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Inspection Guidelines –

For Water, Sewer and Reclaimed Water



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Section 1.0

Introduction and General Information

This document provides a summary of the processes and procedures included in the construction of a water, sewer or reclaim project from the pre-construction conference to final inspection. This document is a guide that outlines the duties and responsibilities of JEA and the Utility Contractor and assists them in making decisions in the field.

JEA's team is trained to assist in the project management, coordination with System Planning, system availability, hydraulic analysis, design review, construction inspection, as-built review, and acceptance processes of developer installed utility systems.

Although there may be unlimited variations of problems encountered in the construction of a project, this document will cite examples of common problems where accepted solutions are already in place.

Responsibilities of contractors, engineers and JEA team members may vary in their everyday routines, but their overall approach to situations encountered on a project shall be consistent. In the material found herein, basic guidelines of an acceptable nature are established.

This document is intended to support the JEA Water and Wastewater Standards manual and the JEA Rules and Regulations for Water, Sewer and Reclaimed Water Services and in no way is meant to allow for any deviations of the standards.

Section 2.0

Definitions:

Authorized Agent – Any person or entity the legal property owner of a parcel of land delegates to conduct business with JEA on their behalf

Development Project – A residential or commercial improvement to a parcel or parcels of land requiring utility infrastructure installation and resulting in new service connections

Engineer of Record (Engineer) – A registered Professional Engineer who has been contracted by the Owner/Developer to prepare design documents and permits to facilitate installation of a water, sewer or reclaim system

Grid Project – A Water, Sewer, and/or Reclaimed Water utility infrastructure installation and/or improvement funded by JEA and installed by a Utility Contractor

Hydraulic Reviewer - JEA representative who has been assigned the role of reviewing the Engineer's pump station design for conformance to JEA Standards and the Water, Sewer, Reclaim Design Guidelines Document and for proper operation on a hydraulic manifold system

JEA assigned Inspector - JEA representative who has been assigned the role of inspecting a Contractor's construction for conformance with JEA Standards and this document.

Joint Project – An infrastructure installation and/or improvement which may include JEA's Water, Sewer, and/or Reclaimed Water utility installed and/or improvement modified by a Utility Contractor representing another Governmental Agency

Owner/Developer – Any person, or entity, who improves a parcel of land which includes the installation of a water, sewer or reclaim utility system for the purpose of providing service to a development project

Plan Reviewer - JEA representative - who has been assigned the role of reviewing the Engineer's design for conformance to JEA Standards and the Water, Sewer, Reclaim Design Guidelines Document

Sub-Contractor – A utility contractor, licensed by the State of Florida, who has been sub-contracted by the Contractor to install a water, sewer or reclaim utility system in support of a development project

Utility Contractor (Contractor) – A utility contractor, licensed by the State of Florida, who has been contracted by the Owner/Developer to install a water, sewer or reclaim utility system in support of a development project.

Section 3.0

JEA Inspector Responsibilities and Authority

Responsibilities - The JEA Inspector is responsible to review the approved plans prior to attending the Pre-construction meeting. He/she will communicate any changes needed to the approved plans to the Project Engineer and JEA Development. He/she will inspect all material prior to being installed to verify that the material meets JEA standards. He/she will be onsite during construction for critical installation, tie-ins, and Final inspections. He/she is responsible to complete all test forms listed in the Appendix at the appropriate time during construction. He/she is responsible to review as-builts to assure their accuracy and completeness. For Joint or Grid Projects the JEA inspector will also be required to complete “Dailey Construction Reports” (Appendix-B pg.31) and review pay application (Appendix-B pg.32-34) for approval before contractor submits to accounts payable for payment.

Authority - The JEA Inspector has the authority to reject any material that does not meet JEA standards. He/she can make changes to the approved plans that meet JEA Standards, any other changes shall require the approval of JEA Development and the project Engineer. He/she has the authority to stop construction if the site is unsafe or the contractor is not following JEA approved plan or standards. During Joint or Grid Projects the JEA Inspector must contact CEI (Construction Engineering Inspection) firm assigned to project by leading agency to review any unsafe conditions.

Section 4.0

Pre-Construction

Pre-construction Meeting

Pre-construction meetings are held at JEA’s downtown office located at 21 W Church Street, Jacksonville FL, 32202. To schedule a pre-construction meeting, contact JEA Development at (904) 665-4081.

All requests must be received from either the owner or authorized agent and scheduled within 5-7 business days. The following persons shall be represented at the pre-construction conference:

1. Underground Utility Contractor license holder and all sub-contractors
2. Developer/owner or Authorized Agent
3. Professional Engineer
4. JEA Assigned Inspector
5. JEA Plan Reviewer - and/or JEA Hydraulic Reviewer
6. JEA Water, Sewer and Reclaim O&M Personnel (Optional attendance at O&M’s discretion)
7. JEA Pump Station O&M Personnel (only required for JEA pump stations)

An attendee representing one of the persons listed above must be authorized and prepared to make decisions about the project.

The following items will be provided to JEA at the pre-construction meeting

1. Valid Underground Utility Contractors license, issued by the State of Florida to the utility contractor performing the work.
 - In accordance with Chapter 489 F.S., utility construction may not be sub-contracted to a non-license holder. Any questions regarding this policy shall be directed to the State of Florida Department of Business and Professional Regulations, Construction Industry Licensing Board.
 - JEA shall maintain a file of current license holders, working on development projects installing JEA utility systems.
2. Valid DEP and/or JEA permit for drinking water distribution and/or wastewater collection.
3. Any other valid right of way permits, including DOT, City, County or railroad permits.

Encroachment into JEA’s Easement

The contractor shall not perform any utility or site work within an existing JEA easement without first having been issued a permit to work by JEA’s Director of Real Estate Services. A copy of this permit must be maintained onsite at all times during construction.

In the event a contractor is found to be working outside the limits of the approved permit or is working without a permit, the assigned JEA Inspector shall order all work within the JEA easement ceased. The Manager of Construction Inspection will notify the Director of Projects and the Director of Real Estate Services of the contractor’s name and location of the encroachment. The contractor shall not resume work until a permit is issued by the Director of Real Estate Services. The only exception shall be that any work performed which has impeded access to a JEA facility, or which has created a safety hazard, must be remedied immediately by the contractor.

Construction Commencement Notification

The contractor shall provide the assigned JEA Inspector with at least a 48 hour notice prior to commencing construction. No utility pipe or appurtenances shall be installed prior to this notification being provided. Any utility pipe or appurtenances which are installed prior to the assigned JEA Inspector being notified will be required to be exposed for inspection.

Upon notification of construction commencement, the assigned JEA Inspector will inspect the stored materials for quality and material approval. It is the contractor’s responsibility to ensure that all materials are in good working condition and are approved materials listed in JEA’s Water and Sewer Standards Manual which are available on-line at www.jea.com. Any materials installed that are not approved in JEA’s Water and Sewer Standards Manual must be removed and replaced with approved materials.

In the event of a construction delay for a period of two or more days, for reasons other than weather related, the contractor shall notify the assigned JEA Inspector that work has ceased. Once notification has been provided, no work shall commence until the assigned JEA Inspector is notified. Any utility pipe or appurtenances which are installed prior to the assigned JEA Inspector being re-notified will be required to be exposed for inspection.

Section 5.0

Inspection Guidelines

Wetwell Installation – Section 433 of the JEA Standards Manual

The assigned JEA Inspector or a JEA representative identified by the assigned JEA Inspector – must be present at the time the base section is installed. The structures shall be inspected for structural integrity, cracking, chipping, etc. The contractor is responsible for the structural integrity and safe handling of the wetwell sections. In the event of damage to the structure the damaged section shall be replaced.

The contractor is required to provide a crane of sufficient lifting capacity to handle the load of each wetwell section in a manner which provides a safe working environment for the workers and the structures. The structure shall be set in a safe, dry excavation with a minimum of 12-inches of rock base. After setting the base structure, the contractor is required to ensure that the bottom of the wetwell has been installed at the proper elevations according to the approved plans.

The contractor shall ensure that joint sealant and joint tape is clean and in unused condition. The contractor shall ensure the structure is plumb as each subsequent section is installed. The contractor shall grout the outside and inside around the boot of the wetwell.

Gravity Sewer Construction – Section 428 of the JEA Standards Manual

The assigned JEA Inspector or a JEA representative identified by the assigned JEA Inspector – must be present at the time the first run of gravity sewer between the wet well and the junction manhole is installed.

All gravity sewer mains and services shall be constructed using green colored pipe or markings.

All gravity sewer pipes shall be properly bedded and installed in a safe, dry excavation. Clean, suitable fill material shall be provided throughout the entire trench excavation.

The excavation should be de-watered, as necessary, to accomplish a dry, safe installation of the gravity sewer with particular attention on proper bedding of pipe.

Gravity sewer pipe shall be installed with the spigot end pointed downstream. During installation, the contractor shall ensure that no debris enters the pipe by maintaining a plug or cap (no boards, buckets or tape) on each section of pipe until the next section is ready to be installed.

