

1020 - Service Lines

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1. GENERAL

1. The customer's property is to be protected in order to maintain good customer relations.
2. Service order forms shall be completed on all service line installations and turned in daily. See Design and Installation [1018 - New Gas Install Service Order Processes](#).
3. Concerning pressure ratings of services and mains:

1. High pressure services (MAOP greater than 60 psig) shall be approved by General Manager of Engineering or designated appointee.
2. New high pressure services adjacent to structures should be designed for an MAOP of 175 psig or less; a stopcock rated for 175 psig may be used on these services, however it must be removed during testing. Any stopcock or valve used during testing should be sufficiently rated for the test pressure.
3. New services from mains with an MAOP above 175 psig should have additional pressure regulation installed near the property line to lower the pressure such that a standard plastic service can be installed. While this requirement applies to the current MAOP, the ultimate system design pressure should also be considered.
4. The standard service line diameter for residential services shall be ¾" IPS. Engineering shall determine if an increased service line size is required to serve large custom homes or extremely long services.
5. Service lines should be installed in as straight a line as possible between the riser and the main, and they should generally extend from the main at a 90 degree angle. If the service must be installed around an obstruction, every attempt should be made to get the service back in line as soon as possible.
6. The minimum diameter for any riser going to a rotary meter set shall be 1-1/4". This includes risers for standard 3/4" services with rotary meters.
7. Service tees should not be installed in locations where future driveways are likely to be constructed.
8. Service tees chimneys should be vertical. An exception can be made in situations where there is shallow main or an obstacle directly adjacent to the main with approval from engineering.
9. A second valve in addition to the stopcock should always be used when purging. The second valve is used to minimize valve lubricant being displaced in the meter stopcock. See Construction Detail Manual [Drawing 3.04.100 - Purge Stack - Service Line](#).
10. All installed service lines shall be purged to ensure the line is clear of any debris or obstruction. Services with excess flow valves (EFV) shall be cleared of any obstructions by purging the line with air prior to connection to any EFV. See D&I [1025 - Excess Flow ValveS \(EFV\)](#).
11. All new commercial services should be submitted and entered into GIS through UGPM.
12. All new services should be sleeved in cases where the riser will be encased with concrete.

2. DEFINITIONS

1. Refer to Design and Installation [1018 - New Gas Install Service Order Processes](#) for pertinent service definitions.

3. INSTALLATION

1. Refer to Detail Drawings & O&M:

[3.02.100 Trench Detail - Service in ROW \(Non SCDOT\)](#)

[3.02.200 Trench Detail - Service within SCDOT ROW](#)

3.04.100 Purge Stack - Service Line

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2. When a plastic service line is inserted into the casing of a retired steel service, tracer wire should be bonded between the main and the casing section(s). Plastic insert protectors (PIPS) should be used. Casing ends should be sealed with wax tape or other effective seals to prevent water from entering. Wires should be bonded before plastic pipe is inserted into the casing. Exception: Do not bond tracer wire to the main if casing pipe is bare or ineffectively coated.
3. The normal installation depth for service lines is 24". Each buried service line must be installed with at least 24" of cover in private property after final grading (If installing prior to final grading, installation depth must accommodate expected grading.) and at least 24" of cover in streets and roads. However, where an underground structure prevents installation at those depths, the service line must be able to withstand any anticipated external load. Exceptions requiring a minimum service depth up to 18" must be approved by Manager – Engineering Projects or designee.
4. Each service line must be properly supported on undisturbed or well-compacted soil, and material used for backfill must be free of materials that could damage the pipe or its coating.
5. Each service line must be installed, with adequate slack, so as to minimize anticipated piping strain and external loading.
6. A new service line should not be installed under a building or below grade through the outer foundation wall of a building, unless the installation has been approved in advance by Engineering.
7. Warning/caution tape should typically be installed with new service lines. Warning/caution tape is not required under roads. The omission of warning/caution tape may be considered on a case by case basis. If any of the following conditions exist, warning/caution tape should not be omitted:
 1. Critical customer (such as health care facilities)
 2. Large use customers
 3. High pressure commercial/industrial service lines
 4. Larger diameter services (1-1/4" or larger)
 5. Services to multiple meters (such as shopping centers, apartments, etc)
 6. Services with a higher probability/potential for dig-ins (areas of heavy construction)

