

WATER & SEWER INSPECTION AND ACCEPTANCE FOR MAINTENANCE

(Last revised 7/24/06)

1.1 EASEMENT 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 the developer's engineer shall verify that the final location of the public utilities is located within a platted easement. The City will verify that the easements shown on the preliminary plat are also duplicated on the final plat, as applicable.
- B. All public easements including (sewer, water, storm drainage, and electric) are to remain clear of obstructions. No building or other obstruction shall be erected and no trees or shrubbery shall be planted on any easement. Driveways, walkways, asphalt and parking lots may be permitted in easements; however, the City 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 City of Jacksonville will not be responsible for replacing a property owners sod after repairing a utility line.

1.2 INSPECTIONS

1.2.1. 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) All services from corporation to meter box.
 - 4) Vaults, air release valves, vacuum valves.
 - 5) New main pressure test (150 psi).
 - 6) Bacteriological test.
 - 7) Flushing logs shall be provided to the inspector for all water flushed. Inspections will be discontinued if logs are not provided.

- 8) For the purpose of eliminating chlorine 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 City's construction inspector must be informed in advance of flushing.

1.2.2. SEWER

- A. The following items must be inspected during and after the installation of sewer lines:

- 1) Gravity Lines:

- a. Sewer service from the main to the right-of-way or easement line cleanout.
- b. Sewer line integrity test (mirror test).
- c. A TV inspection of gravity sanitary sewer lines may be performed by City personnel on a case-by-case basis at the discretion of the Public Services Director.
- d. Sewer line infiltration test.
- e. Sewer line pressure test (completed after installation of all cleanouts).
- f. Deflection Test: Mandrel pull-through test (95% certified mandrel).
- g. Manhole integrity, invert (construction, etc.).
- h. Manhole vacuum test.
- i. Check for removal of debris from manholes and sewer mains.

- 2) Force Mains:

- a. Pressure Test & Leakage.
- b. All bend fittings, tees, valves, tapping sleeves and valves, for proper installation, blocking, and rodding.

1.2.3. ACCEPTANCE OF WATER & SEWER MAINS

- A. **Interim Inspection:** All inspections are to be coordinated with the Public Services Director. An Interim 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. Streets shall have subgrade in place and curb & gutter, if applicable. 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 can be picked up from the City during the next working day. When all deficiencies have been corrected, the Contractor may request a final inspection.

- B. Final Inspection:** At the request of the Contractor, a Final Inspection shall be made. If in the course of the inspection any deficiency is found that was on the punch list given at the Interim Inspection, the inspection shall stop at that point. When the Contractor has satisfactorily corrected all deficiencies on the punch list, he may request another Final Inspection. One weeks notice is to be given in scheduling all repeat Final Inspections. The first re-inspection is at no cost to the Developer. Any subsequent re-inspections necessary must be prepaid at an amount set by the current City of Jacksonville fee schedule in effect at the time of the request.

C. Issuance of a Building Permit prior to completion of development:

- 1) A building permit shall not be issued, nor shall combustibles be brought on to any site, until the following improvements have been installed by the developer and inspected, approved, and placed into service by the City Public Services Department:
 - a. Storm water facilities
 - b. Water mains and appurtenances
 - c. Sewer mains and appurtenances
 - d. Fire hydrant within 250 feet of any commercial/industrial site and within 500 feet of any residential site.
 - e. Fire apparatus access road in accordance with the North Carolina Fire Prevention Code Chapter 5 Section 503.
- 2) A Certificate of Occupancy (CO) shall not be issued until all of the improvements to be constructed by the developer are completed and approved by the Public Services Department. Exception: If a condition exists which is beyond the control of the developer, such as weather or frozen ground, and prevents completion of the development, then a Certificate of Occupancy may be issued provided the following items are completed:
 - a. Curb, gutter, and sidewalk are installed.
 - b. Street grading and base construction are complete.
 - c. The developer places in escrow with the City an amount equal to 125% of the cost of completing the development; such cost to be determined by the developer and acceptable to the City Public Services Department.
 - d. The developer agrees in writing to complete the required development within 180 days of placing the funds in escrow with the City. If the development is not completed within the specified time period, the City shall use the escrowed funds for completion.
 - e. The required developments under this section shall be inspected and approved by the Public Services Department prior to issuance of a Certificate of Occupancy.
- 3) The provisions of this section should not be construed as requiring development of an entire subdivision prior to obtaining a building permit or

Certificate of Occupancy. A subdivision may be developed in phases with the following provisions of this section being applied to each phase:

- a. A minimum phase shall be a total development of the length of one street between intersection streets.
- b. The approach to each phase shall be a previously, and wholly, completed street (see section 1 a through d, and section 2 a through e).
- c. The minimum water main loop sizes, or applicable performance specifications required by the City Public Services and Fire Department must be completed, inspected, and approved and placed in service.

- D. **Tentative Final Acceptance Inspection:** Tentative Acceptance will be given upon completion of paving for the related streets and landscaping (including off site construction), receipt of Recorded Easements, Certificate of Completion for Sewer System, As-Built Drawings, and Recorded Plat with street addresses. Mains and related appurtenances will be reviewed to assure that no damage has been done during paving and landscaping. Any problems found will have to be corrected. Tentative Acceptance will be made in writing upon completion of the above items. The 18-month Warranty Period will begin at the date of Tentative Acceptance.

The Inspector will make the appropriate recommendation for Tentative Acceptance to the Public Services Director.

If approved, meters will be installed upon payment of applicable fees and issuance of a Work Order by the City.

- E. **Final Acceptance:** Two months before the 18-month warranty period is over, the project will be inspected for any failures or defects (including TV inspections of sewer lines if deemed necessary). Any problems found will have to be corrected within five working days of the expiration date. Final Acceptance will be made in writing at this point.

