

# **City of Lawrence**

## **Water & Sewer Design & Construction Standards**

### **Unit II – General Information**

**Table of Contents**

Section 1      Drafting Standards..... II - 1

Section 2      Easement Requirements..... II - 4

Section 3      Boring and Jacking Requirements..... II - 8

Section 4      Slope Protection..... II - 12

Section 5      Inspections, Dedication and Acceptance of Infrastructure..... II - 14

## SECTION 1

### DRAFTING STANDARDS

#### 1.01 GENERAL

This section contains drafting standards and easement requirements that apply to projects submitted to the City of Lawrence Utilities (CITY), whether they are water main projects or sanitary sewer main projects.

One complete set of preliminary design drawings are to be submitted to the CITY for main sizing and preliminary review; the original will be returned to the developer or his engineer to incorporate corrections or alterations. A plan view of the affected construction area will be submitted in one encompassing digital drawing file. This file will be used for identifying the proposed project area on our GIS. The developer or engineer agrees to abide with the “Works for Hire” clause when receiving this digital information because portions are copyrighted by IMAGIS and other County Agencies.

One set of final plans signed and sealed by the project engineer, two half-size sets along with an electronic file compatible with ArcView/ESRI, registered in State Plane coordinates with two points of geodetic control for spatial reference, completed Indiana Department of Environmental Management (IDEM) paperwork, and check, if required, will then be submitted to the utility prior to commencement of construction.

These standards have been established for the purpose of ensuring uniformity in the design and drafting techniques of projects to be submitted for review and acceptance by the CITY.

- A.** All projects submitted shall have a title sheet that will include:
  - 1. General overall area map
  - 2. Vicinity location map
  - 3. A site plan map detailing the project
  - 4. Name/title of project, including section number if applicable
  - 5. Owner and engineer’s names
  - 6. Utility contacts (gas, electric, cable, phone, water/sewer)
  - 7. Professional engineer’s seal and signature.
- B.** All plan and profile sheets are to be certified and dated by a professional engineer of the state of Indiana.
- C.** All sheets are to be numbered, with the total number of sheets included (i.e., Sheet 4 of 12).
- D.** Include detail sheet(s)/specification sheet(s), as applicable.
- E.** Design drawings shall be 22 inches by 34 inches.

**F.** CITY standard detail drawings for water/sewer must be included.

## **1.02 SCALES**

The following scales for drawings are required.

**A.** Plan and profile: variable, not to exceed 1" = 50' horizontal or 1" = 5' vertical.

**B.** Cross-sections: 1" = 5' horizontal and vertical.

## **1.03 PLAN AND PROFILE DRAWINGS**

**A.** All plan sheets shall include the following information when applicable:

1. A north arrow
2. The scales used
3. Project name and number, sheet number, date drawn, date, and nature of revision
4. All topography in the area affected by construction
5. Right-of-way lines, property lines, and easements
6. Locations of benchmarks and their descriptions
7. Locations of all existing and proposed utilities in the project area
8. Match lines shall be easily identifiable

**B.** All profiles shall include the following.

1. Existing and finished grade lines
2. Inverts at all manholes
3. Length and size of pipe between manholes
4. Slope of pipe in percent
5. Elevations to USGS datum
6. Top of casting elevations
7. Types of materials used
8. Profile of existing and proposed utilities
9. Special construction required due to unfavorable soil conditions
10. All pipe crossings along with vertical separation distances

#### 1.04 LIFT STATION DRAWINGS

- A.** Lift station plans shall, at a minimum, contain the following.
1. At least two views of the station, plan view, and cross-section
  2. Electrical panel detail
  3. Pump and alarm control elevations
  4. Inlet and outlet pipe elevations
  5. Finished grade and foundation elevations
  6. Special construction required due to unfavorable soil conditions
  7. Design pump capacity, rated horsepower, total dynamic head, and manufacturer and model number
  8. Sump capacity and cycle time
- B.** Also, the engineer shall submit a copy of the head discharge curve and the complete design calculations for the lift station and force main and fence and access drive detail.