The contractor shall exercise care when installing sewer pipe into and out of manhole boots. Sufficient bedding shall be provided at these locations to ensure that no dips occur adjacent to the manhole structure.

Pipe Bedding

During excavation, the contractor shall refrain from undercutting below the depth of the proposed sewer pipe. Undercutting shall only be utilized in areas where unsuitable materials are present. Upon determining that unsuitable materials are present, the contractor shall notify the engineer and Construction Support Services. Jointly, the contractor and the assigned JEA Inspector will determine the amount of undercutting that will be required/allowed. Excavated material shall be replaced with clean, suitable backfill per JEA Standards, properly compacted to avoid dips and settling of the sewer system.

Service Tees

Service tees shall be installed at 30-60 degrees and placed within the center portion of the lot. Special care must be taken when installing a service tee on gravity main to assure good compaction and support of the tee and service piping, because the area is usually undercut to aid in the installation. Service pipe bedding and compaction is the same as for the gravity main.

Sewer Services

A bend may be installed on the service riser to facilitate the service terminating at a depth of between 30 to 60 inches at the property line. The service lateral shall be in the center portion of the lot marked by pressure treated 3x3x6 post or landscape timber. The Contractor shall mark all services at the right-of-way and curb.

Sewer Manholes – Section 427 of the JEA Standards Manual

All manhole sections damaged during delivery, handling, or installation shall be rejected. The manhole base should be installed on clean, dry soil with a clean gravel leveling course, as required. Risers are to be

installed with clean, dry joints and plastic joint sealant properly installed. Inverts shall be constructed per JEA Standards. The manhole base may be handled with forks but all other sections of the manhole are to be handled using nylons straps, cables or chains.

The contractor shall grout the outside and inside around the boot of the manhole with non-shrink grout and the boot must be double banded.

Inverts shall be smooth and shall be free of protrusions, rough edges, slag and other items which might obstruct the flow stream. Branches shall be smooth and shall utilize the largest possible radius.

Ensure that compaction around the manhole has been accomplished in lifts, as required.

Before final inspection, manholes should be trimmed of any excess plastic joint sealant. Any voids in pre-cast wall should be filled with non-shrink grout and inside of manhole should be thoroughly painted, excluding invert and bench, as required. No manhole leak repairs will be allowed on new manholes.

Tie into existing manholes – Section 427 of the JEA Standards Manual

No core will be made in manhole joints or cone section. A hole saw should be used for coring the manhole wall, taking care not to drill saw support holes into a joint. The cored hole should be round and properly sized for the diameter pipe being used plus allowance for a rubber boot with double banded stainless screw clamp. A mechanical plug shall be installed and maintained until final inspection. The Contractor must make sure to tie off plugs to ensure they do not accidentally go down the line. No core shall be allowed within six inches of an existing pipe entry, when measured on the inside wall of the manhole. Unless approved otherwise by JEA, all new 6" sewer service laterals which require a new 6" connection into an existing JEA manhole or main must be completed by JEA O&M staff only.

Tie-in to existing sewer stub

The Contractor is responsible for verifying the existing stub-out condition, slope and elevation. Any deviation in elevation or alignment from the approved plans must be reviewed and approved by the Engineer prior to connection. The gravity sewer pipe should be installed without deflection and connection should be made using an approved transition coupling, if required.

Sewer Drops

All drops less than 2 feet require a flume no less than the diameter of the pipe. Any drops 2 feet or greater, shall be constructed per JEA Standards.

Compaction Above Pipe

Upon completion of installation, the pipe trench should be backfilled with loose clean dry material which is free of debris and compacted in 12-inch maximum lifts to 2 foot above the crown of the pipe. Further backfilling is to be accomplished using clean dry material, which also is free of debris, in 12-inch loose lifts compacted to proper density.

General Pressure Pipe Construction – Section 350 (Water), Section 429 (Wastewater), Section 701 (Reclaimed) of the JEA Standards Manual

This section pertains to all pressure pipe, including water mains, sewer force mains and reclaimed water mains. The assigned JEA Inspector or a JEA representative identified by the assigned JEA Inspector must be present at the time of connection to existing utilities. All 4" through 12" Water and Reclaimed Water pipe shall be DR18 (C900).

The Contractor is responsible for installing the main in accordance with the final approved plans which correctly indicate final grade.

Pipe should be bedded and backfilled with suitable fill material according to JEA Standards and density tests will be performed as required.

The Contractor should note any clearance deviation from the approved plans and FDEP permit with storm drains and water mains on field record drawings. The Engineer should be notified, by the Contractor, of any installations not in compliance with the FDEP permit.

Pipe should be in proper alignment before homing the spigot into the bell end to prevent rolling the gaskets. Gaskets should be lubricated and free of dirt, mud and debris. During installation, the contractor shall ensure that no debris enters the pipe by maintaining a plug or cap (no boards, buckets or tape) on each section of pipe until the next section is ready to be installed. Pipe should always be installed in as clean a condition as possible to reduce the volume of water used for flushing.

Joints may not be deflected more than 80% of the manufacturer's recommended maximum. The contractor is required to determine the maximum deflection of the pipe manufacturer being installed and adjust accordingly. In some cases, bends or fittings may need to be added to adjust for the variances between differing manufacturer's joint deflection allowances. If a bend is needed to facilitate construction, but has not been included on the design drawings, one must be added as directed by the Engineer.

Pipe deflection of PVC is strictly forbidden. PVC pipe may not be bent or placed in a bind in order to eliminate bends. If a bend is needed to facilitate construction, but has not been included on the design drawings, one must be added as directed by the Engineer. Any pipe found to be forcefully bent during installation must be removed.

Locate wire shall be installed per JEA Standards. During pipe bedding and backfill, care should be taken to protect the wire and all connections. The wire shall be secured to the pipe and shall not be wrapped around fittings, nuts, bolts or other appurtenances. Wire shall be continuous, with no buried connections or splices. All connections or splices must be made within a valve jacket or a locate wire box. When installing wire in a valve box, care must be taken to ensure the wire does not become entangled with the valve operating nut. Additionally, the wire shall be protected when entering the valve box so that the wire does not become grounded. The preferred method for protecting the wire is to cut a notch in the PVC stand pipe prior to installing the valve jacket. Locate wire boxes should normally be installed at a property line. The contractor must use the proper color wire for the appropriate main and service (water-blue, wastewater-green and reclaimed-purple).

The contractor is required to install thrust restraints in accordance with the latest version of JEA's Water and Sewer Standards Manual. Bell restraints must be installed in accordance with the restraint manufacturer's recommended procedures.

For projects having looped water mains with multiple points of connection to the existing water system, the contractor will only be allowed to make one tie-in until after the Certificate of Clearance has been issued. This point of tie-in will be the source of water for all flushings and subsequent testing.

Wet Tap by Method of Tapping Sleeve and Valve – Section 351 (Water), Section 429-430 (Wastewater) of the JEA Standards Manual

The assigned JEA Inspector or a JEA representative identified by the assigned JEA Inspector must be present for the tap. The JEA Inspector must witness the pressure test of the tapping sleeve and the removal of the tapping machine to verify the coupon is removed.

The Contractor is responsible for verifying the location, depth, type, and outside diameter of existing pipe as well as the location and accessibility of the nearest upstream and downstream isolation valves.

Unless approved otherwise by JEA, size-on-size taps are limited on PVC mains to 12 inch size and smaller. Size-on-size taps are acceptable on D.I.P. (all sizes). For size-on-size taps, on 8" and larger mains, the actual tap hole size shall be reduced by 1-inch.

The installation of the tapping sleeve should be performed on a clean, dry pipe and a minimum distance, as specified in the JEA Standards, from any joint end or fitting.

Since this is a scheduled event, the tapping sleeve & valve should be installed in advance to allow time for air trapped in the valve to be purged and any leaks to be corrected before the appointed time.

Light soap (dish washing soap) can be applied to the rubber seal of the tapping sleeve to aid in achieving a proper uniform seal.

The Contractor must install the tapping sleeve per the manufacturer's recommendations.

The tapping valve should be installed using a rubber gasket between the valve flange and the tap sleeve flange. Bolts should be tightened to the manufacturer's torque recommendations.

The Contractor shall pressure/leak test the tapping sleeve and tapping valve at a pressure of 150 pounds per square inch. for a duration of 15 minutes. The pressure/leak test is to be witnessed by the Inspector.

If no problems are encountered in the testing, the Contractor may proceed using a tapping machine and a clean, sharp bit designed to retrieve the coupon. The contractor shall make sure that the tapping valve is supported during the tap and that the coupon is collected when completed. Flush the tap valve to remove shavings. The tapping valve should then be permanently supported.

For water main taps, chlorinate the bit and cutter with bleach prior to installation.

If the coupon is lost in the main, the Contractor will be held responsible for its retrieval. The retrieval method will be determined on a case-by-case basis by the Contractor, Engineer and Inspector. All the associated costs will be the burden of the Contractor.