4. SERVICE RISER VALVES AND CURB VALVE REQUIREMENTS

1. Each service line that is not placed in service upon completion of installation must be installed with a service riser valve that is closed to prevent the flow of gas to the customer. The service riser valve must be provided with a locking device or other means designed to prevent opening by persons other than those authorized by the operator.
2. Nipples with caps will be the standard for all risers without meters. This will include newly installed services and inactive risers in all sizes up to and including 2". Risers greater than 2" are typically blind flanged. Plugs or close nipples shall not be used. The service riser valve is to be equipped with a barrel lock. See Construction Detail Drawing [3.03.100 Service Riser](#).

3. Curb valves with valve boxes may be installed on service lines if approved by the Division Engineer. Service tees with appropriate provisions for shutting off the gas at the main shall be used in residential (single family) areas.

5. LOCATION OF VALVES

1. Each service-line valve must be installed upstream of the regulator or, if there is no regulator, upstream of the meter.
2. Each service line must have a shut-off valve in a readily accessible location that, if feasible, is outside of the building.
3. Each service riser valve shall be installed on the inlet riser with a minimum of 12" clearance between the bottom of the valve and the ground line. See Reference Drawing [03.03.100 Service Riser](#).

6. CONNECTION TO MAIN

1. Refer to Detail Drawings:

[2.01.120 Plastic Tapping Tee - Conventional Fusion](#)

[3.01.120 Plastic Tapping Tee - Mechanical](#)

[2.01.100 Steel Tapping Tee - Weld, Threaded Cap](#)

[2.01.101 Steel Tapping Tee - Weld, Flanged Cap](#)

2. Each service line connection to a main should be located at the top of the main or, if that is not practical, at the side of the main.
3. Protective sleeves shall be installed on the outlet of tapping tees when specified by the tapping tee's manufacturer.
4. Soil should be carefully back filled and tamped at each bellhole where service lines are connected to the main. Soil should be tamped in 6" layers. Soil within 12" above a pipeline should be hand tamped. See D&I Section [1010 – Construction Details](#) for more information.
5. Each mechanical-type service line to main connection must be designed and installed to effectively sustain the longitudinal pull-out or thrust forces caused by contraction or expansion of the piping, or by anticipated external or internal loading.
6. Services shall be connected to the main using an approved service tee.
7. Where cathodic protection is planned to be installed, the service lines shall be properly connected to the main in order to insure electrical continuity.
8. All service taps shall be made using approved "No-Blow" tapping equipment unless self-tapping tees are utilized.
9. When a plastic service line is installed off of a steel main, tracer wire should be bonded to the main. If plastic pipe has already been inserted into an old steel main, do not exothermically weld to the old steel main as the heat may damage the plastic pipe. Extrude pipe should also not be exothermically welded. A clamp or other bonding device should be used in these situations.
10. Mechanical tapping tees used to join service lines to steel mains should be electrically continuous with the main. All coating on the main in the area of the tapping tee should be removed to provide for an adequate electrical bond. Once installation is complete, the main and tapping tee should be properly coated and/or wrapped with Engineering approved tape to prevent corrosion. See Reference Detail Drawing [3.01.110 - Steel](#)

7. SPLIT AND BRANCH SERVICE LINES

1. Host Service - For split or branch services, this is the service line that connects to the main.
2. Split/Branch Service - For split or branch services, this is the piping that connects from the "host service" to an adjacent or adjoining customer's meter and regulator.
3. Split or branch services should be approved by the Engineering Manager before being offered as an option to the customer.
4. Split and branch services should be avoided if the shared portion of the service line is not congruent with the shared property line unless a signed customer agreement or easement is obtained to allow one customer's portion of the service to cross the property of the adjacent customer.
5. All customer service lines that are protected by an EFV shall be identified within CSR Desktop.
6. See D&I Section [1025 - Excess Flow Valves \(EFV\)](#) for Excess Flow Valve installation practices regarding split and branch service lines.