#### 1.05 RECORD DRAWINGS

- A.** As-built line drawings shall be submitted to the utility inspector upon completion of all potable water and sanitary sewer projects. Upon satisfactory review, electronic files will be submitted to the utility prior to project acceptance.
- B.** Plans submitted as record (“as-built”) drawings shall have all laterals shown on the plan view with their locations properly scaled. Lateral measurements shall be indicated by their distance from the downstream manhole in the form of stationing. Lateral stationing shall begin at 0+00 at each downstream manhole. Water valves shall be measured from the nearest street centerlines. Water main fittings shall be referenced to the nearest valve or hydrant branch. All sheets shall have the phrase “as-built” or “record drawing” boldly printed on them with the date and shall be certified by the project professional engineer registered in the state of Indiana. Electronic as-built plans shall include GPS locations of all valves, hydrants, manholes, clean outs, blow-offs, air-relief valves, sampling stations, flush stacks, meter pits, backflow devices, curb stops, wet well hatches, and any other water or sanitary sewer appurtenances. GPS shall be sub-meter accuracy and include elevation.

*Use of Standard Symbols and Notations:* Plans shall be prepared using standard symbols and notations commonly used in the practice of civil engineering. If necessary, legends shall be provided to define the symbols used.

## SECTION 2

### EASEMENT REQUIREMENTS

#### 2.01 GENERAL

Whenever possible, sanitary sewer and water mains and all appurtenances shall be constructed within the public right-of-way. When mains are proposed to be constructed in easements and when un-sewered or undeveloped property adjoins the applicant's property, the applicant may be required to extend the mains and/or an easement dedicated to the City of Lawrence to the downstream property line. Should the construction be outside the limits of the public right-of-way, recorded easements shall be acquired, dedicated, and recorded by the developer solely for the benefit of the City of Lawrence, unless otherwise noted.

Easement boundaries shall be shown on the plans and specifications as "Sanitary Sewer Easement" or "Water Main Easement" in lieu of "Utility Easement."

The minimum permanent easement widths to be dedicated to the CITY are as follows.

| <b>Depth of Main<br/>From Finished Grade</b> | <b>Minimum Easement<br/>(In feet)</b> |
|--|---------------------------------------|
| Up to 15 Feet                                | 20                                    |
| > 15 feet to 25 feet                         | 25                                    |
| Greater than 25 feet                         | 30                                    |

For those mains constructed in the public right-of-way, the easement shall extend the distance outside the right-of-way necessary to provide the required easement width.

A minimum 30-foot by 30-foot easement shall be provided for all submersible lift stations with wet wells up to 30 feet deep. Easements for lift stations with wet wells greater than 30 feet deep and/or wet well/dry pit lift stations shall be handled on a case-by-case basis.

Easements shall be exclusively under the discretion and control of the City at all times. No utility companies are allowed to use the easements for installation of their utility lines without the express written permission of the CITY. The planting of trees or placing of other obstructions (including fences) in the easement is not permitted without the expressed written permission of the CITY. Should such permission be granted, it shall be with the provision that there may be no trees or other obstructions placed atop or within ten feet (five feet in demonstrated special circumstances) of either side of the water or sewer main or other water or sewer utility structure or appurtenance. All plan sheets shall clearly identify the easement and the location of all other proposed utilities. The horizontal and vertical plans shall identify all utilities proposed to cross the sanitary sewer easement.

*The following are guidelines pertinent for the easement submittals to be approved.*

**2.02 GRANTING AN EASEMENT TO THE CITY OF LAWRENCE**

When a developer or property owner is required to grant permanent easements to the City for the installation of water mains or sewer mains, a meeting is required with a utility representative prior to submittal of easement documents. A letter requesting the City to accept the easement shall be submitted to the utility. The letter of request shall contain the following attachments.

1. A plat drawing (Attachment A) on 8½ x 14 inch paper to conform to the following specifications.
2. A legal description of the easement (see section 2.04 below).

**2.03 GRANTING OF RIGHT-OF-WAY PLAN SHEET**

- A. Geographic location map showing the extent of the project and including where applicable:
  1. Directional north arrow and scale
  2. County
  3. Civil township
  4. Section, township, and range identification
  5. Subdivision names, recording information, and lot numbers
  6. Highway, road and street identifications
  7. Rivers, creeks, and named ditches
  8. Assigned parcel numbers arranged in ascending numerical order from the project beginning to end, and
  9. List of apparent owners (last deed of record) by assigned parcel numbers.
- B. In addition to the above, there should be sufficient information on the design drawings to properly correlate with the right-of-way plan sheet, i.e., property lines, subdivision information, parcel number or name, width of right-of-way, permanent or temporary, and special conditions (i.e., structures, trees, shrubs to be removed or replaced, sodding, riprap, etc.)