In the event of damage to the existing main during the tap, the Construction Inspector will notify JEA's System Operation Control Center (SOCC) immediately. — SOCC will dispatch a trouble-shooter to evaluate the damage and determine if the Contractor has sufficient resources to facilitate the repair. In the event JEA assistance is needed, SOCC will call in the necessary repair crews. JEA may issue a bill to the contractor for the cost of making the repair if it is determined the contractor is at fault.

Tie-In by Method of Cutting in a Mechanical Joint Tee, Sleeve and Gate Valve

The assigned JEA Inspector or a JEA representative identified by the assigned JEA Inspector must be present during any connections to existing JEA utilities. If an outage is required the JEA Inspector will determine the affected area and communicate through the outage notification process.

The Contractor is responsible for verifying the location, depth, type, and outside diameter of existing pipe as well as the location and accessibility of the nearest upstream and downstream isolation valves. The assigned JEA Inspector will coordinate a simulated outage to ensure that the valves operate properly and provide sufficient line isolation.

The assigned JEA Inspector will verify that the Contractor is properly prepared to perform the tie-in by having all necessary equipment, materials and personnel on the site prior to cutting the existing pipe. Equipment and materials shall include repair couplings or sleeves in the event the tie-in is unsuccessful.

If the tie-in is not completed within the approved outage time or it appears that the Contractor will be unable to make the tie-in, the Inspector will notify SOCC of the potential extended outage. The assigned JEA Inspector has the option, at that time, to require the contractor to place the existing main back into service and reschedule the tie-in.

While the Contractor is installing the M.J. tee, sleeve and gate valve, the contractor should verify that all bolts, nuts and restraints are properly tightened and that the M.J. sleeve is properly centered and aligned.

The contractor shall verify that required thrust restraints per JEA standards are in place on the main line to be cut into.

The Inspector will verify, after the tie-in is completed, that the Contractor has bedded, backfilled and compacted to the springline, put the existing main back in service, and visually checked all connections for leaks before completing backfilling and compaction.

In the event of damage to the existing main during the tie-in, the Construction Inspector will notify SOCC immediately. -SOCC will dispatch a trouble-shooter to evaluate the damage and determine if the Contractor has sufficient resources to facilitate the repair. In the event JEA assistance is needed, SOCC will call in the necessary repair crews. JEA may issue a bill to the contractor for the cost of making the repair it is determined the contractor is at fault.

Outage Process

Sewer Outage Process

The assigned JEA Inspector will coordinate all sewer outages with the appropriate JEA personnel by completing the Planned Outage/Flushing Notification form (Appendix–A pg.27) and forward through the outage communication email. At this time, the number of lift stations to be taken out of service, the anticipated down time and the approximate volume of sewage to be drained and pumped from the existing force main pipe will be determined.

The Contractor shall estimate the number and/or volume of pump trucks required for the proper disposal of sewage from the excavation site. The contractor shall provide all necessary standby and/or auxiliary pumping equipment required to facilitate any pump station which must be taken out of service. This may include, but not be limited to, pump and haul trucks or portable pumps. The Contractor will be provided a discharge location and shall be responsible for delivery of all sewage to this location. The pump trucks must remain on the job site until the force main is put back in service.

The Contractor will line the excavation site with a plastic liner or take other precautions to prevent sewer spillage onto the ground and to prevent mud, debris or rock from being pumped into the pump trucks. No sewage may be pumped onto the ground or into the storm drainage system.

Water Outage Notification Process

The assigned JEA Inspector will coordinate any outages and outage simulations using the outage notification procedure and provide proper notification at least 48 hours in advance of the construction. At this time, the number of customers to be taken out of service and the anticipated down time will be determined.

Planned Outage/Flushing Notification form includes (Appendix–A pg.27):

- Location of outage
- Proposed date, time and duration of the outage
- Purpose of the outage
- Number of customers affected
- Contractor contact name and number

After receiving approval of outage notification, all affected parties must be notified.

The Contractor shall notify customers by going door-to-door and issuing written notifications. The notification shall be provided no less than 48-hours in advance if the outage affects less than 49 customers, and does not affect any industrial, commercial or institutional customers for which water supply is critical to their operation. These institutions include, but are not limited to schools, day care facilities, medical facilities and any process facilities relying on an uninterrupted source of water.

A five day notice is required for outages affecting more than 49 customers. If more than 350 customers are affected, or the outage exceeds more than 8 hours, or has critical users within the outage, a boil water advisory (BWA) is required.

The customer correspondence shall be on the contractor's letterhead and shall include the following information:

What: *Planned Outage*

Where:

When:

Time:

Project:

Number of Residents Affected:

Number of Businesses Affected:

Contractor:

Contractor Contact:

Contractor Phone Number:

Special Instructions:

Purpose of Outage: *example (This outage is to tie in the new 12" water main to the existing 12" water main)*

JEA will issue a formal news releases if the outage affects more than 100 customers and/or affects one or more industrial, commercial or institutional customers for which water supply is critical to their operations. To provide adequate time for a news release, notification of the proposed outage must be made to the Media Relations Coordinator at least five (5) days prior to the outage.

In certain outage situations involving entire subdivisions, the contractor may be required to provide message boards at the entrance to the subdivision. This requirement will be identified on a case by case basis by JEA.

Tie-In to Existing Stub-Out – Section 428 of the JEA Standards Manual

The assigned JEA Inspector or a JEA representative identified by the assigned JEA Inspector must be present during any connections to existing JEA utilities. The Contractor should verify the location, depth and type of existing pipe and verify that the valve and end of the existing stub-out are properly restrained. If not properly restrained, the Contractor is responsible for installing approved restraints. The assigned JEA Inspector shall assist the Contractor in verifying that the stub-out gate valve is operable and is in the closed position.

Before the scheduled time of the tie-in appointment, the Contractor should prepare the excavation as required, and remove the cap by cutting off the end of the pipe or removing the nuts and bolts on the cap.

The contractor shall check the alignment, the centering of the sleeve over the connection and verify that all bolts, nuts and restraining devices are properly installed, tightened, bedded and backfilled.

The Contractor should use bends, as necessary, to correct depth or alignment of piping. These bends may or may not be indicated on the approved construction documents.

The Contractor is responsible for stub-out piping after connection and pressure testing against the existing gate valve. In the event the existing gate valve will not hold pressure, the contractor may install a new gate valve at the connection point. For water main connections only, the contractor may opt to install a jumper connection, with a 2-inch reduced pressure backflow assembly to fill the new lines and pressure test his piping separately from the existing stub out.

Sewer Force Main Construction – Section 429 of the JEA Standards Manual

Ductile Iron fittings are required to be epoxy lined and handled so not to damage the interior lining. For example, a nylon strap can be used to lift the fitting in lieu of a chain.

During construction, to avoid adding air release valves, the contractor, where possible, shall avoid changes in vertical elevation not shown on the approved plans.

All force mains to be constructed using green colored pipe or markings.

All private pump stations shall require the pump-out box as detailed on JEA standards S-46, JEA will field verify the construction prior to acceptance (transfer of ownership/maintenance).

Air Release Valves (ARV) – Section 430 of the JEA Standards Manual

The Engineer and Contractor must adjust the planned location of ARV's to the actual high points of the line. The Contractor, with the Engineer's approval, should install additional air release valves at changes in elevation of 2 feet or greater due to actual field conditions or other conditions not identified on the approved plans. As-builts will indicate the location and elevations of all ARV's.

Pressure testing of force mains should be performed against the air release assembly isolation valve. After successful pressure testing, the contractor shall verify that all air release assembly isolation valves have been opened.

The air release structure must be lined.

Force Main Tie-In to a Manhole – Section 429 of the JEA Standards Manual

The assigned JEA Inspector or a JEA representative identified by the assigned JEA Inspector must be present at the time of connection to existing utilities.

The force main pipe is to be installed into the manhole so that the crown of the force main matches the existing effluent pipe. A gate valve, sized accordingly, should be installed in the force main adjacent to the receiving manhole.

The force main pipe should be installed far enough into the manhole to facilitate the installation of a temporary restrained mechanical joint cap with a 2-inch threaded tap and standpipe for testing purposes.

The force main should be pressure tested to the manhole connection to assure that no leaks occur.

Upon passing the pressure test, the temporary cap shall be removed and the excess pipe must be cut and removed.

The force main pipe shall be constructed such that it enters the manhole between 180 and 90 degrees from the effluent line.

The force main pipe through the manhole wall will require the installation of a rubber boot and stainless steel band. Grouted on the inside and outside around the boot.

After connection of the force main and completion of all concrete work within the manhole, the receiving manhole shall be lined in accordance with JEA Standards.

Reclaimed Water Main Construction – Section 701 of the JEA Standards Manual and A-4 of the JEA Rules and Regulations for Water, Sewer & Reclaimed Water Services

The assigned JEA Inspector or a JEA representative identified by the assigned JEA Inspector must be present at the time of connection to existing utilities.

DI Fittings – Fittings are required to be cement lined and handled so not to damage the lining. For example, a nylon strap can be used to lift the fitting in lieu of a chain.

All Reclaimed Water mains and services to be constructed using pantone purple number 522C colored pipe or markings.

