

**Tabernash Meadows Water & Sanitation District Rules and
Regulations**

APPENDIX B

**Standards &
Specifications**

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STANDARDS AND SPECIFICATIONS

1. GENERAL: All water and sewer service line construction and water meter installation shall be done in accordance with these specifications. Not all matters can be covered by this Appendix and the Builder/Contractor shall consult with the District's Manager and Superintendent as to new or revised standards prior to construction and installation. The scope of these Specifications shall include all new service line installation from the District mains to the associated plumbing of the building or any other facility requiring service.

It shall be the Builder's/Contractor's responsibility to protect the service line, water meter assembly including water meter and all home plumbing including appliances and fixtures from freezing or other physical damage during construction. After completion of the construction and acceptance by the Owner, it shall be the Owner's responsibility to protect the service line, water meter assembly including water meter and all home plumbing including appliances and fixtures from freezing or other physical damage.

2. LICENSES AND PERMITS REQUIRED: All water service installations shall be done by a Contractor who has an individual working for him that possesses a current master plumbers card associated with the Plumbing Trade and that such individual personally accomplishes or directly supervises the installation work.

A connection permit shall be secured from the District a minimum of 24 hours prior to construction at which time the Contractor(s) shall familiarize themselves with these Standards and Specifications; select and obtain approval of the appropriate standard water service installation for the building or facility; submit an appropriate set of mechanical plans; inform District personnel of the intended schedule for construction and present the appropriate trade card. See service line plan drawing requirements.

Where a street cut is required for a water service, the Contractor shall rebuild the road base in accord with Grand County Road and Street Standards and provide a permanent hot mix asphalt patch and obtain the appropriate permit. If hot mix is not available due to the time of year, a temporary cold asphalt patch may be installed. The permanent patch shall be installed by the Contractor not later than the first of June following construction.

All work shall be inspected by the District's representative who shall have the authority to halt construction when, in their opinion these specifications or proper construction practices are not being adhered to. Whenever any portion of these specifications is violated, the District representative shall order further construction to cease until all deficiencies are corrected. No line shall be covered without the District representative's approval.

3. SPECIFICATIONS: All specifications or standards; i.e., ASA, AWWA, ASTM, etc., made a portion of these specifications by reference shall be the latest edition and revision thereof.

4. WATER SERVICE LINE INSPECTIONS AND SPECIFICATIONS:

- 4.1 Minimum Sizing Criteria for Service Lines and Meters in Residential Areas:

Note: The table below gives minimum size permitted by District only. Lines may have to be oversized for low-pressure areas or for other specific reasons.

Step 1 - Find the required flow from the following table:

NUMBER OF UNITS SERVED	FLOW/UNIT (gpm)	TOTAL FLOW (gpm)
1	15.00	15.00
2	8.75	17.50
3	6.67	20.00
4	5.63	22.55
5	5.00	25.00
6	4.58	27.50
8	4.06	32.50
10	3.75	37.50
11	3.64	40.00
12	3.54	42.50

Step 2 - Determine the distance from the main to the structure.

Step 3 -With the GPM and length of service line, enter the following table and determine the minimum size of service line and meter size.

FLOW REQUIRED GPM	LENGTH OF SERVICE LINE FEET					
	25	50	75	100	150	200
	Line/Meter	Line/Meter	Line/Meter	Line/Meter	Line/Meter	Line/Meter
15	3/4 - 3/4	3/4* - 3/4	1 - 3/4	1 - 3/4	1 1/2 - 3/4	1 1/2 - 3/4
20	3/4 - 3/4	1 - 3/4	1 - 3/4	1 1/2 - 3/4	1 1/2 - 3/4	1 1/2 - 3/4
25	1 - 3/4	1 1/2 - 3/4	1 1/2 - 3/4	1 1/2 - 3/4	1 1/2 - 3/4	1 1/2 - 3/4
30	1 - 1	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1
35	1 - 1	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1
40	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1	2 - 1
45	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1	1 1/2 - 1	2 - 1	2 - 1
50	1 1/2 - 1 1/2	1 1/2 - 1 1/2	1 1/2 - 1 1/2	1 1/2 - 1 1/2	1 1/2 - 1 1/2	1 - 1 1/2
75	2 - 1 1/2	2 - 1 1/2	2 - 1 1/2	2 - 1 1/2	3 - 1 1/2	3 - 1 1/2
100	2 - 2	2 - 2	2 - 2	3 - 2	3 - 2	3 - 2

* - Use 1 inch line where static pressure is less than 50 psi.

NOTE: Builder should review all sizing over 1" to determine if adequate for specific use proposed.

- 4.2 **Materials:** Following are the materials approved for water service lines in the District, subject to the minimum standards thereafter referred to:
- 4.2.1 **Corporation Stops:** Mueller #H-15000, or Ford #F-600, or equivalent.
- 4.2.2 **Curb Stops:** 3/4" and 1" Mueller #H-15200 or Ford Type #300, or equivalent.
- 4.2.3 **Curb Boxes:** Mueller #H-10350 1-1/2" shaft 4' x 5'6" extended, or equivalent.