8. PRESSURE TESTING

1. All services shall be tested in accordance with [DENC and DESC O&M Manual Ch 9 Pressure Test Requirements](#). Test information shall be recorded on the service order form. All testing should be completed before tapping the main.

9. EXCESS FLOW VALVES AND CURB VALVES

See D&I Section [1025 - Excess Flow Valves \(EFV\)](#) for Excess Flow Valve.

10. PURGING

See [DESC O&M Chapter 11 – H](#) for Purging of Service Lines Requirements.

11. SEWER CROSS BORE VERIFICATION PROCESS

1. Contractor or company employee shall check YES/NO on the service order as to whether no sewer cross bore was verified upon installation.
 1. In order to select YES, the entire service (tapping tee to riser) must be verified for no cross bore. If YES is selected, the contractor or company employee shall select all the applicable method(s) of verification according to the abbreviations that follow:
 1. LA - Located & Avoided
 2. LVP - Located & Visually pot-holed at crossing
 3. OT - Open Trench (100% of open trench portion was visually verified)
 4. SC - Sewer Camera used
 5. BHC - Borehole Camera used

2. If NO is selected, the installer should immediately notify an inspector (if contractor) or supervisor (if company employee) and explain the work performed in more detail in the notes section of the order.
2. This process shall be used for all residential and commercial services. It applies to all new installations, replacement services, and relocates.
3. This process will not apply to repaired services at this time since service orders are not currently printed in the field.
4. In addition to bores, this "cross-bore" verification process also applies to insertion, bursting (splitter), and plowing/planting since the original service line installation most likely was not verified for no cross bore.
5. For more information on bores and HDDs, see [D&I Section 1015 - Horizontal Directional Drilling_\(HDD\)](#) and [Section 8 of D&I Section 1010 Construction Specifications](#).

12. TEE REMOVAL USING KRAVITCH TOOL

1. Follow manufacturer's procedure to remove tee from main and install plug.
 1. In addition to manufacturer's procedures, appropriate measurements must be noted throughout procedure to ensure drilling process is performed correctly.
 2. For tool maintenance (drill bit sharpening, etc), mail tools to:

Kravitch Machine Co.

4148 State Route 151

Aliquippa, PA 15001

Be sure to include return address and description of maintenance required.

2. Weld ½" or ¾" thread-o-let around pipe plug. Install vent stack in thread-o-let if pipe plug begins to leak during welding.
3. When Thread-o-let is cool to the touch, install ½" or ¾" solid steel plug into thread-o-let; no thread tape or pipe dope is necessary.
4. Tighten plug and weld into place.
5. Soap test welds.
6. Coat/wrap pipe in accordance with all DESC procedure.

13. TEE REMOVAL USING McCASKILL TOOL

1. Expose service tee. Remove coating from tee and clean surface on either side of tee along main.
2. Remove service tee cap.
3. Run threaded cutter down to seat it against main.