The contractor is required to install the proper signage, as required by FDEP, and the JEA Rules and Regulations for Water, Sewer and Reclaimed Water Services identifying the existence of Reclaimed Water within a project. All signs shall use purple as a prominent color.

Flushing Reclaimed Water mains

Prior to any flushing the JEA Inspector will complete the Planned Outage/Flushing Notification form (Appendix–A pg.27) and e-mail through the Water Outage Communication.

Any Reclaimed Water main providing metered services must be flushed until free of debris.

All flushing must be coordinated, by the Inspector, with the treatment facility providing the Reclaimed Water.

Before scheduled appointment for flushing, the contractor shall ensure that all flushing points are correct and that all new mainline gate valves are open to point of first end to be flushed. Gate valves, at point of connection from main to be flushed, are closed in succession.

The contractor and engineer shall ensure that all Reclaimed Water discharged is properly contained and/or stored in accordance with FDEP requirements.

Services should be flushed individually by the Contractor after the Reclaimed Water main starts to clear.

No Reclaimed Water meter boxes shall be installed in paved areas, concrete sidewalks or driveways. Mark the curb with an “R”.

In the event the Reclaimed Water system is not available to flush the new system, a temporary connection, with reduced pressure backflow assembly, may be utilized to fill from a water main. This installation must be witnessed by the assigned JEA Inspector and must be removed immediately upon successful flushing. When utilizing an existing water main to flush a Reclaimed Water main, see the section below titled “Flushing Water Mains” for specific coordination instructions.

Water Main Construction – Section 350 of the JEA Standards Manual

The assigned JEA Inspector or a JEA representative identified by the assigned JEA Inspector – must be present at the time of connection to existing utilities.

Ductile iron fittings – Fittings are required to be cement lined and handled so not to damage the lining. For example, a nylon strap can be used to lift the fitting in lieu of a chain.

All water mains and services to be constructed shall be installed using blue pipe or markings.

Bacteriological sample test points shall be installed in locations as indicated on the approved construction drawings or as required by FDEP rules and regulations. Any sample test points not indicated on the approved construction drawings shall be identified by the Engineer. The hose bib shall be two and one half feet above ground, shall be pointed down and shall be easily accessible.

No water meter boxes shall be installed in paved areas, concrete sidewalks or driveways.

It is important to note that fire hydrant requirements for Duval, Clay, St Johns and Nassau Counties do vary. As a result, the contractor and/or engineer shall ensure that all fire hydrants are installed in accordance with the local fire official’s requirements.

Services shall be installed in a straight line, with a single piece of poly, from the main to the meter box. Services shall not be looped around the meter box.

Flushing water mains – Section 350 of the JEA Standards Manual

All flushing must be coordinated, by the assigned JEA Inspector through JEA’s outage notification communication system. The JEA Inspector is required to complete the Outage/Flushing Notification form (Appendix–A pg.27) and communicate via e-mail. In the notification, the Inspector will provide the location, size and length of the main to be flushed along with the desired date, time and estimated amount of water to be used. Once approval has been received, the flushing may be scheduled.

Prior to the scheduled flushing appointment, the contractor shall verify the following: All valves are uncovered and operable; Valves are open or closed as required to facilitate the flush; Flushing points are accessible; and that the silt/erosion control is installed in accordance with approved plans. The assigned JEA Inspector or JEA representative shall call 665-4553 before starting and upon completion of flushing.

For mains larger than 12” in diameter a swab shall be used to help facilitate the cleaning of the main. For mains 16’ and larger the blow-offs are required to be one size smaller in diameter than the main being flushed.

Fire hydrants should be flushed after the main starts to clear to avoid plugging with debris. However, fire hydrant independent gate valves should be open in advance to prevent delays.

Services should be flushed individually by Contractor after main starts to clear. Any plugged services should be noted and corrected in a timely manner after flushing completion.

HDPE Pipe Installation – Section 750 of the JEA Standards Manual

Prior to installation, the contractor shall have several sections of HDPE fused and staged for drilling. Fusing of HDPE joints must be performed by a person having been certified by the HDPE manufacturer. Fusing equipment must be in good operating condition. The assigned JEA Inspector will inspect the fused joints and ensure that proper HDPE material is being utilized. A data logger shall be used to record and document all butt weld fusion process.

During the drill, the Contractor will be required to pull two (2) 12 gauge, copper-clad, carbon-steel, locate wires. Drilling depth shall be appropriate to avoid conflict with existing utilities and to avoid a frac-out of the drilling mud. The drilling contractor shall have an emergency action plan prepared in the event of a frac-out. The contractor shall avoid drilling deeper than required as a means of convenience.

When connecting two drills, the Contractor shall excavate as required so that the connection points do not generate unnecessary high points in the main.

The Contractor shall provide a profile log of the drill on the project as-built.

Section 6.0

Testing Requirements and Procedures

Bacteriological Sample Testing – Section 350 of the JEA Standards Manual

After successfully flushing the water main, the contractor is required to properly chlorinate the entire water main, services and fire hydrants prior to bacteriological sample testing.

The super-chlorinated water must remain in the lines a minimum of 24 hours and then should be flushed from the lines. Flushing shall be performed using flushing hydrants, fire hydrants or services, as required, to reduce the chlorine residual in accordance with JEA Standards.

Sample points should be installed according to the approved plans. If the sample point locations are not clearly designated on the design plans, the Contractor shall coordinate with the Engineer of Record to identify sample point locations. **The assigned JEA Inspector is not responsible for identifying sample point locations.**

No samples are to be taken from fire hydrants. Sample points should have clean 3/4-inch hose bibs for proper sampling.

Two consecutive days of passing samples are required. The assigned JEA Inspector is responsible for obtaining the first set of samples and transporting them to the JEA lab for testing. The JEA Inspector will complete the “Drinking Water Microbial Sample” Form (Appendix-A pg. 26). In the event of a failed sample, the assigned JEA Inspector will notify the Contractor and re-pull samples. If problems persist, the Contractor may be required to re-chlorinate. Samples will then be obtained by the assigned JEA Inspector.

Any breaks or damages to the line will require sample testing in accordance with FDEP regulations. Expiration of samples prior to issuance of a Certificate of Clearance will require a new set of passing samples. In these cases, the Contractor will be required to pull the samples and deliver them to a private testing facility. The Contractor shall provide copies of all paperwork certifying passing samples.

Pressure/Leakage Testing – Section 350 (Water), Section 427 (Wastewater), Section 701 (Reclaimed) of the JEA Standards Manual

After bacteriological samples are successfully achieved, preliminary pressure testing can begin. Prior to scheduling with the Construction Inspector, the road base and curb will be finished, services will be lowered and meter boxes installed. The pressure test procedure should be performed as follows:

Prior to the scheduled test time, the Contractor shall perform a preliminary test ensure that the system has been pressurized to 150 PSI and is not dropping pressure. The JEA Inspector is not required to be present for the preliminary test, but shall be required to be onsite prior to the start of the official pressure test. The test will not start if the pressure is below 150 PSI. The duration of the test will be two (2) hours. If, at any time during the test, pressure loss is greater than 5 PSI, the test fails regardless of leakage volume. The appropriate formula for the allowable leakage is provided in the JEA Standards Manual. The JEA Inspector is required to complete a “Record of Pressure and Leakage Test” form (Appendix-A pg. 22-25) for the type of pipe and material installed.

The contractor should verify that all inline valves, if installed, are open so the entire line will be pressure tested. The Contractor will pump from a clean reservoir using chlorinated potable water. At the start of the pressure test, record the time and gauge pressure. At the end of the test, if a loss occurs, the Contractor will then pump the line back to the beginning pressure. The assigned JEA Inspector will then measure the volume of water used to fill the reservoir back to the original mark. If the volume of water required to re-pressurize the main is less than the allowed amount for leakage, the assigned JEA Inspector then ensures that the piping was tested from the point of tie-in to the end of the installation. Upon completion of this process, the main passes the pressure/leakage test.

If the volume of water required to re-pressurize the main is more than the allowed amount for leakage, the line fails. The Contractor must then locate the source of leakage, make appropriate repairs reschedule the entire pressure test.

Televised Inspection – Section 428 of the JEA Standards Manual

Prior to video inspection, all manhole inverts must be constructed, road base must be installed and final density tests must be completed. For gravity sewer mains deeper than ten feet, sub-grade densities may be substituted for the final density test. Gravity sewer in easements must be backfilled and at final grade.

Mandrel testing for deflection shall be performed concurrently with TV testing. The mandrel shall be pulled in front of the camera. The Inspector may check the mandrel with a truing ring to ensure the proper size mandrel is utilized. If repairs are required on a main, a mandrel must be pulled during the post-repair TV inspection.

For all TV inspections, including post-repair inspections, water must be added to indicate low areas or dips in piping. Sufficient water must be added to flow from the downstream end of the pipe. Water flow shall be video recorded prior to initiation of TV inspection.