**2.04 LEGAL DESCRIPTION SHEETS**

The following shall be provided:

- A. Parcel number
- B. Project number
- C. Project name

- D. Identification as to permanent or temporary easement
- E. Separate descriptions on separate sheets are required where both permanent and temporary easements are to be taken.
- F. Metes and bounds descriptions shall be clear, concise, and complete with sufficient detail to positively establish from known and referenced points, monuments, lines, etc. Area of taking should be stated at end of description. Areas should be given in acres.
- G. Descriptions of easements from platted subdivision lots, including strips off sides of lots with name of subdivision and recording information for the subdivision as well as affected lot number(s). NOTE: These are usually small areas; therefore, area should be stated in square feet and acres.
- H. Registered land surveyors, licensed in the state of Indiana, seal and signature

**2.05 PROPERTY PLATS**

The following shall be provided:

- A. Parcel number
- B. Project number
- C. Project name
- D. County
- E. Civil township
- F. Section
- G. Township
- H. Range
- I. Owner
- J. Permanent or temporary legends
- K. Permanent or temporary easement areas
- L. Total area of property out of which easement is to be taken
- M. Drawn by
- N. Directional north arrow
- O. Scale



- P.** Unplatted properties: complete boundaries of property description out of which easements are to be taken, including properly identified referenced corners, POBs, monuments, roads, bearings, distances, etc.
- Q.** Platted subdivisions: dimensions of lot(s), as well as the lot number(s), and including the subdivision name and recording information.
- R.** Easement boundaries as described in Item A of this subsection, including referenced bearings, distances, etc., and identified as shown in the legend, and;
- S.** Registered land surveyor seal and signature

## SECTION 3

### BORING AND JACKING

#### 3.01 GENERAL

The work covered by this section includes labor, equipment, and materials required for the boring and jacking of carrier pipe under highways and/or other locations.

Ductile iron pipe (AWWA C151, latest revision), cast iron pipe (AWWA C106, latest revision) or RCP (ASTM C76, latest revision) shall be used as a carrier pipe. Casing pipes shall be per ASTM A139 Grade B.

#### 3.02 EXECUTION

The owner or contractor shall make arrangements with all governmental and other parties affected by the work in sufficient time for each to take appropriate action to ensure successful and timely completion of boring and jacking operations. The owner or contractor shall pay all costs involved.

NOTE: The utility company is not responsible, nor will it arrange to obtain permits from other governmental agencies.

The contractor shall accomplish the boring and jacking operations in accordance with all applicable requirements of owners of roads, railroads, utilities, and private property encountered in the work.

Use of materials and detailed method of installation shall be per these standards and the project technical specifications and drawings approved by an Indiana-registered professional engineer.

The contractor shall submit to the utility company for review details giving locations and size of the shaft, pit, or approach tunnel and the method and equipment to be used. Location of shaft, pit, or approach tunnel shall not interfere with traffic or adjacent property.

#### 3.03 INSTALLATION

General Requirements: An approach trench shall be dug at the forward end of the proposed pipe to a depth sufficient to form a vertical face at least one foot higher than the top of the pipe and large enough to provide ample working room. The size and height of this vertical face may be varied, but in all cases, the roadbed and shoulders shall be adequately protected. After the pipe is installed, the excavated area not occupied by the pipe shall be backfilled with suitable material and thoroughly compacted into place.

Sheeting and bracing of work pits shall be provided if the nature and conditions of the soil or height of exposed faces is such as to endanger either the traveling public or the integrity of the road surfacing. Pit construction is to comply with all provisions, requirements, and latest revisions of Federal Occupational Safety & Health Act of 1970.

When groundwater is known or anticipated, a dewatering system of sufficient capacity to handle the flow shall be maintained at the site until their operation can be safely halted. The dewatering system shall be equipped with screens or filter media sufficient to prevent the displacement of fines. The dewatering system shall not be discharged to the sanitary sewer system unless approved and permitted by the City of Lawrence.

Jacked pipe shall be so constructed as to prevent leakage of any substance from the pipe throughout its length. Installation by open-trench methods will be permitted only at locations indicated and shall comply with the applicable specifications for that type of installation. Jacked pipe shall be installed by the following methods.

**A. Jacking**

This method shall consist of pushing reinforced concrete pipe as the carrier pipe into the embankment.

