

SECTION 8 SEPARATION OF LINES

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8.02 PURPOSE

This section states the requirements and standards for the separation between TMWA water pipelines and services and sewer and non-potable water within the TMWA retail service area. TMWA water facility installations will not be accepted if these requirements and the requirements of the Nevada Administrative Code are not adhered to.

8.03 DEFINITIONS

- 8.03.01 Sewer Mains: The term “sewer mains” shall mean a sewer collector main of a sanitary sewer or storm sewer system or any other type of sewer and any unidentified conduit with a diameter that is at least six (6) inches. Pressurized sewer mains shall include pressurized non-potable water mains.
- 8.03.02 Sewer Service Laterals: The term “sewer service lateral” shall mean a sewer service lateral of a sanitary sewer or storm sewer system or any other type of sewer and any unidentified conduit with a diameter of less than six (6) inches that extends from a collector main and terminates on-site. This term also refers to sanitary and storm drain structures, including but not limited to manholes. Pressurized sewer service laterals shall include pressurized non-potable water service laterals
- 8.03.03 Non-Potable Water: The term “non-potable water” shall mean any water supply which has not been approved for human consumption by the health authority having jurisdiction.
- 8.03.04 Welded Pipe or Welded Joints: The term “welded pipe” or “welded joints” shall mean any steel pipe with welded joints or HDPE or PVC pipe with fusion welded joints.

8.04 SEWER SEPARATION

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THIS SECTION SUPERSEDES SECTION 1.1.20

8.04.01 Parallel Separations (Sewer Mains to Water Mains or Water Service Laterals)

For Section 8.04.01 the term “water” shall refer to both water service laterals and water mains unless otherwise stated.

In all cases, sewer mains and water shall be installed in separate trenches. The following separations must be maintained between all sewer mains which parallel water. Refer to detail 10L-10.

- A. At least ten (10) feet of separation measured horizontally from exterior pipe walls shall be maintained between water and sewer mains. Sewer mains shall be placed at depth greater than water when possible.
- B. Where the requirements above are not practicable, one of the following options shall apply:
 - 1) Less than ten (10) feet horizontal separation, all of the following shall apply:
 - a. Horizontal separation shall be at least five (5) feet between exterior pipe walls, and
 - b. Vertical separation shall be at least eighteen (18) inches between exterior pipe walls with the water being placed above sewer mains.
 - 2) Where the required ten (10) foot horizontal separation or the five (5) foot horizontal plus the eighteen (18) inch vertical separation with the water above sewer mains cannot be met, all of the following provisions shall apply:
 - a. All efforts will be made to place the water above sewer mains,
 - b. Horizontal separation shall not be less than six (6) feet from exterior pipe walls, and
 - c. Sewer mains shall be constructed using one of the following options:
 - i. If sewer mains are not pressurized, it shall be constructed of SDR 35 PVC pipe with integral elastomeric gasketed joints meeting the requirements of ASTM D3212,

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- ii. With approval from the jurisdictional agency owning or approving sewer systems, non SDR 35 PVC pipe must be totally encased with a minimum of four (4) inches of excavatable cement slurry (300 psi), use external joint sealant (ASTM C877) or other mitigation to ensure watertight joints.
- iii. If part of a storm sewer and has a diameter of twenty-four (24) inches or larger, sewer mains must be installed with watertight joints that use joint sealants or joint gaskets.
- iv. Where sewer mains are pressurized, all sewer main and water joints shall be mechanically restrained. All mechanically restrained water shall be ductile iron with polyethylene wrap per AWWA C105. For water service laterals two (2) inches and smaller CTS HDPE tubing shall be used. There shall be no joints between the water main and the water meter for water service laterals two (2) inches and smaller. Approval from the jurisdictional agency owning or approving sewer systems or non-potable water systems shall be obtained. This requirement does not apply to welded joints.

8.04.02 Crossing Separations (Sewer Mains and Water Mains)

The following separations must be maintained between all sewer mains which cross water mains. Refer to detail 10L-11.

- A. Sewer mains shall be placed below water mains and shall be separated vertically by at least eighteen (18) inches between exterior pipe walls.
- B. Where water mains are below sewer mains or where water mains are above sewer mains with a vertical separation less than eighteen (18) inches, all of the following provisions shall apply:
 - 1) A reasonable effort must be made to place water main and sewer main joints an equal/maximum distance from the crossing point. All water main joints within ten (10) feet of the crossing shall be mechanically restrained. All mechanically restrained water mains shall be ductile iron with polyethylene wrap per AWWA C105. This requirement does not apply to welded joints,
 - 2) A vertical separation of no less than six (6) inches must be maintained and structural support for sewer mains and/or water

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mains shall be determined by the applicant's engineer and approved by the Authority, and

- 3) With approval from the jurisdictional agency owning or approving sewer systems, sewer mains will be constructed of SDR 35 PVC pipe with integral elastomeric gasketed joints meeting the requirements of ASTM D3212, non-SDR 35 sewer mains must be totally encased with a minimum of four (4) inches of excavatable cement slurry (300 psi), use external joint sealant (ASTM C877) or other mitigation to ensure watertight joints. This requirement does not apply to welded joints.

