

## NORTH TABLE MOUNTAIN WATER AND SANITATION DISTRICT DEVELOPER SPECIFICATIONS AND GENERAL NOTES

### GENERAL NOTES:

1. Notes revised July 21, 2017. Contractor is responsible for confirming that he has the latest version of notes at the time of construction. The notes are posted on the NTM website, [www.ntmwater.org](http://www.ntmwater.org).
2. Fees:
  - Utility Permit Fee = \$200.00
  - Inspection/Review Fees:
    - \$2.00/LF Water
    - \$1.25/LF Sewer
  - GIS data collection = \$20 per data point
3. Contractor must obtain a Utility Permit from NTMW&SD before any water or sanitary sewer utility construction is started. Failure to obtain a permit before start of construction will result in a \$600.00 penalty.
4. All materials and workmanship shall conform to current North Table Mountain Water and Sanitation District (NTMW&SD) Standards and Material specifications. All work will be inspected by NTMW&SD. Any item not covered by these notes must meet North Table Mountain Water and Sanitation District standards and specifications and those of any other governing agency.
5. A submittal package of detail sheets to include all pipe and appurtenances, to be used during construction, must be submitted and approved prior to construction.
6. Any changes of material or deviations from the approved plans or these specifications must be done with written permission of the NTMW&SD District Engineer.
7. The contractor shall have in his/her possession at all times, one (1) signed copy of the plans which have been approved by NTMW&SD.
8. Trenches shall not be backfilled until the pipe is inspected. The contractor is responsible for notifying the NTMW&SD Engineering Inspector 24 hours prior to inspection at 303-279-2854.
9. **A minimum** of ten (10) feet shall be maintained between the water and sanitary sewer facilities, including mains and service lines.
10. Road cut permits and all bonding for work in Jefferson County shall be secured and paid for by the Contractor. Backfill and road surface replacement shall meet Jefferson County Engineering Standards or governing jurisdiction.
11. The Contractor shall maintain, on the job site, a separate set of Construction Plans red-lined to fully indicate field installed conditions and deviations from the original drawings.
12. The contractor shall furnish to NTMW&SD one printed full set and one electronic copy of the As-Built Drawings in both AUTOCAD and in PDF format. The "As-Built" drawings shall show all of information from the contractor's red-lined set of drawing.
13. The District will collect GIS data coordinates of the installed infrastructure, the developer is responsible for the cost of the data collection.
14. Water and sanitary sewer service locations shall be permanently marked on the face of the curb with a "W" or "S" **stamped** in wet concrete.
15. The contractor shall warranty the construction for two years. A letter of acceptance will be issued once the project has been inspected/approved, the As-Built drawings have been submitted/approved and the GIS and inspection fees have been paid. The two-year warranty period shall commence at this time.

16. Soil amendment is required for all new development. Each 1,000 square feet of soil must be amended with 4 cubic yards of approved compost, see approved compost list. Amendment must be roto-tilled into the soil to a depth of 4 to 6 inches. This applies to all permeable areas of the development including each individual lot and all common areas.

17. Landscape and Irrigation Plans must be submitted and approved before Construction Drawings will be approved. See Landscape and Irrigation Inspection Requirements.

18. Material Quantities:

- a. Water main (LF): \_\_\_\_\_
- b. Sewer main (LF): \_\_\_\_\_
- c. Manholes: \_\_\_\_\_
- d. Valve boxes: \_\_\_\_\_
- e. Fire hydrants: \_\_\_\_\_
- f. Meter pits: \_\_\_\_\_

*The above notes are in addition to those on the Standard Water and Sewer Detail drawings.*

## WATER LINE NOTES

1. All water mains 12" diameter and less shall be PVC, Pressure Class 235, push-on single gasket type manufactured in accordance with AWWA Standards C909-02 unless otherwise approved by the District Engineer. Water main that is 16" diameter must be C909 Pressure Class 165
2. All fittings shall be made from ductile iron meeting AWWA Standards C104 and C111 and be furnished with mechanical joint ends. All fittings shall have a pressure rating of 350 psi and shall be wrapped with an 8-mil minimum thickness polyethylene material per AWWA Standard C105.
3. The contractor shall furnish and install detector wire along the length of all new water pipe.
4. There shall be a minimum cover of 4.50 feet over all water mains,
5. All fittings shall be restrained using PVC Stargrip Series 4000 made for C909 PVC pipe or approved equal and must provide approved joint restraint according to the distances set forth in the table on Water Standard Detail W10. And must be protected from thrust by using concrete thrust blocks sized according to the table shown on the Standard Water Detail W3.
6. All valves are to be open to the right (clockwise). Approved manufacturers - Mueller, Clow or District approved equal.
7. All new water main connections to the existing system shall be wet tapped. Wet taps shall be made using full wrap, stainless steel full gasket with 360 degrees of pipe coverage (Muller Co., Ford, Power Seal, or approved equal). Tapping valves shall be ductile iron body, 200 psi minimum working pressure, resilient seat tapping valves with non-rising stem, flanged inlet and mechanical joint outlet, two inch operating nut, open right (clockwise) which meet or exceed AWWA Standard C509. Acceptable manufacturers Clow, Mueller or District approved equal.
8. Backflow protection shall be provided in accordance with the Colorado Cross-Connection Control Manual. All devices shall be tested upon installation and the results provided to the District
9. All water mains shall be chlorinated in accordance with AWWA Standard C651, "Disinfecting Water Mains". The preferred method is to use chlorine tablets filling and flushing of the line shall only be performed in the presence of the NTMW&SD Engineering Inspector or his/her representative.
10. Schedule for testing of pipe:

Bacteriological sampling will take a minimum of 4 days, no exceptions! Samples shall be taken at every 1200 feet of new water main, the end of the main and from each branch.