All pipe shall be handled, unloaded, and stacked so as to prevent any damage to the joints of the pipe.

Excavation shall be undertaken within a steel cutting edge or shield attached to the front section of pipe to form and to cut the required opening for the pipe. Excavation shall be undertaken within the shield and shall not be carried ahead of the pipe far enough to cause loss of soil. When jacking in loose, granular, or running soils, the shield shall have means for inserting steel baffle plates and shelves for the purpose of preventing voids.

The contractor's superintendent and/or engineer experienced in pipe-jacking techniques shall be present at all times while work is proceeding and shall be responsible for checking the line and grade.

The thrust wall shall be adequate for installation of the jacked pipe. It shall be constructed normal to the proposed line of thrust.

A suitable lubricant, such as bentonite, may be applied to the outside surface of the jacked pipe to reduce frictional forces. This shall be accomplished by the use of pressure equipment that pumps the lubricant to the outside of the shield on the lead pipe, or the lubricant may be pumped to the outside surfaces of the pipe through grout holes.

The contractor shall use jacking equipment designed to provide the forces necessary for installation of the pipe. The thrust load shall be imparted to the pipe through a suitable thrust ring that shall be sufficiently rigid to ensure distribution of the load without creating point loading.

When necessary to prevent loss of soil at the heading, the face of the excavation shall be adequately bulk headed when work is shut down at the end of the working day.

Only reinforced concrete pipe sized 30 inches inside diameter and over may be jacked. The pipe shall be Class III or better with tongue and groove joints. All pipes shall have steel reinforcement concentric with the pipe wall and, where required, additional reinforcement at the end of the pipe.

To avoid concentrated loads at the joints from pipe to pipe, strips of plywood, asphalt roofing paper, or other similar resilient materials shall be inserted around circumference in the joints as each pipe is placed ahead of the thrust ring. Resilient material must also be used between the pipe end and the thrust ring.

All jacking pipe shall have accompanying design data of diameter, wall thickness, joint design, circumferential reinforcement and additional joint reinforcement, steel placement, concrete cover and compressive strength of concrete. Shop drawings showing this information shall be submitted to the engineers for their approval before any materials are shipped to the site.

Minimum compressive strength of concrete shall be 5,000 psi.

**B. Boring (Rotating Auger)**

This method shall consist of pushing the pipe into the fill with a boring auger rotating within the pipe to remove the spoil. Advancement of the cutting head ahead of the pipe will not be permitted except for that distance to permit the cutting head teeth to cut clearance for the pipe. In the event granular, loose or unstable soil is encountered during the boring operation, the cutting head shall be retracted into the casing a distance that permits a balance between pushing pressure and the ratio of pipe advancement to quantity of spoil to assure no voiding is taking place. The excavation by the cutting head shall not exceed the outside diameter of the pipe by more than ½ inch. The face of the cutting head shall be arranged to provide reasonable obstruction to the free flow of soft or porous material.

The use of water or liquids to soften or wash the face will not be permitted. Water may be used in sticky clays to facilitate spoil removal providing water is introduced behind the cutting head. Lubricating agents, such as bentonite, may be used to lubricate the casing and reduce friction between casing and embankment.

Bored or jacked installations shall have a bored hole essentially the same as the outside diameter of the pipe. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe by more than approximately one inch, grouting or other approved methods shall be employed to fill such voids.

If an obstruction that stops progress of pipe is encountered during installation, the cause of stoppage shall be determined, and when the cause is identified, the installation method shall be modified to best suit the conditions encountered, except that line and grade may not be changed. Before proceeding, the contractor shall notify the engineer in writing of the difficulty, diagnosis, and proposed procedural modification. If the contractor proposes abandonment of in-place piping and initiation of a new attempt at an alternate location, such a proposal will be considered only under the following conditions.

1. The Contractor assures the CITY in writing that he will perform all proposed work in compliance with applicable laws, regulations, and ISHD and AREA or other industry or trade standards (he shall cite standards) that govern the activities he proposes.
2. In-place pipe will be left in place, filled with grout; stymied pipe shall not be withdrawn and reused in a subsequent attempt.
3. The site of abandonment will be restored to a condition equal to that prior to start of work.
4. All shifts in alignment necessary to accommodate the proposed relocation shall be included, and no deviation from designated grade shall be made.
5. The contractor submits to the CITY prior to commencement of work sufficient drawings, calculations, and other supporting data, bearing the seal of a Professional Engineer registered in the state of Indiana, to enable the CITY to judge the acceptability of the proposed work.