During the TV inspection, the camera operator shall stop the camera and pan the lens towards the service to provide an unobstructed view of the service. On the recorded and written copies of the inspection, the operator shall call out any leaks, dips, deflections, discoloration, reverse fall, external debris protrusions or indentions, and any other visual abnormalities.

The contractor shall provide a copy of the TV inspection, accompanied by a written report, within 7 days of the test. The assigned JEA Inspector will review the written and recorded inspection reports and make a determination if repairs or replacement of any pipe segments are required.

Paving should not be installed prior to review and approval of the TV inspection results by W/WW Project Engineering & Construction, however, if the contractor chooses to install paving prior to Inspector's review, he or she proceeds with full knowledge of the associated risk that the sewer system may need to be repaired. JEA will not overlook defects or accept inferior sewer systems which have been paved over prior to the Inspector's TV review.

Locate Wire Testing – Section 350 (Water), Section 427 (Wastewater), Section 701 (Reclaimed)

Locate wire testing will take place after completion of pressure testing and after valve jackets have been installed to grade.

Wire testing shall be performed by a person certified by JEA, using JEA approved testing equipment.

The Contractor shall have a representative present during the wire test. As faults are identified, the wire tester shall mark the general area of the problem. The Contractor representative shall note the location and make repairs immediately, where possible. Where not possible to repair immediately, the contractor shall make repairs within five working days and reschedule the wire test.

Second or multiple water tie-in points – Section 350 in the JEA Standards Manual

After receipt of Certificate of Clearance, the contractor may schedule any additional point of water main tie-ins which are identified on the approved construction drawings. The assigned JEA Inspector or a JEA representative identified by the assigned JEA Inspector must be present during any connections to existing JEA utilities.

Fire Hydrant Flow Test

Fire Hydrant flow testing is required in some counties within JEA's service territory. Where required, the Contractor shall provide the personnel to complete the testing. Upon completion of the testing, a report shall be prepared, by the testing personnel, and submitted to the Construction Inspector and appropriate County Officials. Fire hydrants will then be painted according to the County standards.

Pump Station Start-up Test – Section 433 in the JEA Standards Manual

All pump stations, to be dedicated to JEA, must be tested to ensure that the pumps operate as designed. This will be conducted during the pump station start-up test. The JEA Construction Inspector shall contact the O&M area coordinator to have the lift station programmed prior to the start-up test. It may take up to a week to get the station programmed.

The assigned JEA Inspector in coordination with the Hydraulic Reviewer shall schedule the start-up and shall invite the appropriate JEA Operations & Maintenance personnel. The Contractor shall invite the Engineer of Record to the start-up. A representative of the Engineer of Record shall be present and shall be authorized to make certification decisions concerning the operation of the pump station.

Prior to the scheduled date and time of the start-up test, a preliminary start up will be conducted. The following people shall be present at the preliminary start up:

- The assigned JEA Inspector
- Contractor
- Contractor's Electrician
- Pump Representative

At the preliminary start-up test, the Contractor shall demonstrate the following:

- Pumps are wired properly and are rotating in the proper direction.
- All downstream force main valves are fully opened.
- All force main air release valves are operating properly and all air has been removed from the main.
- Test ports have been installed in the discharge piping.
- RTU is installed, properly wired and is of the proper type as identified on the approved plans.
- Electric meter is installed.

After completion of the preliminary start-up test a final pump station start-up inspection test will be conducted. Prior to the scheduled date and time of the test, the contractor shall ensure the following:

- Influent gravity sewer line entering the wetwell is plugged.
- The wetwell has been filled to approximately three-fourths of the wetwell volume.
- If applicable, generator fuel tanks are full of fuel.

During the test, the Hydraulic-Reviewer will install a pressure gauge on the test port and shall be responsible for recording start/stop time and flow test results. The Contractor shall operate the pumps, individually, as directed by JEA. If a generator has been installed at the pump station, the appropriate JEA Operations & Maintenance personnel will direct the contractor in the load testing of the generator.

During the pump start-up, the following will be performed and/or verified:

- Influent gravity sewer line entering the wetwell is plugged.
- The wetwell has been filled to approximately three-fourths of the wetwell volume and the beginning water level has been recorded.
- Run each pump individually, to determine the flow rate of the pump.
- Verify landscaping is healthy and check the operation of the sprinkler system, water meter installation and backflow prevention device installation.
- Ensure fence is grounded and properly installed.
- Ensure control panels are properly installed, seal-offs are installed.
- Wetwell and junction manhole are lined with approved lining material.
- Wash down is working properly with sufficient hose to reach the bottom of the wetwell.
- Water pressure test station is properly installed.
- Pump controls are in the off position.

Upon completion of the test, the Engineer of Record shall coordinate with the - Hydraulic Reviewer and the Pump Representative to determine if the pumps are operating as designed.

It is important to note that the completion of the pump station start-up does not constitute pump station completion or imply that the pump station is operational and ready for service.

No wastewater flow shall enter the wetwell until an FDEP Certificate of Clearance (COC) has been issued, a JEA letter of acceptance has been issued for the pump station and offsite force main and the SCADA system has been installed, programmed and made operational by JEA O&M Personnel. After the SCADA system has been made operational by JEA, the pump station construction is considered complete and the contractor may remove the plug and place the station into operation.

In certain cases, a pump out agreement may be issued allowing the wastewater system to be placed into service prior to completion of the pump station. This will only be allowed at a manhole identified as the point of pump-out, accessible by a pumper truck. Neither the pump station, nor the discharge force main may be used to pump the sewer flow during the pump out agreement period. The pump out agreement shall remain in effect until the pump station construction is complete as defined above.

As-Built and Record Drawings – Section 501 in the JEA Standards Manual

Prior to issuance of a Certificate of Clearance, the Contractor shall submit an as-built drawing to JEA's Development team for approval in accordance with the JEA Standards for review. The JEA Inspector will provide assistance in the As-built review process. The drawing shall accurately depict the installed system and shall show any deviations from the approved drawings.

An as-built approval letter will be issued to the company and contact provided on the transmittal letter.

Construction Completion – Final Inspection

After construction completion and submittal of required acceptance documents a JEA Final Inspection of the project may be scheduled with the assigned JEA Inspector for the project close out.

The Contractor and the JEA Inspector will schedule the Final Inspection and the Contractor shall invite the Project Manager, the Developer or Authorized Agent, and project Engineer.

Prior to the scheduled time, the Contractor shall have the proper equipment and manpower onsite and shall complete the following:

- Clean asphalt from all manhole lids.
- Open all manhole lids and secure area around manhole. Any manholes which cannot be secured shall be left closed until inspection.
- Open all water meter boxes.
- Remove tops from valve boxes.

During the Final Inspection the assigned JEA Inspector will complete a "Final Inspection" form (Appendix-A pg. 21) and a punch list. The JEA Inspector will verify that all punch list items are resolved prior to completion of the Final Inspection. The JEA Inspector will perform the following:

Valves

- Verify that all valves have been installed with valve jackets adjusted to grade, tops and inside of the jacket are painted the appropriate color, the brass tags are installed, the concrete donut is installed and grouted in place and the valves are operable and in the open position.
- Verify that any dead-end stub-out valves are open 3 turns.
- Check curb, or adjacent asphalt, for a "V" etched per JEA standards, and painted the appropriate color.

Gravity Mains

- Perform a lamp and mirror inspection of the gravity mains. To facilitate inspection of the gravity main, the Contractor shall provide a clean mirror and a light capable of illuminating a gravity sewer run. The lamping may be performed prior to the Final Inspection for subdivisions greater than 10 lots.
- Verify that the manhole is dry, clean, and free of debris and is not leaking and has not been patched from the inside.
- Verify that all concrete work inside manhole is complete, manhole is painted or lined per the approved plans and JEA standards, the manhole ring and cover is adjusted to final grade and all plastic joint sealant has been trimmed flush with the manhole wall.

Services

- Verify sewer service ends are located with a 3' x 3', pressure treated marker, painted appropriately. Verify curb, or adjacent asphalt, has been etched with an "S" per JEA Standards, and painted the appropriate color.
- Verify that each water and/or reclaim services are all operable by physically opening each curb stop. Verify curb, or adjacent asphalt, has been etched with a "W" or "R" per JEA Standards, and painted the appropriate color.
- Verify that the water and/or reclaim curb stops are properly located within the meter box, with no poly tubing showing within the box. Verify that the curb stops are installed horizontally, with the operating nut facing up. All reclaim curb stops shall be identified with an "R/W" on the operating nut.
- Verify that the water and/or reclaim meter boxes are installed in the correct location and are not located within sidewalk or driveways. After operating each service, the meter box lid shall be closed by the Contractor.

Fire Hydrants

- Verify that all exposed portions of the fire hydrant assembly are completely painted, all ports are greased, port caps and chains are installed and a blue reflector has been installed in the travel lane of the adjacent roadway.
- Where applicable, verify that the fire hydrant bonnets and port caps have been painted the appropriate color to match the flow test results.
- Verify that the hydrants are plumb, the centerline of the ports are a minimum of 18 inches above finished grade, the operating nut is no greater than 48 inches above finished grade, and is placed a minimum 3feet behind curb to furthest part of hydrant.
- The hydrant shall be operated and then closed. The hydrant independent valve shall be left in the open position.
- After verification of hydrant operation, any hydrant bags may be removed to indicate to the fire department that the hydrant is now operational.