  - i. Fill main and allow pipe to chlorinate for 24 hours.
  - ii. After the first 24 hours the chlorine residual in the main shall be at least 25 mg/L, prior to flushing.
    - Contractor shall schedule NTMW&SD to take a residual chlorine sample, flush the main and collect the first sample(s) for bacteriological testing .
  - iii. A second bacteriological sample(s) will be collected for testing 24 hours after the main has been flushed and the first sample has been taken.
  - iv. Results from the bacteriological sample(s) will be determined in 48 hours, no less.
  - v. Once all of the bacteriological tests have passed and the service lines have been installed, the main shall be pressure tested by the Contractor as specified below.

The main must have service lines installed and passed the bacteriological test prior to a hydro-static pressure test. All pipe shall be field hydro-static pressure tested to a minimum of 150 psi for at least one (1) hour duration. All testing shall be done in the presence of the NTMW&SD Inspector. Test pressure shall not drop more than 5 psi for the duration of the test, Allowable leakage for each section of pipe between line valves shall not exceed the leakage rate set forth below.

Pipe Size ID.	Allowable Leakage per 1000 feet GPH
i. 4 inch	0.37
ii. 6 inch	0.55
iii. 8 inch	0.74
iv. 12 inch	1.10

## SEWER LINE NOTES

1. All sanitary sewer mains shall be constructed of PVC pipe manufactured to ASTM D-3034, SDR 35 for 4" through 15" and SF 679 for 18" through 27". The pipe shall be colored white or green for in-ground identification as sewer pipe. Bells on all pipe and fittings shall consist of integral wall section stiffened with two (2) PVC retainer rings which securely lock the solid cross-section rubber in position and shall be installed according to ASTM D- 2321
2. All sanitary sewer pipe installations shall be air tested prior to acceptance. Air pressure tests shall be performed in the presence of the NTMW&SD Inspector. Pressure must be stabilized at 3.5 psi at start of test. If the time required for a one (1) pound pressure drop (from 3.5 to 2.5 psi) is greater than ten (10) minutes then the section shall pass.
3. Locations where sewer and water lines cross, the sewer pipe shall be a minimum of eighteen (18) inches clear distance vertically below the water main without the need for special requirements. See Standard Detail Drawing for requirements.
4. 12 gauge copper tracer wire must be installed on sanitary service lines per detail drawing.
5. A vacuum of 10 inches of mercury (Hg) shall be drawn. The manhole shall pass the test if the vacuum reading does not drop more than 1 inch Hg (from 10" Hg to 9" Hg) during the following vacuum test times:

MH Depth	4' Diameter MH	5' Diameter MH	6' Diameter MH
15 feet or less	60 seconds	75 seconds	95 seconds
Over 15 feet	90 seconds	105 seconds	120 seconds

6. Contractor responsible for television inspection of all new sewer mains shall be performed by experienced personnel trained in locating breaks, obstacles and service connections by closed circuit color television. Television inspection shall include the following:
  - (a) Prior to the television inspection, all new sewer mains shall be jetted by trained personnel to remove foreign material from the newly installed sewer main. All material flushed from new mains shall be removed and not allowed to enter existing sewer mains.
  - (b) The video must be recorded directly after the main has been flushed, the video shall be recorded with water flowing in pipe. Video of dry main will not be accepted. NTM will perform flushing, coordinate with field staff.
  - (c) Video to be submitted to the district prior to acceptance. The video shall remain the property of the district.
  - (d) All videos shall contain voice data and stationing information.
  - (e) Post construction video of all reconstruction of each reach of sewer main with the voice description, as appropriate with stationing of services indicated.
  - (f) Should any portion of the inspection video be of inadequate quality or coverage, as determined by the District Engineer, or his representative, the Contractor will have the portion re-inspected and videoed at no additional cost to the District.

7. All sewers shall be designed to transport average flows at mean velocities of two feet per second. The slope between manholes shall be uniform and in no case be less than the following for sewer services and mains:

Line Size	Grade
4 inch	2.0% or 1/4 inch per foot
6 inch	1.0% or 1/8 inch per foot
8 inch thru 15 inch	0.40%
18 inch	0.35%

The maximum allowable slope on any sized sewer line, (main or service), shall be 8% (percent).

*The above notes are in addition to those on the Standard Water and Sewer Detail drawings.*