Pressure grouting of the soils or freezing of the soils before jacking or boring may be appropriate to stabilize the soils, control water, prevent loss of material, and prevent settlement or displacement of embankment. Grout shall be cement chemical or other special injection material selected to accomplish the necessary stabilization. All materials and methods for injection shall be as developed by a registered professional soils engineer and by an experienced and qualified company specializing

in this type of work. If injection will be used in the work, the contractor shall submit the proposed plan to the engineer before start of work, along with evidence of the qualifications of the preparer of the proposed plan.

The contractor shall employ only personnel skilled and experienced for all specialized activities and operation of specialized equipment involved in the work of this section.

## SECTION 4

### SLOPE PROTECTION

#### 4.01 GENERAL

The contractor shall accomplish temporary and permanent erosion protection related to grubbing, grading, excavation, paving, and other work as directed by the City and as shown on the approved plans.

#### 4.02 TEMPORARY EROSION CONTROL

The contractor shall construct temporary berms, dikes, dams, and ditching or sediment basins and maintain such control features until permanent erosion control features are placed in accordance with the approved plans.

#### 4.03 PERMANENT EROSION CONTROL

The contractor shall incorporate permanent erosion control features into the project at the earliest practicable time as the construction progresses in accordance with the approved plans and the following.

##### A. Erosion Control Fabric

1. The fabrics shall act to block the force of rain and act as mulch.
2. The mat shall be clean and weed free using biodegradable materials that will not leave a residue.
3. The application of the specific seed, lime, and fertilizer shall be applied immediately before laying the fabric.
4. The fabric shall be laid according to the manufacturer's recommendations and as approved by the City.

##### B. Riprap

1. Riprap shall be placed where indicated on the approved plans and in accordance with the INDOT Standards Section 616.
2. The type of riprap required shall be indicated on the approved plans and as directed and approved by the City.

##### C. Seed/Sod

1. Seed mixtures and mulched seeding shall be placed as early as practicable to keep the area of bare soil exposed at any one time by construction operations to a minimum.
2. Sod shall be placed as shown on the approved plans and as directed by the City.
3. Seed and sod shall be placed according to INDOT Standards Section 612.

**D. Gabions (Stone Filled)**

1. Gabion materials shall be non-corrosive, high-strength polyethylene, or galvanized stainless steel.
2. Stone fill material shall be placed in the gabion by hand. The stone shall be a hard durable rock not less than three inches.
3. The gabion shall be constructed, installed, and filled as recommended by the manufacturer and as directed by the City.

**4.04 APPROVED ALTERNATIVES**

The contractor may use alternate permanent erosion control protection methods only with written authorization from the City.

## SECTION 5

### INSPECTIONS, DEDICATION AND ACCEPTANCE OF INFRASTRUCTURE

#### 5.01 GENERAL

Ordinance No. 4, 1999 and Ordinance No. 10, 1994, in their entirety, as adopted by the Common Council of the City of Lawrence, Indiana, are hereby included in and made part of this standard.

- A. The power to investigate and inspect water and sanitary sewer system improvements shall be vested in the City and its authorized representatives.
- B. Investigation and inspection of water and sanitary sewer system improvements construction may be made at any time by going upon, around, or about the affected property.
- C. Such investigation and inspection may be made either before, during, or after construction is completed and shall be made for the purpose of determining whether the construction has been accomplished in a manner consistent with the approved plans and specifications and the minimum requirements of the CITY.
- D. Persons working on or having control of the construction shall cooperate fully with the inspectors and shall have available a copy of the approved plans and specifications used to obtain the construction permit.

#### 5.02 OBSERVATION OF CONSTRUCTION

Prior to the commencement of construction, the applicant shall execute a construction observation agreement with the CITY that shall provide:

- A. The CITY shall employ an observer of its choosing to observe the construction work to ensure such construction meets the requirements of the approved construction plans.
- B. The observer shall be responsible for submitting and certifying hydrostatic and bacteriological test results for all water system improvements installed pursuant to the permit. The contractor performing the work shall be charged the costs of testing and sampling for all water system improvements. The observer shall be responsible for submitting and certifying all air and mandrel tests, and manhole vacuum tests, for all sanitary sewer system improvements installed pursuant to the permit. Observer shall ensure required sanitary sewer video inspection CDs or DVDs are completed and submitted.
- C. The applicant shall reimburse the City of Lawrence for the cost of such observation services, which shall be determined at the time of execution of the agreement, with 50% of said cost to be paid prior to the commencement of construction and the balance due upon substantial completion of the project. The utility shall provide an estimated cost of inspection services at time of plan approval, based upon the contractor's construction schedule.
- D. Upon completion of construction, the observer and contractor shall execute and file with the CITY a certificate of completion and compliance certifying to the CITY and the applicant the



compliance of such construction with the requirements of the approved construction plans and/or approved change orders.