Appendix - A



21 West Church Street • Jacksonville, Florida 32202-3139

FINAL INSPECTION

L.S. WATER METER # _____
L.S. ELECT METER # _____
L.S. LIFE STA ADDRESS _____

DATE:	TIME:
PROJECT:	
LOCATION:	
ENGINEER:	
CONTRACTOR:	
INSPECTOR:	PROJ #

Those in attendance were: _____

The following was noted: _____

Copies to _____

Signed: _____



RECORD of PRESSURE and LEAKAGE TEST
Based on Formula No. 1 (PVC and DIP Material)

Inspector's
Signature

PROJECT: Greenleaf Village
 TEST SECTION: Phase 1
 JEA REPRESENTATIVE: Bill Tindell SIGNATURE _____
 TEST DATE: 1 / 12 / 15 TEST TIME: 1:00 PM BEGIN 3:00 PM END
 OTHER TEST PHASE ATTENDEE'S: _____

Have all
attendee's
sign

Pressure and Leakage Test Calculations: WATER MAIN _____ SEWER FORCE MAIN _____
 _____ RECLAIMED WATER MAIN _____

Line Pressure Test:
 Start: 158 PSI (Minimum of 150 PSI) End: 158 PSI
 Difference: 0 PSI (IF GREATER THAN 5 PSI, THE TEST FAILS)

TYPE OF PIPE PVC/D.I.P (1)	DIAMETER OF PIPE (INCHES) (2)	LINEAR FEET (3)	2-HOUR TEST FACTOR (4)	TOTAL ALLOWABLE LEAKAGE (2x3x4) (5)
PVC	8"	2000'	0.0001655	2.65
PVC	6"	800'	0.0001655	.79
PVC	4"	250'	0.0001655	.17
PVC	2"	180'	0.0001655	0
				0.0001655

Total Allowable Leakage Amount (Gallons): 3.61

Allowable Leakage Amount 3 Gal 78 Oz (32 oz per qt; 128 oz per gal)

Actual Leakage Amount 0 Gal

Pressure and Leakage Test Results
(Pass or Fail): Pass

To convert gallons
to ounces multiply
.61x128=78

The above is based on the average pressure test of 150 PSI, 2 hour test period and utilizing Formula No. 1 as given below ("L" is the allowable leakage amount in gallons per hour, "S" is the length of pipe tested (5,000 L.F. max.); "D" is the diameter of the pipe and "P" is the average test pressure):


$$\text{FORMULA NO. 1 (PVC AND D.I.P.)} \quad L = \frac{SDP^2}{148,000}$$

Formula No. 1 may be used to determine an allowable leakage amount for PVC Pipe, DIP or combination of both. If the actual leakage amount is equal or less than the allowable leakage amount (based upon Formula No. 1), the leakage test is acceptable (test passes and no other calculation is required). If the actual leakage amount is greater than the allowable leakage amount (based upon Formula No. 1), the allowable leakage amount must be re-calculated based upon the sum total of Formula Nos. 2 and 3 (see other forms for these calculations). The above formula meets and exceeds the requirements of AWWA C600 and AWWA C605. The total length of pipe within the test section shall not exceed 5,000 linear feet, unless approved otherwise by JEA.

FILE No. 2011-0000

Enter
Availability
Number

Revised: April 1, 2006



RECORD of PRESSURE and LEAKAGE TEST

Based on Formula No. 2 (PVC Material Only)

PROJECT: _____

TEST SECTION: _____

JEA REPRESENTATIVE: _____ SIGNATURE _____

TEST DATE: ____/____/____ TEST TIME: _____ BEGIN _____ END _____

OTHER TEST PHASE ATTENDEES: _____

Pressure and Leakage Test Calculations: _____ WATER MAIN _____ WASTE WATER FORCE MAIN _____

_____ RECLAIMED WATER MAIN _____

Line Pressure Test:

Start: _____ PSI (Minimum of 150 PSI or 2x operating pressure) End: _____ PSI

Difference: _____ PSI (IF GREATER THAN 5 PSI, THE TEST FAILS)

TYPE OF PIPE PVC (1)	DIAMETER OF PIPE (INCHES) (2)	NUMBER OF JOINTS (3)	2-HOUR TEST FACTOR (4)	TOTAL ALLOWABLE LEAKAGE (2x3x4) (5)
PVC			0.00331	
PVC			0.00331	
PVC			0.00331	
PVC			0.00331	
PVC			0.00331	
PVC (Sum of Above):				
DIP (From Formula 3):				
Total Allowable:				

Allowable Leakage Amount _____ Gal _____ Oz. (32 oz per qt; 128 oz per gal)

Actual Leakage Amount _____ Gal _____ Oz.

Pressure and Leakage Test Results (Pass or Fail): _____

The above is based on the average pressure test of 150 PSI, 2 hour test period and utilizing Formula No. 2 as given below ("L" is the allowable leakage amount in gallons per hour, "N" is the number of joints (rubber gaskets) in the test section; "D" is the diameter of the pipe and "P" is the average test pressure):

$$\text{FORMULA NO. 2 (PVC ONLY)} \quad L = \frac{NDP^2}{7,400}$$

Formula No. 2 may be used to determine an allowable leakage amount for PVC Pipe only. If the actual leakage amount is equal or less than the allowable leakage amount (based upon Formula No. 2), the leakage test is acceptable (test passes). If the actual leakage amount is greater than the allowable leakage amount (based upon Formula No. 2), the leakage test fails. For a test section, which includes both PVC and ductile iron pipe, the allowable leakage amount would be determined by adding the allowable leakage amount based upon Formula No.2 (for the PVC pipe test section) and Formula No. 3 (for the DIP test section). The above formula meets and exceeds the requirements of AWWA C600 and AWWA C605. The total length of pipe within the test section shall not exceed 5,000 linear feet, unless approved otherwise by JEA.

FILE No. _____ Revised January 1, 2014



**RECORD of PRESSURE and LEAKAGE TEST
Based on Formula No. 3 (DIP Material Only)**

PROJECT: _____

TEST SECTION: _____

JEA REPRESENTATIVE: _____ SIGNATURE _____

TEST DATE: ____/____/____ TEST TIME: BEGIN END _____

OTHER TEST PHASE ATTENDEES:

PRESSURE AND LEAKAGE TEST CALCULATIONS: _____ WATER MAIN _____ WASTEWATER FORCE MAIN

_____ RECLAIMED WATER MAIN

Line Pressure Test:

Start: _____ PSI (Minimum of 150 PSI or 2x operating pressure) End: _____ PSI

Difference: _____ PSI (IF GREATER THAN 5 PSI, THE TEST FAILS)

TYPE OF PIPE PVC/D.I.P. (1)	DIAMETER OF PIPE (INCHES) (2)	LINEAR FEET (3)	2-HOUR TEST FACTOR (4)	TOTAL ALLOWABLE LEAKAGE (2x3x4) (5)
D.I.P.			0.0001839	
D.I.P.			0.0001839	
D.I.P.			0.0001839	
D.I.P.			0.0001839	
D.I.P.			0.0001839	

D.I.P. (Sum of Above): _____

PVC (From Formula 2): _____

Total Allowable: _____

Allowable Leakage Amount _____ Gal _____ Oz. (32 oz per qt, 128 oz per gal)

Actual Leakage Amount _____ Gal _____ Oz.

Pressure and Leakage Test Results

(Pass or Fail): _____

The above is based on the average pressure test of 150 PSI, 2 hour test period and utilizing Formula No. 3 as given below ("L" is the allowable leakage amount in gallons per hour, "S" is the length of pipe tested (5,000 L.F. max.); "D" is the diameter of the pipe and "P" is the average test pressure):

$$\text{FORMULA NO. 3} \quad L = \frac{SDP^2}{133,200}$$

(D.I.P. ONLY)

Formula No. 3 may be used to determine an allowable leakage amount for D.I.P. Pipe only. If the actual leakage amount is equal or less than the allowable leakage amount (based upon Formula No. 3), the leakage test is acceptable (test passes). If the actual leakage amount is greater than the allowable leakage amount (based upon Formula No. 3), the leakage test fails. For a test section, which includes both PVC and ductile iron pipe, the allowable leakage amount would be determined by adding the allowable leakage amount based upon Formula No. 2 (for the PVC pipe test section) and Formula No. 3 (for the DIP test section). The above formula meets and exceeds the requirements of AWWA C600 and AWWA C605. The total length of pipe within the test section shall not exceed 5,000 lineal feet, unless approved otherwise by JEA.

