bypass system. The Contractor shall maintain the sewer bypass system until the Work is complete. The Contractor shall have qualified person(s) on site at all times, dedicated to oversee the operation of the bypass system and monitor manholes for potential back up. After the sewage bypass operation is complete, all sewers subject to surcharging during the bypass operation shall be cleaned.
- During any bypass operation, a vactor truck must be onsite during bypass operations and sized to accommodate flows if pump swap is needed.

3-6.000 Abandoning Existing Sewer System

The portions of the sewer system that are replaced or no longer needed as a result of the Work shall be abandoned or removed, as directed by the District or as required by the jurisdictional authority. Whichever requirement is more stringent shall apply.

At a minimum, all manhole sections including the cone or flat top shall be removed to the base and any pipe line that remains in the ground shall be filled with flowable CDF. The manhole sections, any pipe and appurtenances removed shall be properly disposed of by the Developer/Contractor. Where abandoned pipe is connected to a manhole that remains active, a heavy duty mechanical plug shall be inserted into the pipe to be abandoned and the manhole shall be rechanneled in a professional manner to eliminate any infiltration from abandoned piping. Bypassing sewer may be required for rechanneling. See applicable section.

If the jurisdictional authority requires removal, the pipe and manholes shall be disposed of in compliance with authorities and the trench lines restored in accordance with District Standards Division 7 or jurisdictional authority, whichever is more stringent shall apply.