4.2.4 Meter Settings:

- (a) Exterior pit type installation: 3/4" x 1" See District Manager for current specifications.
- (b) Interior installation: 3/4" x 1" Meters: See Meter Assembly drawing for 3/4" and 1" meter installations.

4.2.5 Meters:

- (a) Full 3/4" to 1 1/2" "Synsus" Read-0-Matic self-generating remote readout and frost protection base, or equivalent. Mounted between 1 foot and 5 feet off floor elevation. Maximum remote readout distance - 125 feet.
- (b) 2" meters and larger - compound as approved by the District Manager.

4.2.6 Meter Pits:

- (a) Standard for 3/4" and 1" meters without pressure reducing valve: Pits: 20" I.D. x 5' (5 cement rings). Covers: Cast Iron 24" - Double lids (Comco Inc. or equivalent).
- (b) Standard for 3/4" and 1" meters with pressure reducing valve: Pits: 30" I.D. x 6' (3 cement rings). Covers: Cast Iron 24" - Double lids (Comco Inc. or equivalent).
- (c) For 1 1/2" meters with and without pressure reducing valve: (See Standard Drawings).

4.2.7 Service Saddles: Smith Blair #323 - Double Strap (cc thread), bronze, or equivalent.

4.2.8 Backflow Protection Device: Watts No. 7 Double Check Valve.

4.2.9 Pressure Regulating Valves: Watts U5B, Watts 25AUB, or Wilkins #70 Series with thermal bypass.

4.2.10 Service Lines: Main to House: Type "K" copper (ASTM 8251) with flared connections, tested to main line pressure before covering.

4.2.11 Water Meters Purchased From District: Water Meters and all required accessories purchased from the District.

- (a) Meters in Stock at District: The District has in stock 3/4" required by the District.

Larger sized meters and assemblies for commercial, multi-family and special situations are available upon request. These assemblies are subject to the approval of the District Manager.

Plumbers, contractors, and property owners may purchase water meters from the District for use within the District's service area.

4.3 Installation:

4.3.1 Remote Register/Readouts: All water service installations shall have a remote register/readout located near the similar power and gas service installations. The readout unit shall be installed on the building at a height of five (5) feet above the ground. The maximum remote distance from the meter shall not be over 125 feet.

- 4.3.2 Location and Alignment of Service: Water service lines shall be located so as to take the shortest, most direct path (preferable perpendicular to the main) from the curb box, if existing, or the water main to the house. If possible the water line shall not be located under any paved driveway or service road. If curb exists, the curb shall be marked with a chiseled "V" at the point where the line crosses under the curb. All water service lines shall have a minimum cover of 6-1/2 feet and shall be insulated in rock formation with Armaflex or comparable insulation. Water service is not allowed across property other than that being served, without prior approval of the District. Water and sewer services shall have parallel path separation of at least ten (10) feet.
- 4.3.3 Service Stub-Ins: Curb stops and boxes are required in all service installations, with the curb box if possible located on public right-of-way or District easement. All lines shall extend from the curb box to the building/facility utility area and terminate with the standard meter mounting horn. Mounting horn to be installed not less than one (1) foot from floor and not higher than five (5) feet above floor. Meters must be installed in such a manner to allow accessibility to the meter and to shut-off valves on either side of the meter. Exterior pit type installations shall be allowed only when a meter would otherwise have to be mounted in an unheated and inaccessible crawl space, in which case the service line terminates at the meter pit and horn assembly. Commercial service stub-ins (1-1/2 inch line or larger) shall terminate at a curb stop and box. Curb boxes shall be three (3) inches above grade if located in earth. If curb boxes are located in a driveway or any other area, they must be flush with the surface.
- 4.3.4 Main to Curb Stop: Service lines from the main to the curb stop and from curb stop to meter horn assembly shall be one continuous length of pipe without joints or connections.
- 4.3.5 Meter Horn to House: The service line (authorized pit installations) from the horn assembly to the house shall be continuous without joints.
- 4.3.6 Remote Signal Cable: Shall be installed by the Contractor. If an interior meter installation, the signal cable shall be roughed in the shortest path from the utility room (meter location) to the location where all other utilities are to be read, and daylight to the outside of the building at a height of five (5) feet above the ground surface. If an exterior installation, the cable shall be laid in a %" plastic conduit underground with twelve (12) inches of cover and in the shortest path from the meter pit to the location on the building where other utilities are to be read and at a height of five (5) feet above the ground surface.
- 4.3.7 Water Meter and Remote Register/Readouts : Shall be installed in the presence of the District representative. The operational testing of the meter and readout shall be demonstrated at this time.
- 4.3.8 Minimum Cover Requirement: 6-1/2 feet over the pipe.
- 4.3.9 Pressure Reduction Valves: A pressure-reducing valve shall be installed in the copper service line just ahead of the meter installation.
- 4.3.10 Sewer Lines, Tracer Wire Required: All sewer service lines shall have tracer wires installed from the existing stub out to the building foundation where the sewer lateral penetrates. Tracer wire shall be installed from the main line to the foundation on new main extensions. A 3' loop of wire must be accessible above ground marking the location at which the service line penetrates the foundation.