FILE No. _____

Revised January 1, 2014

S

JEA
RECORD of PRESSURE and LEAKAGE TEST
(HDPE PIPE)

Inspector's
Signature

Have All
Attendee's
sign

PROJECT: Greenleaf Village

TEST SECTION: Phase 1

JEA REPRESENTATIVE: Bill Tindell SIGNATURE _____

TEST DATE: 1 / 5 / 15 TEST TIME: 2 Hours BEGIN 9:00 AM END 11:00 AM

OTHER TEST PHASE ATTENDEE'S:

PRESSURE AND LEAKAGE TEST CALCULATIONS:

WATER MAIN

SEWER FORCE MAIN

RECLAIMED WATER MAIN

Line Pressure Test:
Start: 156 PSI (Minimum of 150 PSI) End: 154 PSI
Difference: 2 PSI (IF GREATER THAN 5 PSI, THE TEST FAILS)

TYPE OF HDPE PIPE (DR RATING) (1)	DIAMETER OF PIPE (INCHES) (2)	LINEAR FEET (3)	2-HOUR TEST FACTOR (see JEA TABLE) (4)	TOTAL ALLOWABLE LEAKAGE (3x4) (5)
DR-11	6"	500'	0.0030	1.50
Total Allowable Leakage Amount (Gallons):				1.50

Allowable Leakage Amount 1 Gal 64 Oz. (32 oz per qt; 128 oz per gal)

Actual Leakage Amount 0 Gal 20 Oz.

Pressure and Leakage Test Results (Pass or Fail): Pass

To convert
gallons to ounces
multiply
.50x128=64

The above is based on the average pressure test of 150 PSI, 2 hour test period.
If the actual leakage amount is equal or less than the allowable leakage amount, the leakage test is acceptable

JEA 2-HOUR TEST FACTORS						
NOMINAL PIPE SIZE (inches) – ALLOWABLE LEAKAGE AMOUNT (Gallons/Linear Feet of Pipe)						
4" – 0.0020	6" – 0.0030	8" – 0.0050	10" – 0.0065	12" – 0.0115	14" – 0.0140	16" – 0.0165
18" – 0.0215	20" – 0.0275	22" – 0.0350	24" – 0.0440	26" – 0.0500	28" – 0.0500	30" – 0.0635
32" – 0.0715	34" – 0.0810	36" – 0.0900	42" – 0.1155	48" – 0.1350	54" – 0.1570	

Enter
Availability
Number

FILE NO. 2011-0000

Revised: April 1, 2006

Check and enter the temperature of samples at the lab

DRINKING WATER MICROBIAL SAMPLE COLLECTION & LABORATORY REPORTING FORMAT
(62-550.730 Reporting Format, Effective 01/19/05, Revised 02/2010)

JEA Laboratory Services
 1002 Main St. N.
 Jacksonville, FL 32206
 Certification Number E52459

Lab Receipt Date & Time: _____

Analysis Date & Time: _____
 Sample Acceptance Criteria:
 Sample Preservation: On Ice Not On Ice 5 °C
 Disinfectant Check: Not Detected _____ mg/L
 This sample does not meet the following NELAC requirements:

Report Number: _____ Sub-Contract Lab ID: _____

Analysis Requested: (check all that apply)

Total Coliform/*E. coli* Total Coliform/Fecal Enterococci Coliphage HPC Other: _____

Public Water System (PWS) Name: Major Grid _____

PWS I.D. 2 1 6 1 3 2 8

PWS Address: Greenleaf Village Phase 1 _____

City: JAX

PWS or PWS Owner's Phone #: N/A

Fax #: N/A

Collector: Bill Tindell

Collector's Phone #: 237-1692

Type of Supply: (check only one)

Community Water System Non-Transient Non-community Water System Transient Non-community Water System
 Limited Use System Bottled Water Private Well Swimming Pool Other: _____

Reason for Sampling: (check all that apply)

Distribution Routine Distribution Repeat Raw (triggered or assessment) Raw (triggered or assessment) additional Well Survey
 Clearance Replacement (also check type of sample being replaced) Boil Water Notice Other: _____

Sample Collection Date: 1/1/15

1st Day

Permit # 0159044-123-DSGP

To be completed by collector of sample						To be completed by lab				
Sample #	Sample Point (Location or Specific Address)	Sample Collection Time	Sample Type ¹	Disinfectant Residual (mg/L)	pH	Analysis Method(s) ² : Coliert, SM9223B				
						Non-Coliform	Total Coliform	Fecal, <i>E. coli</i> , Enterococci, or Coliphage ³	Data Qualifier ⁴	Lab Sample #
1	Tie-in Point - Lot #1	09:00	S	1.0	7.5					
2	Lot #10	09:05	S	1.0	7.5					
3	End of Main Line - Lot #20	09:10	S	0.8	7.6					

Average of disinfectant residuals for distribution routine & repeat samples.⁵ Free chlorine or Total chlorine (circle one).

Disinfectant Residual Analysis Method:

DPD Colorimetric Other: _____

Person performing disinfectant analysis is (see instructions on reverse):

- A certified operator (# _____)
- Supervised by certified operator (# _____)
- Employed by a certified lab Employed by DEP or DOH
- Authorized representative of supplier of water

Unless otherwise noted, all tests are performed in accordance with NELAC standards, and the results relate only to the samples.

Date and time PWS notified by lab of positive results: _____

Date and time DEP/DOH notified by lab of positive results: _____

Date Report Issued: _____

Lab Signature: _____

Title: _____

NAME AND MAILING ADDRESS OF PERSON TO RECEIVE REPORT:

Bill Tindell

T-4

DEP/DOH USE ONLY

- Satisfactory
- Incomplete Collection Information
- Repeat Samples Required
- Replacement Samples Required

Date Reviewed by DEP/DOH: _____

DEP/DOH Reviewing Official: _____

¹ For Sample Type see Instructions item 1.10.
² For Analysis Methods see Instructions item 11.6.
³ Wherever applicable, appropriate substitution.
⁴ Defined in Florida Administrative Code Rule 62-160, Table 3.
⁵ Excludes for community & non-transient non-community systems serving population up to and including 4,500. Do not include raw or plant samples in the average.



PLANNED OUTAGE/FLUSH NOTIFICATION

DATE/TIME EVENT: _____

LOCATION OF EVENT: (OUTAGE, FLUSH, SIMULATION) _____

TYPE OF EVENT: _____

OUTAGE TYPE: (ELECTRIC, WATER OR SEWER) _____

MAIN/SERVICE SIZE: (PROVIDE COPY OF GIS SCREENSHOT(S) IF AVAIL) _____

AREA(S) IMPACTED: (IDENTIFY STREETS AND/OR INTERSECTIONS AFFECTED)