8.04.03 Sewer Service Lateral Separations to Water Mains or Water Service Laterals

For Section 8.04.03 the term "water" shall refer to water service laterals and water mains unless otherwise noted. Refer to detail 10L-12.

A. Parallel Separation

- 1) At least four (4) feet of separation measured horizontally from exterior pipe walls shall be maintained between water and sewer service laterals. Water shall be a minimum of twelve (12) inches above sewer service laterals. Where this cannot be met all of the following provisions shall apply:
 - a. Horizontal separation shall not be less than six (6) feet from exterior pipe walls. The water shall be mechanically restrained. All mechanically restrained water shall be ductile iron with polyethylene wrap per AWWA C105. This requirement does not apply to welded joints and
 - b. With approval from the jurisdictional agency owning or approving sewer systems, sewer service laterals will be constructed of SDR 35 PVC pipe with integral elastomeric gasketed joints meeting the requirements of ASTM D3212, non-SDR 35 sewer service laterals must be totally encased with a minimum of four (4) inches of excavatable cement slurry (300 psi), use external joint sealant (ASTM C877) or other mitigation to ensure watertight joints. This requirement does not apply to welded joints.
 - c. Where sewer service laterals are pressurized, all water and sewer service lateral joints shall be mechanically restrained. All mechanically restrained water shall be ductile iron with

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polyethylene wrap per AWWA C105. Approval from the jurisdictional agency owning or approving sewer systems or non-potable water system shall be obtained. This requirement does not apply to welded joints.

- 2) Water shall be installed a minimum of four (4) feet from the exterior of manholes.

B. Crossings

- 1) Where water crosses sewer service laterals, water shall be above sewer service laterals with a vertical separation of at least twelve (12) inches.

Any relocation of existing water to achieve these clearances must be performed with the approval of and in accordance with the procedures and standards of the Authority.

- 2) Where the water is below sewer service laterals or where the water is above sewer service laterals with a vertical separation less than twelve (12) inches, all of the following provisions shall apply:

- a. A reasonable effort must be made to place water and sewer service lateral joints an equal/maximum distance from the crossing point. All water joints within ten (10) feet of the crossing shall be mechanically restrained. All mechanically restrained water shall be ductile iron with polyethylene wrap per AWWA C105. For water service laterals two (2) inches and smaller CTS HDPE tubing shall be used. There shall be no joints between the water main and the water meter for water service laterals two (2) inches and smaller. This requirement does not apply to welded joints,
- b. A vertical separation of no less than six (6) inches must be maintained and structural support for sewer service laterals and/or water shall be determined by the applicant's engineer and approved by the Authority, and
- c. With approval from the jurisdictional agency owning or approving sewer systems, sewer service laterals will be constructed of SDR 35 PVC pipe with integral elastomeric gasketed joints meeting the requirements of ASTM D3212, non-SDR 35 sewer service laterals must be totally encased with a minimum of four (4) inches of excavatable cement slurry (300 psi), use external joint sealant (ASTM C877) or other mitigation

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to ensure watertight joints. This requirement does not apply to welded joints.

- d. Where sewer service laterals are pressurized, all water and sewer service lateral joints shall be mechanically restrained within ten (10) feet of the crossing. All mechanically restrained water shall be ductile iron with polyethylene wrap per AWWA C105. For water service laterals two (2) inches and smaller CTS HDPE tubing shall be used. There shall be no joints between the water main and the water meter for water service laterals two (2) inches and smaller. Approval from the jurisdictional agency owning or approving sewer systems or non-potable water system shall be obtained. This requirement does not apply to welded joints.

8.04.04 Crossing Separations (Sewer Mains and Water Service Laterals)

Refer to detail 10L-13.

- A. Sewer mains shall be placed below water service laterals and shall be separated vertically by at least eighteen (18) inches between exterior pipe walls.
- B. Where water service laterals are below sewer mains or where water service laterals are above sewer mains with a vertical separation less than eighteen (18) inches, all of the following provisions shall apply:
 - 1) A reasonable effort must be made to place water service lateral and sewer main joints an equal/maximum distance from the crossing point. All water service lateral joints within ten (10) feet of the crossing shall be mechanically restrained. All mechanically restrained water service laterals shall be ductile iron with polyethylene wrap per AWWA C105. For water service laterals two (2) inches and smaller CTS HDPE tubing shall be used. There shall be no joints between the water main and the water meter for water service laterals two (2) inches and smaller. This requirement does not apply to welded joints,
 - 2) A vertical separation of no less than six (6) inches must be maintained and structural support for sewer mains and/or water service laterals shall be determined by the applicant's engineer and approved by the Authority and
 - 3) With approval from the jurisdictional agency owning or approving sewer systems, sewer mains will be constructed of SDR 35 PVC

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pipe with integral elastomeric gasketed joints meeting the requirements of ASTM D3212, non-SDR 35 sewer mains must be totally encased with a minimum of four (4) inches of excavatable cement slurry (300 psi), use external joint sealant (ASTM C877) or other mitigation to ensure watertight joints. This requirement does not apply to welded joints.