5. SEWER SERVICE LINE INSTALLATION AND SPECIFICATIONS:

5.1 Gravity Sewer System Materials:

5.1.1 CIP - Class 22 ASA Specs 121.6 or A21.8

5.1.2 PVC - ASTM Specs D-30 34-73, SDR-35 and Schedule 40. No Clay pipe permitted.

- 5.1.3 Pressure Sewer Services Materials: PVC - Schedule 40 and Schedule 80
 - 5.2 Minimum Cover Required: Gravity services is sixty (60) inches and Pressure/Ejector services is sixty (60) inches.
 - 5.3 Clean Out Required at Foundation and Then for Each 100 Feet of Length: Extended 3" above grade and cap as approved by the District.
 - 5.4 Saddle Tap Requires: Two (2) stainless steel bands, 45 degree saddle with rubber gasket or PVC compatible adhesive ASTM #D-2564.
 - 5.5 Size: 4" gravity, 2" pressure (pressure lines have different specs than those listed above).
 - 5.6 Backfill: Exclude rocks, ice, and trash for a minimum of twelve (12) inches above each side of the pipe. Pipe should be bedded according to manufacturer's recommendations.
 - 5.7 Grade: At a minimum uniform drop of ¼ inch per lineal foot.
 - 5.8 Cast Iron Pipe: Must extend five (5) feet through foundation wall; minimum cover – thirty (30) inches.
 - 5.9 Inspection: Must be made by the District representative before back filling.
6. MAINTENANCE OF TRAFFIC: To avoid interference with traffic, the following conditions shall be met:
- 6.1 Street service cuts shall be open only between 8:30 a.m. and 4:00 p.m. Only one side of a street in a block may be closed at any one time.
 - 6.2 Adequate barricades, signs and warning devices as required by the District shall be placed and maintained during the progress of the work.
 - 6.3 Permit to cut pavement must be obtained from the Grand County Road and Bridge Department prior to installation of lines. Permit must be shown to the District's Manager before commencing construction.
7. EXCAVATION: Excavation of the trench shall be done in a workmanlike manner providing a trench that is straight and true with a flat bottom containing no rock or other deleterious material that would damage the pipe, and providing for a minimum of 6-1/2 feet of cover over the pipe. All excavated material shall be stockpiled in a manner that will not endanger the work nor obstruct sidewalks, driveways or streets, and the work shall be carried on in such a manner as to cause the least possible interruption to traffic.
8. TAPPING THE MAIN: Tapping of all mains and installation of corporation stop, to and including two-inch diameter, shall be coordinated with District personnel. Notification shall be given to the District 24 hours prior to need to provide ample time for the District personnel to respond.
9. BACKFILL: Backfill material in streets shall be "Special Backfill Material" as required by the Grand County Engineering Department. Colorado Department of Highways, Class 5 or 6 base courses may be used in lieu of "Special Backfill Material."
10. SURFACE RESTORATION: Paving, curb and gutters, sidewalk, improved surfaces, other street improvements removed, damaged or destroyed during construction shall be replaced to the same elevation and alignment, with the same type and dimensions of units removed, and shall be equal to and consistent with the undisturbed portions of the improvements existing prior to trench excavation. Sub-grade for all restored surfaces shall be thoroughly compacted by mechanical or hand tampers

weighing not less than 20 pounds, by vibratory rollers, or by other proposed means of compaction acceptable to the District representative.

Debris shall be removed from the site of the work at the expense of the contractor.

11. MAINTENANCE OF BACKFILL AND SURFACE WARRANTY: All backfill shall be maintained in a satisfactory condition, and all places showing signs of settlement shall be filled and maintained during the life of the contract and for a period of one year following the date of final acceptance for all work performed under this contract, except the warranty period for settlement in asphalt surfaced streets shall be two (2) years. When the developer or contractor is notified by the District that any backfill is hazardous, he shall correct such hazardous condition at once.

12. PROHIBITED PRACTICES:

- 12.1 Grounding electrical system to the water service line.
- 12.2 Turning on the water service at the curb box by other than District personnel.
- 12.3 Connecting storm drains into sewer system.
- 12.4 Crossing of water and sewer service lines, unless approved by the District.
- 12.5 Sweated or solder fittings ahead of the pressure reducing valve.
- 12.6 Connecting to existing pig-tail at curb stop.
- 12.7 Clay pipe for sewer service lines.

13. SERVICE LINE DRAWING REQUIREMENTS:

- 13.1 The District's personnel shall prepare service line drawings showing the location of these lines and facilities, which shall be kept on file in the District's facilities.