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# INSPECTION AND ACCEPTANCE FOR MAINTENANCE

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(Last revised 6/29/10)

## SELECTED LINKS TO SECTIONS WITHIN THIS SPECIFICATION

[Acceptance Items applicable to both W&S Sewer Inspections](#)      [Sewer As Built Drwg Example Street Inspection Require'ts Water As Built Dwg Example](#)      [Water Inspections Require'ts Warranty](#)

## 2.1 EASEMENTS REQUIRED

- A. Where possible, all water and sewer mains shall be placed within the right-of-way. When this is impractical, or where, due to depth or slope, additional easements are required, then easements shall be dedicated and recorded on plats prior to acceptance for maintenance. When utilities are located outside the public street rights of way, the developer and his/her Engineer shall verify that the final location of the public utilities is located within a platted easement. The Town will verify that the easements shown on the preliminary plat are also duplicated on the final plat.
- B. All public easements including (sewer, water, storm sewer, and electric) are to remain clear of obstructions. No building, fences, trees, shrubs or other obstructions shall be placed in any utility easement. Driveways, walkways, asphalt and parking lots may be permitted in easements; however, the Town reserves the right to remove such asphalt, concrete, base course and sod as necessary to access its facility in the case of emergency. Pavement or concrete will be replaced with a patch. Sod will be replaced with Fescue or Rye seeding. The Town of Clayton will not be responsible for replacing a property owners sod after repairing a utility line.

## 2.2 INSPECTIONS:

### 2.2.1. WATER

- A. The following items must be inspected during and after installation of water mains and appurtenances:
- 1) All bend fittings, tees, valves, tapping sleeves and valves, for proper installation, blocking, and rodding.
  - 2) Fire hydrant installation for proper blocking and rodding, clearance and location, painting and flow.
  - 3) Vertical bends (fittings, rodding if applicable, piles, etc.)
  - 4) All services from corporation to meter box.
  - 5) Vaults, air release valves, vacuum valves.
  - 6) New main pressure test: 150 psi minimum or 1.5 times the system static pressure.

- 7) Valve and hydrant operation to ensure the lines are open and the hydrants flowing.
- 8) Hydrant painting.
- 9) Bacteriological test.
- 10) Flushing logs shall be provided to the inspector for all water flushed. Inspections will be discontinued if logs are not provided.
- 11) For the purpose of eliminating excessive chlorine used during the disinfection process, the contractor must document and provide the inspector with information on which hydrant was opened and how long the system was flushed. The Town's construction inspector must be informed in advance of flushing. It should be noted that unauthorized use of Town's water is subject to penalty.

### 2.2.2. SEWER

- A. The following items must be inspected during and after the installation of sewer lines:
  - 1) Sewer service from the main to the right-of-way cleanout.
  - 2) Sewer line integrity test (mirror test).
  - 3) At the contractor's expense, a TV inspection shall be performed on all gravity sanitary sewer lines.
  - 4) Sewer line pressure test (completed after installation of all cleanouts).
  - 5) Mandrel pull-through test (95% certified mandrel).
  - 6) Manhole integrity, invert (construction, etc.).
  - 7) Manhole vacuum test.
  - 8) Check for removal of debris from manholes and sewer mains.
  - 9) Pump Stations: Witnessed Testing, Drawdown test, and Manufacturers Start-up Services. See *02530, Sanitary Sewer, paragraph 3.10 I, Pump Station Operation/Testing/Startup.*

### 2.3 ITEMS APPLICABLE TO BOTH WATER AND SEWER:

- A. **Check for buried items:** It is the responsibility of the developer and/or Contractor to ensure that all water meter boxes, valves, manholes, and sewer cleanouts are not buried.
- B. **Record Drawings:** Record drawings are required to be submitted upon completion of the project prior to final acceptance.