1.2.4. ITEMS APPLICABLE TO BOTH WATER AND SEWER:

- A. **Check for buried items:** It is the responsibility of the developer and not the contractor to ensure that no water meter boxes, valves, manholes, and sewer cleanouts are buried.
- B. **As-Built Drawings:**
- C. Prior to interim approval, the Contractor shall provide the City with a digital and 1 readable paper copy of "As-Built" drawings of water and sewer installation as follows:
 - 1) As-built drawings shall accurately show only those lines installed at time of submittal and in the correct location. Lines not installed shall not appear on the as-built drawings. "Omit" or "Omitted" is not an acceptable method of indication that lines were not installed. All changes on the Mylar shall be made with ink.

- 2) Any changes made in grade, alignment, or placement of manholes, valve hydrants, etc. because of problems encountered during installation shall be accurately shown on the as-built drawings.
- 3) The exact location of taps/service connections shall be shown on the as-built drawings in the following manner:

Lot or House #	Water			Sewer		
	Station	Offset R/L	Length	Station	Offset R/L	Length

4) **Footnotes:**

- a. Station on water or sewer main to the corporation or service saddle to the nearest 0.1 feet.
- b. Right or left is off of main looking up station.
- c. Horizontal distance from the corporation to meter box or services saddle to curb cleanout.
- d. Depth of sewer service connection at clean-out plug.
- e. The sketch shall indicate whether various mains are PVC SDR 35, PVC Truss, ductile iron, etc.

5) **Valve Tie-downs:** There shall be a minimum of three tie-downs to fixed permanent objects for all valves except the hydrant lateral guard valve that may be measured form the hydrant operation nut. Measurements may be made to:

- a. The center of other valve boxes,
- b. The center of manhole covers,
- c. Hydrant operating nuts,
- d. Corner of storm sewer curb inlets,
- e. Perpendicular to curb face.

Temporary structures or objects, such as traffic signs, pavement markings, valve markers, etc. are unsatisfactory as tie downs reference points.

6) Measurements shall be made to the nearest 0.1 foot.

7) **Sewers:** As-built drawings of sewers shall include the following obtained from an actual field survey: invert in and invert out elevations at each manhole and the actual field-measured distance between centerlines of manholes.

a. **Acceptable Grade variation from required minimum slope:** The line is to be inspected for conformance with line and grade shown on the plans. The maximum allowable drift between structures from the proposed alignment is:

b. **Horizontal alignment:** 0.50 foot (applies to manholes)

c. **Vertical alignment:**

i) **Minimum Slope:** No tolerance below the NCDENR minimum slopes will be allowed. When permitted by the Public Services Director, drift in vertical grade between as-built manholes shall not decrease the slope of the sewer line below the NCDENR minimum permitted slopes based on the following tolerance:

Pipe size (inches)	Variation (%)
8 through 24	No flatter than 90% of the NCDENR specified slope

ii) **Penalty for deviation below minimum slopes:** _____

iii) When permitted, if the slope in the pipe is found to be less than the approved variation, the Contractor shall relay the pipe. Errors in vertical grade between manholes shall be compensated for by adjusting the manhole inverts or by resetting the manhole as required by the Public Services Director. Pipe removed due to faulty grade shall be replaced with new pipe.

iv) **Maximum Slope:** The maximum grade shall not exceed 10%.

D. **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 City of Jacksonville for the water and/or sewer extensions stating that the construction conforms substantially to the approved plans. Water will be turned on after As-Builts have been approved and NCDENR has approved the water and sewer certifications.

E. **Inspection scheduling:** All inspections must be scheduled at least forty-eight (48) hours 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.

1.2.5. WARRANTY:

- A. **Warranty and Defects Guarantee:** Upon the acceptance of facilities, utilities, or streets for permanent maintenance, an 18-month warranty for all improvements shall become effective. Any leakage, defects in materials, workmanship or the settlement of trenches within 18 months following acceptance by the City shall be repaired or restored by the Contractor at his own expense. This warranty must be satisfactory to the City of Jacksonville.
- B. **Reference Point for commencement of warranty period:** Upon completion of construction the developer shall request a warranty inspection. Upon completion of:
- 1) All punch list items,
 - 2) The provision of a set of acceptable as-built drawings,
 - 3) Operation and Maintenance manuals,
 - 4) List of subcontractors, manufacturers and suppliers who participated in this project,
 - 5) Statement of payment of taxes,
 - 6) Affidavit of Payment of Debts and Claims
 - 7) Affidavit of Release of Liens, and
 - 8) The submission of the design engineer's water and/or sewer certifications,
- an 18-month warranty period shall commence.
- C. For the purposes of this section, the term "defects" refers to any condition in publicly dedicated facilities, utilities or streets that requires the City to make repairs to such improvements over and above the normal amount of maintenance that they would require. If such defects appear, the warranty may be enforced regardless of whether the facilities, utilities, or streets were constructed in accordance with the requirements of this ordinance.
- D. **Latent Defects:** During the 18-month warranty period the developer shall repair any latent defects that occur.
- E. **End of Warranty Period:** At the end of the 18-month 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 [Section 02275 – Trenching, Backfilling & Compaction of Utilities](#) as well as per the applicable standard details.
 - 2) Structural cracks in sidewalk and/or curb and gutter shall be repaired by removing and repouring such sections as necessary unless otherwise approved by the Public Services Director;

- 3) 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.
 - 4) All sanitary sewers and manholes, streets and ditches impacted by the construction shall be free of debris, dirt or silt;
 - 5) 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);
 - 6) All other defects shall be corrected in accordance with the recommendations of the Public Services Director or his/her representative;
- G. The City 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 Public Services Director. In addition, the City may take additional legal action against the developer.

End of Section

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