- E.* No action with regard to the acceptance of the construction and release of the improvement bond shall be taken until the applicant has reimbursed the CITY in full for all observation and testing services, and all other outstanding fees.
- F.* All construction of water and sanitary sewer system improvements intended for dedication to the City of Lawrence shall be inspected and certified by an authorized representative of the CITY.
- G.* The applicant shall furnish the CITY necessary copies of the approved construction plans.
- H.* If construction has already commenced, the applicant must then furnish, along with a written request for acceptance, a certification by a professional engineer or land surveyor registered in the state of Indiana that the construction has met the requirements of the approved construction plans. All deficiencies shall be corrected prior to acceptance by the CITY.

### **5.03 APPEALS**

All appeals shall be handled in accordance with the applicable portion(s) of the City of Lawrence Municipal Code, Title 5.

### **5.04 PENALTIES**

Any penalties assessed against a contractor or developer of a project will be assessed in accordance with the City of Lawrence Municipal Code, Title 5.

### **5.05 PLAN REVIEW FEE**

Plan review fees are charged by the hour per City code and the total cost will be dependent upon the total hours spent in review by utility staff. The owner/developer will be provided an invoice at the time of the issuance of plan approval stating the hours spent and the hourly rate.

### **5.06 STOP WORK ORDER**

The CITY is empowered to issue an order requesting suspension of work ("Stop Work Order") whenever it determines:

- A.* Construction is proceeding in an unsafe manner; or
- B.* Construction is occurring in violation of CITY standard specifications and requirements and in such a manner that, if construction is allowed to proceed, there is a probability it will be substantially difficult to correct the violation; or
- C.* Construction for which a construction permit is required is proceeding without a construction permit being in force. In such an instance, the stop work order shall indicate the effect of the order terminates when the required permit is obtained. The stop work order shall be in writing and shall state to what construction it is applicable and the reason for its issuance. One copy of the stop work order shall state the conditions under which construction may be resumed.

### 5.07 VARIANCE PROCEDURE

The CITY shall have the power to grant a variance of any minimum water system or sewer system standard regulations promulgated and adopted by the CITY. The CITY may grant such a variance if an applicant for a construction permit submits the request in writing and makes a substantial showing that, a minimum design standard or regulation is unfeasible or unreasonably burdensome; and an alternate plan submitted by the applicant will achieve the same objective and purpose as compliance with minimum design standards and regulations of the CITY.

If the CITY shall fail to respond to such request for variance within 30 days from such written request, it shall be deemed to be denied.

An applicant may appeal and request a hearing by the CITY of any decision denying or only partially approving a variance. The appeal of such a decision shall be filed with the CITY within 30 days of the decision. The CITY shall hear the request for the variance *de novo* and in making a decision shall apply the standards set forth above.

### 5.08 REQUIREMENTS FOR ACCEPTANCE AND DEDICATION TO CITY

Water and sanitary sewer system improvements shall not be accepted and tap permits shall not be issued until all documents, as required by CITY standard specifications, are submitted to the CITY, including the following:

- A. Maintenance bond
- B. Recorded plat, covenant and easement, or right-of-way documents.
- C. Certificate of completion and compliance.
- D. The completion of a final inspection and test results confirms the systems have been constructed and tested in accordance with CITY standard specifications. Contractor and inspector shall both sign off on punch list certifying completion.
- E. Construction record drawings of the project as constructed (no water or sewer services will be provided to the project until as-built plans have been submitted, reviewed, and approved by the CITY).
- F. Payment of all fees for inspection services, hydrostatic, and bacteriological testing (no water or sewer services will be provided until all fees are paid in full).
- G. Testing and submittal to utility of test documents from certified tester for all required backflow devices (no water service will be provided until this requirement is fulfilled).