- 1) **Verify Sewer Grades:** The Design Engineer shall verify that the sewer main grades fall within the permitted tolerances by having the manholes surveyed upon completion of construction. Provide plans, prepared by a NC Professional Surveyor, showing as-built inverts, stations of manholes, and the actual main grade. Minimum grades flatter than permitted are not permitted. See [paragraph 2.4, A, As-Built Drawings Required](#), below.
- 2) **GPS Post-Construction Survey Requirements:**

- a. To acquire accurate information for updating the Town's GIS base, using GPS equipment, the Engineer shall employ a Professional Land Surveyor to field locate and tie-in to the NC State Plane Coordinate system (NAVD 83; x,y,z coordinates) the following water and sewer appurtenances so constructed:
  - i. Manholes
  - ii. Valve boxes
  - iii. Cleanouts
  - iv. Meters
  - v. Fire hydrants
  - vi. Storm catch basins and junction boxes
  - vii. Invert of flared end sections

The Engineer shall then furnish to the Town one paper copy and one electronic .dxf file of the surveyed elements on a CD rom. The As-built drawings showing the appurtenances (required in paragraph 2.4A, below); however, does not need to be modified to accurately reflect the surveyed field location.

- b. **Electronic Format:** Electronic format of as-built survey to be compatible with ESRI's ArcGIS or ArcView.
- C. **Engineer's Water & Sewer Certification:** Prior to the issuance of a certificate of occupancy for any dwelling, an Engineer's certification must be received by the State and the Town for the water and/or sewer extensions stating that the construction conforms substantially to the approved plans.
- D. **Inspection scheduling:** All inspections must be scheduled the day prior to when needed. Inspections will be performed in the order received. Every effort will be made to accommodate the time of request, however, this cannot be guaranteed.
- E. **Re-inspection fees:** All inspections that fail or are not ready for inspection are subject to a re-inspection fee in accordance with the current Town of Clayton fee schedule.

## 2.4 ITEMS APPLICABLE TO ALL UTILITY PROJECTS

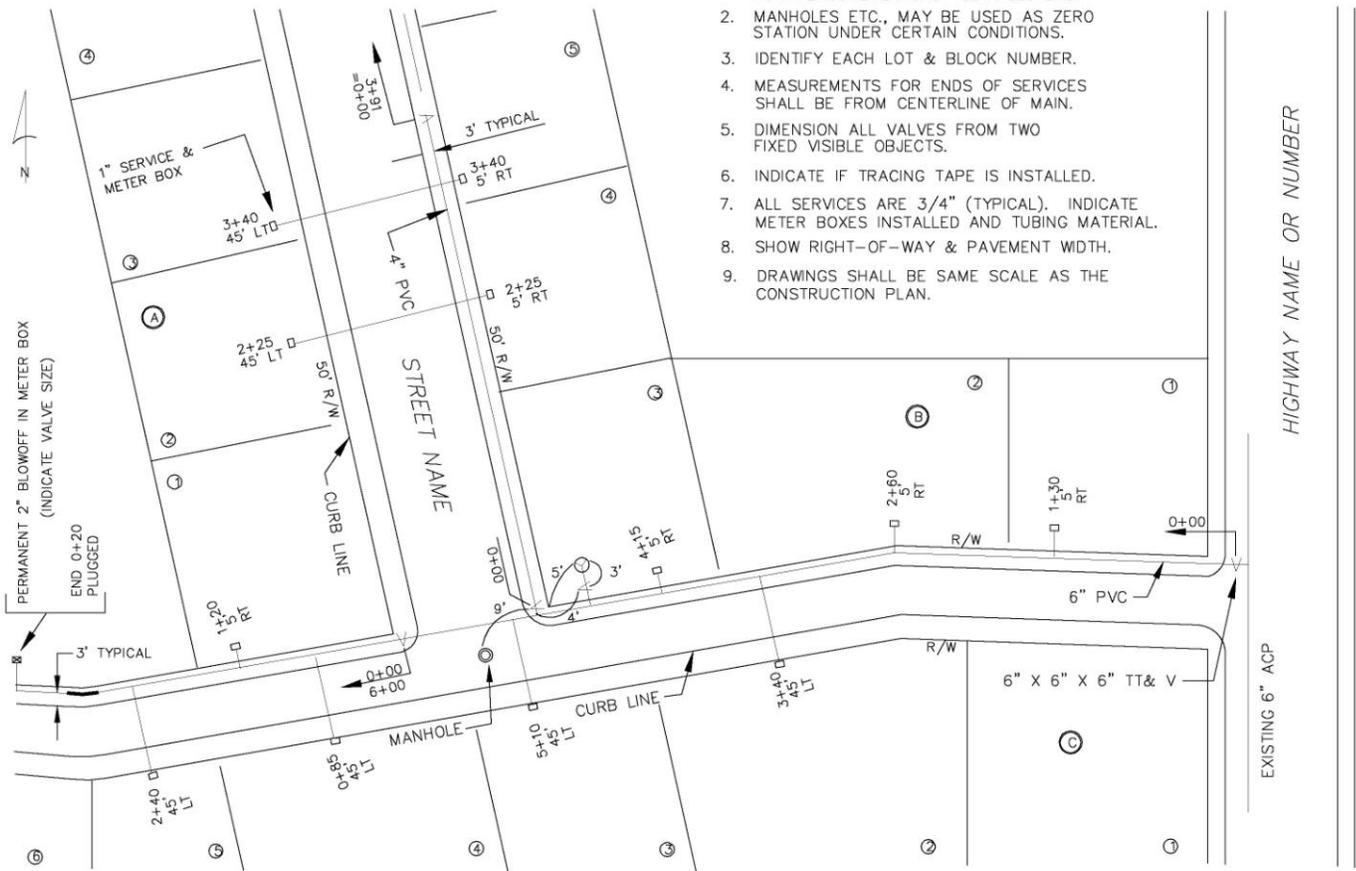
- A. **As-Built Drawings Required:** The following is a list of standards for the composition of as-built drawings. These standards are set forth as the minimal requirements to achieve a suitable level of recordation for utilities or utility systems that will become property of the Town of Clayton.

