

## SECTION 6.0

### **GUIDELINES FOR THE CONSTRUCTION PHASE OF WATER AND WASTEWATER SYSTEM EXTENSIONS**

#### 6.1 GENERAL

This section shall describe certain conditions and requirements of the Commission concerning water and wastewater system extension construction which shall be addressed in all Contract Documents receiving the approval of the Commission.

#### 6.2 PRECONSTRUCTION CONFERENCE

Prior to commencing any water or sewer extension construction work, the Department Engineer shall be contacted to schedule a preconstruction conference. No construction shall occur until after the preconstruction conference is held. As a minimum, the Engineer and the Contractor shall attend the preconstruction conference. Prior to the scheduling of the preconstruction conference both the "pigging" plan as required in Section 3.5.4 and the executed "Indemnification and Hold Harmless Agreement" shall be submitted and approved by the Commission.

#### 6.3 UTILITIES LOCATION SERVICES

NC One Call Center shall be contacted a minimum of forty-eight ( 48) hours prior to any excavation. The utilities contacted shall have the opportunity to take the steps which they deem necessary to protect their utilities. The Contract Documents shall note that utilities location by NC One Call Center is not valid after the expiration of a ten (10) day period beginning on the date of such location.

#### 6.4 NORMAL WORK HOURS

Unless approved otherwise by the Commission, all construction shall be performed during the regular office hours of the Commission, i.e. 8:00 a.m. to 5:00 p.m. After hours, holiday, or weekend work should include only such tasks that do not require observation by the Commission's Representative. Under certain conditions, the Commission may agree to provide construction observation after hours or on weekends and holidays. The Contractor shall bear the costs of provision of such construction observation.

## 6.5 OPERATION OF EXISTING FACILITIES

- 6.5.1 The Contractor performing water or sewer extension work shall contact the Commission's Representative whenever operation of the Commission's valves or hydrants is necessary to request scheduling of such operation. The Commission shall require the contractor to estimate the length of time service will be interrupted and the number of customers to be affected.
- 6.5.2 Facilities and equipment belonging to the Commission may not be operated or adjusted without the express permission of the Commission's Representative. In the case of any emergency, the Contractor shall be allowed to take such steps with valves and hydrants as necessary for the protection of life and property.
- 6.5.3 Valves which control networks not yet accepted but which are connected to the existing system shall be considered system valves. Valves within a network not yet accepted and which do not control the flow of water between new and existing systems are not considered system valves and do not require permission to operate.
- 6.5.4 Notification to the Commission must be made by the Contractor upon breakage of any Commission maintained water or sewer line or appurtenance thereof. Repair of the Commission's facilities shall be made by the Contractor upon approval of the Department Engineer. Any repairs made with Commission forces will be billed to the Contractor at cost.
- 6.5.5 Where interruption of service is required, the Commission shall be notified to request approval and subsequent scheduling of such interruption. The Commission shall notify the affected customers should the interruption be approved. A minimum (forty-eight) 48-hour notice shall be given the affected customers.

## 6.6 QUALITY CONTROL

### 6.6.1 General

In order to insure that water and sewer system extensions are constructed in accordance with the standards of the Commission; testing, inspection, and surveying for construction work shall meet the requirements set forth herein.

### 6.6.2 Materials Testing

All materials testing and testing equipment and procedures shall be in accordance with the applicable industry standards.

### 6.6.3 Inspection Services

The Developer shall provide complete engineering services; including design, survey and grade control, and construction observation. These services shall be rendered by competent, experienced, personnel with a clear understanding of the work at hand. The Commission's Representative shall periodically observe the work while the construction is in progress. It shall not be the duty of the Commission's Representative to supervise construction, establish grades, or to provide solutions to grade, construction, or design problems. The Developer shall ensure that the installation of the water or wastewater system extensions is in accordance with the approved Contract Documents. Failure of the Commission's Representative to discover deficiencies at the time of construction shall not relieve the Developer of responsibility to correct such defects. Each construction crew of the Contractor shall have a set of Contract Documents bearing the Commission's stamp of approval at the project site at all times.