4. Use measuring device to ensure cutter has threaded all the way down.
5. Use Soap to check for leaks; if an excessive leak is present, the seal between the cutter and the main may not be sufficient to use this tool.
6. Disconnect service line in accordance with all DESC Procedures.
7. Oil Bearing on Allen Tool Assembly.
8. Install Allen Tool Assembly into cutter.
9. Verify tool is clean and bearing is rotating freely.
10. Install McCaskill Tool to main; tighten each vice hand tight.
11. Oil Threads (entire threaded rod) on McCaskill tool.
12. Ensure McCaskill tool is properly aligned in all directions; shaft should not contact edge of chimney.
13. Hand tighten top shaft.
14. Loosen nut on service tee enough to get bottom saddle away from main; do not remove nut yet.
15. Tap bottom saddle with a brass hammer if needed to separate from main.
16. Turn Allen tool assembly clockwise to begin separation of tee from main; ensure top shaft is not turning during this step.
17. Check for clean separation of tee from main. Soap test to check for leaks.
18. Adjust torque wrench to correct setting: 30 ft-lbs
19. Tighten top shaft using torque wrench to stop leaks at cutter; do not exceed torque settings.
20. Once leaks are stopped, remove nut from service tee.
21. Use brass hammer as needed to separate tee; do not use excessive force.
22. Continue turning Allen tool assembly clockwise until tee has been completely lifted away from the cutter.
23. Use bungee cord (or other method) to secure tee up and away from main.
24. Soap test cutter for leaks; tighten top shaft using torque wrench to stop leaks at cutter; do not exceed torque settings.
25. Allen tool assembly may also be rotated to help seat cutter to main and stop leaks.
26. Clean surface at cutter; prepare for welding.
27. Weld cutter to main.

29. Cut top of cutter off. Cutter should be cut low enough to remove excess, however should not cut into the weld.
30. Place thread-o-let over cutter.
31. Weld thread-o-let to main.
32. After thread-o-let has cooled to the touch, install plug without thread tape or compound.
33. Weld plug to thread-o-let. It is normal for a small gas leak to arise during this process.
34. Soap test weld
35. Wrap / Coat in accordance with all DESC Procedures.

14. SERVICE LINE SPLITTERS

1. A splitter may not be used around significant bends or through any couplings. Fish tape should be used to locate couplings; all known or expected couplings should be removed prior to pulling in a new service with a splitter. If a coupling is found during the splitting process, it must be removed prior to continuing with the splitter.
2. Splitter may be purchased from manufacturer or may be "home-made".
 1. Back-run cable through service line, from riser to service tee.
 2. Connect cable, splitter, and pipe using a weak link between the pipe and the splitter. Weak link may be a break-away connector or a hole drilled through the pipe:
 1. Break-away Connector: Break-away connector with pin not exceeding allowable tensile load of pipe.
 1. ½" CTS (5/8" O.D.) pipe has an allowable tensile load of 156 lbs
 2. ¾" IPS pipe has an allowable tensile load of 307 lbs.
 2. Hole drilled in pipe: Specified hole(s) should be drilled in the entry section of pipe, directly following connection to pulling/splitting device.
 1. For ½" CTS (5/8" O.D.) pipe, a 3/8" hole should be drilled entirely through the pipe, creating two holes total.
 2. For ¾" IPS pipe, two 3/8" holes should be drilled entirely through the pipe, creating four holes total. These must be in the same plane, in a cross pattern (spaced 90 degrees apart).
 3. Pull cable to begin splitting pipe and pulling in new pipe. Continue pulling until new pipe is pulled in. In the event that the weak link fails, all pipe between the ground entrance and splitter should be discarded.
 4. Upon successful pull-in of new pipe, inspect front end of pipe (nearest splitter) for gouges, egging, or other damage. Ensure entire service line pipe is in an acceptable condition.
 5. Continue installing service in accordance to DESC procedures.

15. ALDYL - A TEE REPAIR

1. Anytime a tee constructed of Aldyl-A is exposed, a chimney repair should be performed. The preferred repair method is the installation of a Kerotest Aldyl-A Tapping Tee Repair Kit (Part #72770515). Follow manufacturer's procedures to install repair kit. In the event that Kerotest repair kits are not available, a 1-1/4" electrofusion coupling and purge cap may be used. In this case, the Kerotest manufacturer's procedures should still be followed.

16. TRAINING

1. See [Dominion Energy Operator Qualification \(OQ\) Program](#) for training requirements. For Specific OQ qualifications for DESC See Appendix B of the Dominion Energy Operator Qualification Program.

(UNCONTROLLED IF PRINTED)