- 1) Field data is to be delivered to the Engineer by the owner's sub-contractor(s) for as-built preparation.
- 2) Construction information such as grades, distances, and elevations shall be marked through and as-built information added.
- 3) All miscellaneous notes, not relative to as-built conditions, shall be omitted from drawings.
- 4) Drawings shall be dated and sealed by the engineer of record.
- 5) Two paper copies shall be submitted, for review, prior to the preparation of Mylars.
- 6) All easements shall be labeled as "utility" easements.
- 7) Distances to sewer services shall be stationed from the immediate downstream manhole.
- 8) Any utility that is to be privately maintained shall be specified and/or labeled as such.
- 9) A copy of the Engineer's certification letter, which is submitted to DENR, shall be sent with as-built.
- 10) All fittings contained in utility mainlines shall show on drawings.
- 11) All phase lines shall be clearly labeled on plan and profile.
- 12) All mainlines shall be labeled with size and material.
- 13) Detail sheets shall be omitted from as-built drawings.
- 14) As-built sheets shall be numbered sequentially.
- 15) All vertical and horizontal curve information shall be omitted from drawings.
- 16) Provide a digital formatted copy of the approved as-built drawing.

## ILLUSTRATIVE AS-BUILT DRAWING REQUIREMENTS

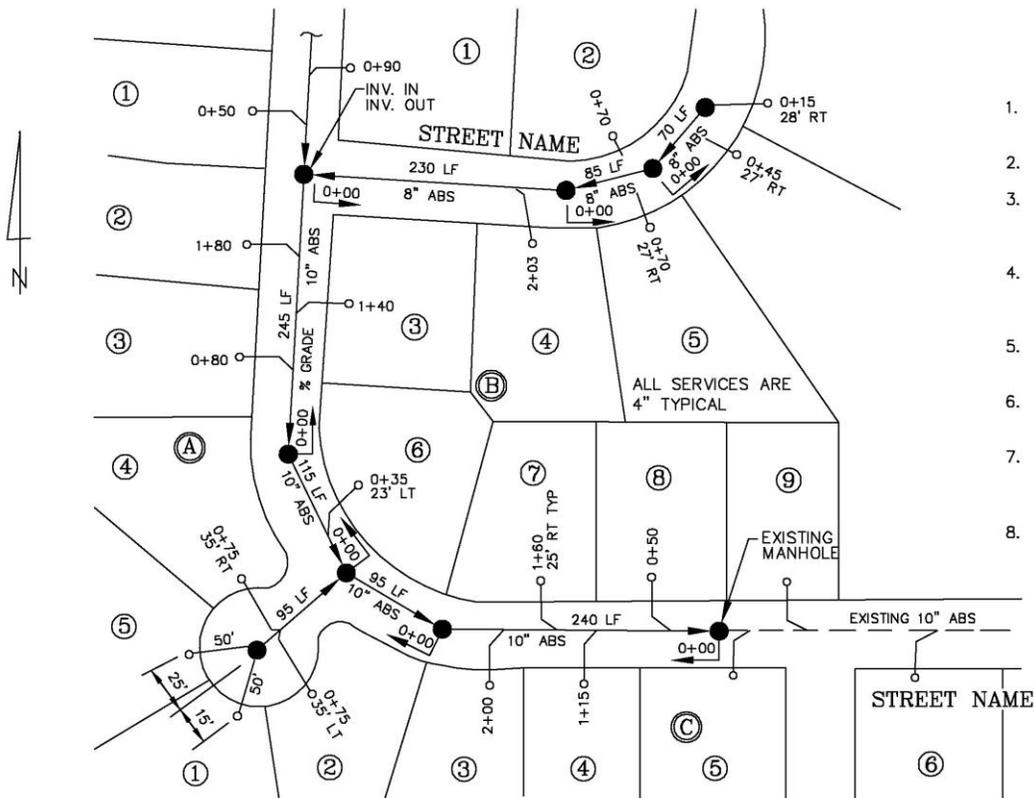
### WATER DISTRIBUTION

1. START 0+00 FROM ALL IN-LINE VALVES FOR MEASUREMENTS OF SERVICES ETC.
2. MANHOLES ETC., MAY BE USED AS ZERO STATION UNDER CERTAIN CONDITIONS.
3. IDENTIFY EACH LOT & BLOCK NUMBER.
4. MEASUREMENTS FOR ENDS OF SERVICES SHALL BE FROM CENTERLINE OF MAIN.
5. DIMENSION ALL VALVES FROM TWO FIXED VISIBLE OBJECTS.
6. INDICATE IF TRACING TAPE IS INSTALLED.