### 6.6.4 Construction Staking

- 6.6.4.1 The Contract Documents shall require that construction staking be performed by a Registered Land Surveyor at least twenty-four (24) hours and three hundred feet (300') in advance of construction and shall identify the party responsible for payment for same.
- 6.6.4.2 The Drawings shall identify the permanent baseline and all references from which dimensions are to be measured. In addition, benchmarks shall be shown on the drawings as required by Section 5.6.2.
- 6.6.4.3 The Contract Documents shall require stakes or hubs at the following locations:
  - i. Along the centerline of proposed water lines, at all points of horizontal curvature and tangency and at maximum intervals of one hundred feet (100') in tangent sections and twenty-five feet (25') in curved sections.

- ii. In addition to (i) above, the Commission reserves the right to require that the centerline of proposed water lines be marked by a continuous paint stripe where there is concern for the quality of work being provided.
- iii. At offsets out of the way of construction operations for each point on the centerline required by (i.) above.
- iv. At all valves, fittings, hydrants, air release valves, cleanouts, water meters and other appurtenances. Such stakes shall have offsets out of the way of construction.
- v. Hubs shall be provided for all pump station plot property or easement corners and at the wet well and valve vault locations.
- vi. Hubs shall be provided at all manhole locations. Each hub shall have a guard stake indicating the manhole number and station number and shall have an offset out of the way of construction.
- vii. The Contract Documents shall require the Contractor to stake the easement line location when requested to do so by the Commission.

## 6.7 PROJECT CLOSE-OUT

### 6.7.1 Pre-Final Inspection

Upon completion of construction, the Contractor or Developer shall contact the Commission's Representative to schedule a pre-final inspection. At the scheduled pre-final inspection, the Commission's Representative shall perform a visual inspection of the work in the presence of the Contractor. Any deficiencies discovered shall be recorded by the Commission's Representative and the Contractor. Any defective items noted shall be corrected prior to the final inspection.

### 6.7.2 Final Inspection

Upon completion of the items on the pre-final punch list, the Contractor or Developer shall contact the Commission to schedule the final inspection. The final inspection will not be scheduled until the following requirements are met:

- i. The work shall be in accordance with the requirements of the Commission.
- ii. A copy of the final estimate has been submitted and approved by the Commission.
- iii. The easements and dedicated property required for the work by this Manual have been obtained and are recorded at the Register of Deeds.
- iv. The as-built plans for the work have received the approval of the Department Engineer.
- v. All fees applicable to the project have been received by the Commission.
- vi. When a project includes sewer system extensions, the Commission has received the official NCDENR final certification form submitted by a Professional Engineer indicating that the sewer system installation conforms with all regulations, design criteria and the permit.
- vii. When a project includes water system extensions, the Commission has received certification by a Professional Engineer stating that the water system installation conforms with the requirements of the approved Contract Documents as required by Section .0903 of the NCDHS regulations (G.S. 130A-315; 130A-317).

At the scheduled final inspection, the Department Engineer or his Designated Representative shall perform a visual inspection in the presence of representatives of the Contractor and the Engineer. The Engineer or his representative shall prepare a detailed punch list of any deficiencies discovered and provide copies to the Developer, Contractor, and the Commission. Any defective items noted shall be corrected prior to acceptance.

No service shall be provided prior to project acceptance.

### 6.7.3 As-Built Drawings

- 6.7.3.1 No Service shall be provided until after the as-built plans are reviewed and accepted. The initial submittal shall consist of two (2) prints. Upon approval, the Contractor shall submit to the Commission either a mylar reproducible or a digital copy of the approved as-built drawings. One (1) print of the final as-built drawing shall also be provided. The as-built shall include both water and sewer combined on each drawing. The sewer as-built shall include plan and profile. The Contractor shall

submit two (2) prints of the as-built drawings with each partial pay estimate to the Owner's engineer. The minimum sheet size for as-built drawings shall be 18" x 24".