- 4) Where sewer mains are pressurized, all water service lateral and sewer main joints shall be mechanically restrained within ten (10) feet of the crossing. All mechanically restrained water service laterals shall be ductile iron with polyethylene wrap per AWWA C105. For water service laterals two (2) inches and smaller CTS HDPE tubing shall be used. There shall be no joints between the water main and the water meter for water service laterals two (2) inches and smaller. Approval from the jurisdictional agency owning or approving sewer systems or non-potable water system shall be obtained. This requirement does not apply to welded joints.

8.04.05 Water Mains or Water Service Laterals Crossing Surface Waters

All proposed water mains or water service laterals crossing across surface water, whether over or under the surface of the water, shall be pre-approved by the Authority and Health Authority prior to commencing design.

- A. Water pipelines crossing over the surface of the water shall be adequately supported and anchored, protected from damage and freezing, and accessible for repair and replacement.
- B. Water pipelines crossing under the surface of the water shall meet the following design criteria:
 - 1) Covered with at least five (5) feet of backfill.
 - 2) Pipeline shall be installed within a casing meeting the requirements of Section 1.1.10, or other casing method as approved by the Authority and Health Authority.
 - 3) Isolation valves
 - a. For all crossings, valves are required at both ends of the crossing in such a manner that the length of the crossing can be isolated. The isolation valves must be easily accessible and must not be subject to flooding.

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- b. If water pipelines will cross under the surface of a channel of water that is fifteen (15) or more feet wide, isolation valves must be located at both ends of the crossing in such a manner that the length of the crossing can be isolated for testing, repair, and sampling. The isolation valves must be easily accessible and must not be subject to flooding. The isolation valve closest to the source of the supply of water must be located in a manhole or vault which is large enough for human access. The manhole or vault must contain a permanent sampling tap and means for pressure testing the pipe.

8.05 POTABLE AND NON-POTABLE WATER SEPARATION

8.05.01 Separation between TMWA's water distribution system and non-potable water supplies shall comply with the separation requirements of this Section, Section 1.1 – Design Standards, TMWA’s Backflow Prevention and Cross-Connection Control Program (Backflow Manual), and the requirements of NAC445A. Under no circumstance shall non-potable water be connected to a potable water system.

8.05.02 Properties with on-site potable and non-potable water service

- A. Reduced pressure principle backflow assembly required on domestic services immediately downstream of the meter. Refer to Appendix 10A for installation details.
- B. Fire services shall have backflow assembly as required by the Backflow Manual. Refer to Appendix 10A for installation details.
- C. No potable irrigation services will be provided to the property.
- D. Where an adjacent property does not use non-potable water there shall be a barrier installed along the full length of the property line separating the properties located on the property using non-potable water.

The barrier shall consist of one of the following:

- 1) A continuous four (4) foot wide concrete, asphalt pavement sidewalk or a stone or paver material with grouted joints, or
- 2) Any solid face wood, stone or brick fencing or wall with a minimum height of three (3) feet. Fencing shall be as detailed by the appropriate city agency or as defined by the development’s CCR’s or development handbook. A six (6) inch wide by six (6) inch thick continuous concrete mow strip shall be placed at the base of any fencing or wall that does not include a concrete footing.

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- E. Non-potable water services will be equipped with a pressure reducing valve to maintain non-potable water pressure below that of the on-site potable system.
- F. All on-site hose bibs will be attached to a structure and will be potable.
- G. Non-potable hose bibs, quick connects or yard hydrants are prohibited
- H. All non-potable system components shall be purple (Pantone 512) in color, labeled, and thoroughly identified.
- I. Non-potable water facilities (piping, spray heads, drip emitters, etc), shall not be installed on the potable water side of the barrier.
- J. Non-potable spray heads or emitters shall not be allowed to over spray or discharge onto the potable water side of the barrier.
- K. Refer to the appropriate jurisdictional agency’s standards for additional requirements.

8.05.03 Construction Requirements

- A. TMWA will require “special inspection” of the on-site facilities to ensure that design/facility requirements are being met. Special inspection services will be paid for by the developer. The developer shall select the inspector from a list of certified cross-connection control specialists provided by TMWA. If available, TMWA may provide special inspection from staff personnel who have certification as a cross-connection control specialist. The special inspector will coordinate with TMWA’s normal on-site facilities inspector and will provide a report to TMWA at the conclusion of construction confirming that all design facility requirements have been met.
- B. An initial shutdown test will be completed before the occupancy of any structure or residence.

8.06 REFERENCES

Backflow Prevention and Cross-Connection Control Program for Truckee Meadows Water Authority
 Nevada Administrative Code 445A
 TMWA Construction and Design Standards, Appendix 10A
 TMWA Construction and Design Standards, Appendix 10L

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