7. ALL SERVICES ARE 3/4" (TYPICAL). INDICATE METER BOXES INSTALLED AND TUBING MATERIAL.
8. SHOW RIGHT-OF-WAY & PAVEMENT WIDTH.
9. DRAWINGS SHALL BE SAME SCALE AS THE CONSTRUCTION PLAN.



*TYPICAL WATER SYSTEM AS-BUILT*  
**(W-18)** NOT TO SCALE

### GRAVITY SEWER



1. MEASUREMENTS ON SEWER LINES ARE MADE FROM  $\text{C}\text{L}$  TO  $\text{C}\text{L}$  OF MANHOLES
2. INDICATE CLEANOUTS.
3. SERVICE MEASUREMENTS ARE MADE FROM THE NEAREST DOWNSTREAM MANHOLE.
4. MEASUREMENTS FOR ENDS OF SERVICES SHALL BE FROM THE CENTERLINE OF MAIN.
5. IDENTIFY EACH LOT BY LOT AND BLOCK NUMBER.
6. DRAWINGS SHALL BE SAME SCALE AS CONSTRUCTION PLANS.
7. INDICATE SEWER LINE GRADE BETWEEN EACH MANHOLE AND INVERTS.
8. INDICATE R/W, CURB & GUTTER AND/OR PAVEMENT WIDTH.

### TYPICAL SEWER SYSTEM "AS BUILT"

(S-16)

NOT TO SCALE

Be advised that these standards are subject to amendment and/or expansion at the discretion of the Town of Clayton's Public Works Department. It will be the responsibility of the Owner's or developer's Engineer to accommodate changes made on any as-built submitted to the Town for review.

**B. Other items that must be submitted** prior to [Final Acceptance](#).

- 1) Bound Operation and Maintenance manuals.

- 2) Equipment Warranties, spare parts requested as part of project, if applicable.
- 3) List of subcontractors, manufacturers and suppliers who participated in this project,
- 4) Pump station witness testing certification from pump manufacturer's representative.
- 5) Statement of payment of taxes (Town Projects)
- 6) Affidavit of Payment of Debts and Claims (Town Projects)
- 7) Affidavit of Release of Liens (Town Projects), and
- 8) The submission of the Design Engineer's water and/or sewer certifications,

## 2.5 STREET INSPECTION REQUIREMENTS

See Section ,5 Street Design for the applicable inspection requirements.