- 6.7.3.2 The Commission shall require at least two (2) weeks from date of receipt to complete its review and a reasonable time for review of any resubmittals.
- 6.7.3.3 The scale for as-built plans shall be the same as that of the construction plans.
- 6.7.3.4 Revised construction plans are acceptable if standard drafting techniques and practices are followed.
- 6.7.3.5 If the project has developed in phases, all lines should be clearly indicated and the title block of the plan sheets shall indicate the phase number and section number (where applicable) and all building units/lots being served with the particular phase being submitted. Lots and building unit numbers must reflect the numbers that will later accompany the service application (request for service).
- 6.7.3.6 The as-built drawings shall show the location by station number, referenced to the downstream manhole, and the length of all services and shall indicate by lot, unit number or address of the unit which each connection will serve.
- 6.7.3.7 The plans shall indicate street names, pavement widths, rights-of-way, and easements.
- 6.7.3.8 Apartments, condominiums, and other developments with walkways and off street parking shall have these facilities shown on the as-built drawings.
- 6.7.3.9 New water lines shall be located by horizontal dimensions from highly visible, permanent, fixed objects; such as the back of the street-curb and gutter, the edge of a walkway, street center-line, etc.
- 6.7.3.10 Valves shall each be located by reference to two (2) permanent, visible objects, such as right-of-way monuments, fire hydrants, manholes, catch basins, etc.
- 6.7.3.11 Indicate the type and size of each water line, sewer line, and service installed.

- 6.7.3.12 Station numbers identifying location of services, fittings, crossings, etc., shall begin at zero at each in-line valve. The distance between valves shall be shown.
- 6.7.3.13 Where more than one (1) type of material is used for water or sewer pipe, note the station of change from one material to another at the beginning of each change.
- 6.7.3.14 Designate on the as-built drawings if metallic detectable tape has been installed.
- 6.7.3.15 All appurtenances of water mains and force mains such as valve boxes and blow-offs shall be provided with station numbers. Indicate by station the location of all fittings for water mains and wastewater force mains.
- 6.7.3.16 Lengths of gravity sewer between manholes shall be shown on the drawings. The plan section should indicate lengths as measured horizontally between manhole centerlines. The profile section should indicate grades as measured from inside manhole wall to inside manhole wall (invert out to invert in).
- 6.7.3.17 The actual elevation, based on USGS datum only, of manhole tops, inverts (including services and taps) and the actual gravity sewer slopes shall be shown.
- 6.7.3.18 Sewer services are to be stationed from the center line of the downstream manhole ring and cover.
- 6.7.3.19 All privately owned sewer and water lines shall be indicated "as private".
- 6.7.3.20 As-built drawings shall be prepared by and bear the seal and signature of a Professional Engineer.
- 6.7.3.21 The recorded plat or standard easement forms conveying easements and rights-of-way for the property to be served shall accompany the as-built drawings. Drawings submitted without the required plat or easement document will be returned as incomplete.

6.8 CONTRACTOR'S AND DEVELOPER'S BILL OF SALE

The Commission will not accept any new water or sewer system extensions until the Developer has submitted an executed Bill of Sale. Examples of the Commission's Bill of Sale form are shown in Appendix F. Blank copies are available from the Commission.

6.9 SATISFACTORY COMPLETION

If all required documentation has been obtained and the final inspection by the Commission reveals no defects in materials or workmanship, the Commission may issue a Certificate of Satisfactory Completion. The Commission shall be responsible for the general maintenance of the water and sewer system from the date of issuance of the Certificate. All damages occurring to the work prior to issuance of the Certificate shall be repaired by the Contractor at no expense to the Commission.

6.10 WARRANTY

The Developer shall warrant the project work to be free of defects in materials or workmanship for a period of one (1) year from the date of the Commission's acceptance of the water or sewer system for permanent operation and maintenance.