## 2.6 ACCEPTANCE

- A. **Pre-Warranty Inspection:** All inspections are to be coordinated with Town's Engineer. A pre-warranty inspection will be made at the request of the contractor upon satisfactory completion of construction and required tests for the entire project or approved phase. Landscaping shall be to rough grade. A representative of the contractor (foreman or supervisor) shall be present or no inspection will be given. A punch list will be prepared stating any deficiencies found. A copy of the punch list will be available from the Town's Engineer within 2 working days. When all deficiencies have been corrected, the contractor may request a warranty inspection.
- B. **Warranty Inspection:** At the request of the contractor, a warranty inspection shall be made. If in the course of the inspection any deficiency is found that was on the punch list given at the pre-warranty inspection, the inspection shall stop at that point. When the contractor has satisfactorily corrected all deficiencies on the punch list, he may request another warranty inspection. One weeks notice is to be given in scheduling all repeat warranty inspections.
- C. **Warranty Acceptance:** Warranty Acceptance will be given upon receipt of Recorded Easements, Performance Bonds, Certificates of Completion and approved Record Drawings. Warranty Acceptance will be made in writing upon completion of the above items and upon approval by the Town Council.

The Town's Engineer will make the appropriate recommendation for Warranty Acceptance to the Town Council.

- D. **Final Acceptance:** One month before the one-year warranty period is over, the project will be inspected for any failures or defects (including TV inspections of sewer lines). Any problems found will have to be corrected within 30 days. Final Acceptance will be made in writing following approval by the Town Council.

## 2.7 WARRANTY:

- A. **Warranty and Defects Guarantee:** Upon the acceptance of facilities, utilities, or streets, a one-year warranty for all improvements shall become effective. This warranty must be satisfactory to the Town of Clayton. A performance bond (to guarantee the

correction of all defects in such facilities, utilities or streets) shall be required on all public and subdividers/developers projects.

- B. **Reference Point for commencement of warranty period:** See paragraph [2.6C, Warranty Acceptance](#).
- C. For the purposes of this section, the term “defects” refers to any condition in publicly dedicated facilities, utilities or streets that requires the Town to make repairs to such improvements over and above the normal amount of maintenance that they would require.
- D. **Latent Defects:** During the one-year warranty period the developer or contractor shall repair any latent defects that occur.
- E. **End of Warranty Period:** At the end of the one-year warranty period the developer shall request a final inspection. Upon successful completion of all warranty items the developer shall be released from maintenance responsibilities for the warranted construction.
- F. Warranty repairs to the following common problems shall be as follows:
- 1) Trench failures in pavement shall be repaired in accordance with the requirements of [02275, Trenching, Backfilling & Compaction of Utilities](#).
  - 2) If more than 3 trench failures occur within a longitudinal distance of 800 feet on any segment of a street, the Town may require a 1-inch overlay once repairs have been completed.
  - 3) Cracks in sidewalk and/or curb and gutter shall be repaired by removing and repouring such sections as necessary;
  - 4) Pavement, sidewalk or curb and gutter failures caused by latent subsurface problems shall be repaired in accordance with the recommendations of an approved Geotechnical engineer.
  - 5) All sanitary sewers and manholes, streets and ditches impacted by the construction shall be free of debris, dirt or silt;
  - 6) All water, sewer, storm sewer, drainage and street appurtenances impacted by the water and/or sewer construction shall be in acceptable condition and properly exposed (particularly water meters and sewer cleanouts);
  - 7) All other defects shall be corrected in accordance with the recommendations of the Town Engineer or his/her representative;
- G. The Town will consider taking water and sewer lines under warranty separate from the completion of the rest of the development improvements (in a subdivision/development) provided there is at least the first lift of asphalt over the areas to be paved.

- H. If a developer fails to complete warranty items, future projects of the developer shall not be reviewed by the Town Engineer. In addition, the Town may take additional legal action against the developer.

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