CUSTOMERS NOTIFIED: (VERBAL AND/OR DOOR HANGER NOTIFICATION) _____

RESIDENTIAL: _____

COMMERCIAL: _____

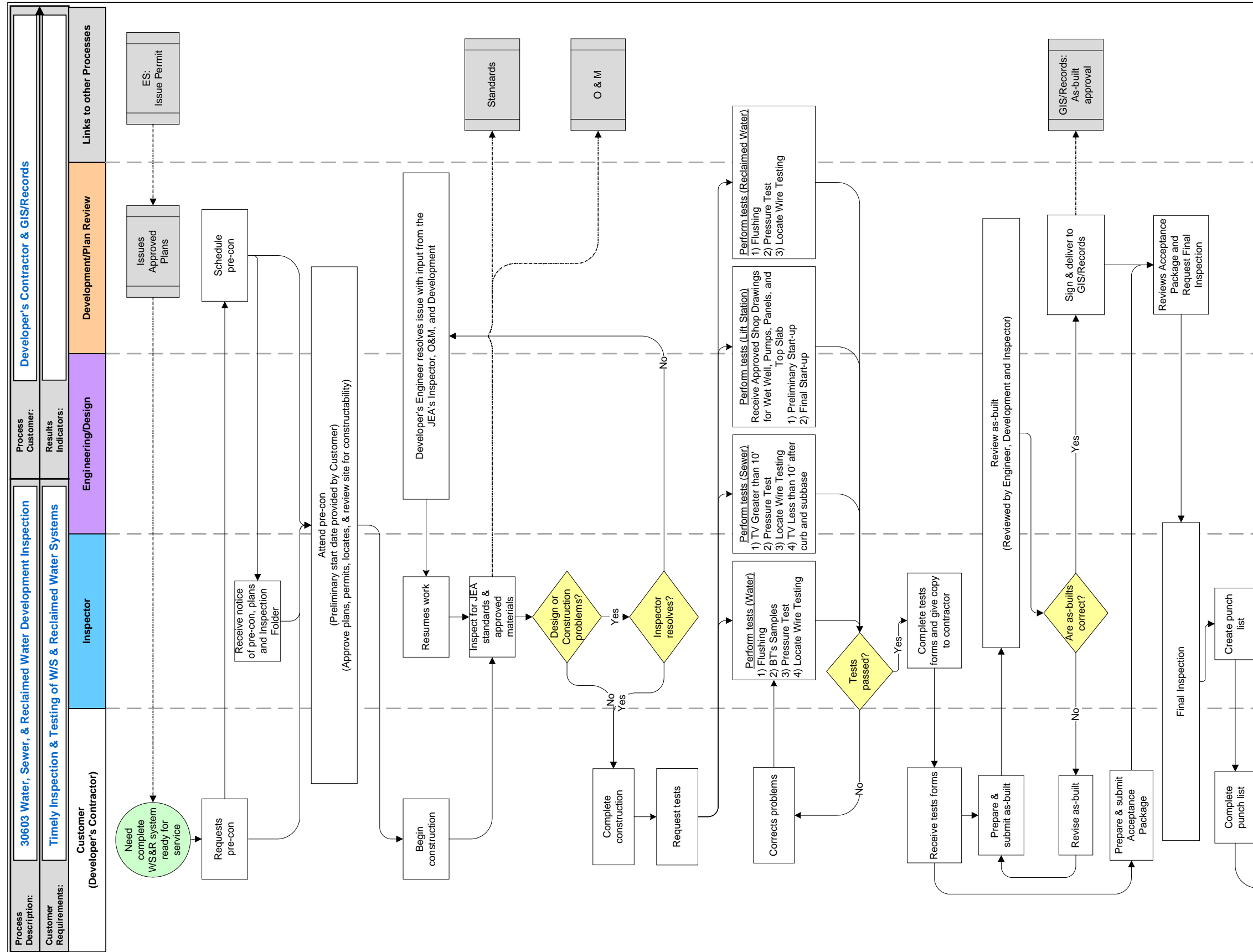
DATE/TIME OF OUTAGE: _____

ESTIMATED TIME OF RESTORATION: _____

GALLONS WATER DISCHARGED: (ESTIMATED OR ACTUAL) _____

FIELD CONTACT PERSON: (FIELD INSPECTOR, CONTRACTOR, ETC...) _____

NOTES: _____



Appendix – B
Grid and Joint Projects

Construction Support Services Daily Construction Activities Report					
Project Name: Beach Blvd. (SR212) Improvements		Project/Avail. Number: 8001913			
Weather Conditions: Cloudy		Temperature: Cool			
Reporting Inspector: Billy Tindell		Date: 9/24/2014			
Contractor: MASCI		Days Left on Cont:			
Activities / Description / Notes					
Contractor installed 60' of 8" DIP and two 1" water services with two 8"X1" tapping saddle starting at station 17+10 and ending at station 17+70. Backfilled in lifts compacted and took densities. Bechtol along with CDM Smith took and recorded density test. Installed asphalt.					
Delays/Deficiencies					
The contractor did not need to install b-crossing under duct bank at station #17+56 but at station #17+95 they will need to install b-crossing under storm pipe.					
Daily Equipment and Manpower Report					
Contractor	Equipment Description	Hours	Quantity	Active Hours	
MASCI Corp.	Trackhoe	Hours	1	11	
MASCI Corp.	Loader	Hours	1	11	
MASCI Corp.	Crew Truck	Hours	1	11	
MASCI Corp.	Dump Truck	Hours	1	11	
MASCI Corp.	Compactor	Hours	1	11	
MASCI Corp.	Roller	Hours	1	11	
MASCI Corp.	Mini Hoe		1	11	
Contractor	Trade	Hours	Quantity	Trade Total	
MASCI Corp.	Forman	Hours	1	11	
MASCI Corp.	Equipment Operator	Hours	2	22	
MASCI Corp.	Laborer	Hours	3	33	
	Trade	Hours	Quantity		
	Trade	Hours	Quantity		
	Trade	Hours	Quantity		
Daily Production Quantities Report					
Pay Item	Unit Description:	Daily Unit Quantity	Sta. / Loc.	% Comp.	
	8" DIP	60'	17+10 to 17+70		
	1" Poly	48'	17+23-17+36		
	8"X1" Tapping Saddle	2	17+23-17+36		
	1" Corp Stop	2	17+23-17+36		
	1" Curb Stop	2	17+23-17+36		
Inspector Signature / Date			Contractor Signature / Date:		

--EXAMPLE--

JEA
APPLICATION FOR PAYMENT

No. <u>11</u>	Application Date <u>6/30/2014</u>
Project Name: <u>Greenland Water Treatment Plant</u> <u>Plant Construction (050-13)</u>	JEA Accounts Payable P.O. Box 4910 Jacksonville, FL 32201-4910

JEA Contract No. <u>129464</u>	Contract Date <u>7/1/2013</u>
Contractor: <u>XXXXXXXXXXXXXX</u>	Application Amount <u>\$ 2,024,336.36</u>
Address: <u>XXXXXXXXXXXXXXXXXX</u>	For Period Beginning <u>5/1/2014</u>
<u>XXXXXXXXXXXXXX, XXXX</u>	For Period Ending <u>5/31/2014</u>
Phone: <u>XXX XXX XXXX</u>	

Base Contract excl. Change Orders and S/WA's	\$	<u>6,213,810.00</u>	①
Contract Amendments No. <u> </u> through <u> </u>	\$	<u>0.00</u>	②
Executed S/WA's No. <u>1</u> through <u>23</u>	\$	<u>97,414.36</u>	③
Total Contract Amount Authorized	\$	<u>6,311,224.36</u>	④

Instruction Sheet Reference

Application is made for payment, as hereinafter shown, in connection with this contract.

Contract to date:

Work in Place - see attached schedule	\$	<u>6,137,350.36</u>	⑤
Stored Material - see attached schedule	\$	<u>12,000.00</u>	⑥
Total Earned to Date - Gross Amount Due	\$	<u>6,149,350.36</u>	⑦
Less Retainage Withheld	\$	<u>307,467.53</u>	⑧
Net Amount Due to Date	\$	<u>5,841,882.83</u>	⑨
Less Net Paid on Previous Applications	\$	<u>3,918,764.25</u>	⑩
Amount Due This Application	\$	<u>1,923,118.58</u>	⑪

This Period:

Work Complete this Period		<u>2,066,629.00</u>	⑫
Stored Material		<u>12,000.00</u>	⑬
Less Stored Material Last Payment Period		<u>54,293.66</u>	⑭
Earned this Period - Gross Due this Period		<u>2,024,335.35</u>	⑮
Less Retainage ----->	<u>5%</u>	<u>101,216.77</u>	⑯
Retention Released this Application		<u>0.00</u>	⑰
Amount Due This Application		<u>1,923,118.58</u>	⑱

The undersigned Contractor hereby swears under penalty of perjury that (1) all items and amounts shown above are correct; (2) all work performed and materials supplied fully comply with the terms and conditions of the Contract Documents; (3) all previous progress payments received from the JEA on account of work performed under the contract and project authorization referred to above have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with work covered by prior Application for Payment under said contract and project authorization, being Application for Payment numbered 1 through inclusive; and (4) title to all work, materials and equipment covered by this Application for Payment, whether incorporated in the Project or not, will pass to the owner upon receipt of such payment by the Contractor, free and clear of all liens, claims, security interests or encumbrances.

Date: _____ (Contractor)

By: XXXXX XXXXXX, Project Manager

State of Florida
County of Duval
Sworn to and subscribed before me this day of , 2014
Personally known
OR, Protocol Identification _____

Notary Public

State of Florida
My commission expires _____

JEA APPROVALS

	Construction Inspector
	Construction Manager (if applicable)
	Project Manager

Instructions for values on Front Page of JEA Application For Payment

- ① This is the original executed contract amount and does not include allowances for SWA's or change orders.
- ② Fully executed contract Amendments (including change orders).
- ③ Fully executed contract SWA's.
- ④ This is the total current contract amount authorized.

Contract to date:

- ⑤ Work In Place is Total Value Completed from pay app schedule of values. Refer to Pay App tab on this workbook.
- ⑥ Stored Material is current balance of materials suitably stored. Refer to Stored Materials tab on this workbook.
- ⑦ Gross Amount Due is Work in Place plus Stored Materials.
- ⑧ Retainage is automatically calculated based on addition of Retention Withheld Total on Net Paid tab plus This Period Retention.
- ⑨ Net Amount Due to Date is calculated using is Gross Amount Due minus Retainage.
- ⑩ Net Amount Paid on Previous Applications is based on payments received from JEA. Refer to Net Paid tab on this workbook.
Note: The Net Paid Tab info must be properly maintained by the contractor, based on checks received by JEA.
- ⑪ Amount Due this Application is calculated using Net Amount Due and subtracting Net Paid on Previous Applications.

This Period:

- ⑫ Work Complete this period is Current Work Complete from pay app schedule of values. Refer to Pay App tab on this workbook.
- ⑬ Stored Material is current balance of materials suitably stored. Refer to Stored Materials tab on this workbook.

- ⑭ Stored Material Last Payment Period should come from previous months pay application. It is necessary to determine change in Stored Material balance during current month.
- ⑮ Gross Due this period is calculated from Work Complete this period plus Stored Material less Stored Material Last Payment Period.
- ⑯ This Period Retention is calculated based on the current retention percentage, as allowed in the contract. The percentage is calculated based on the percentage value input on this line.
- ⑰ Retention Released this application is input based on amount requested as per contract terms and conditions.
- ⑱ Amount Due This Application is calculated based on Gross Due This Period less Retainage plus Retainage Released This Application.

JEA Application For Payment

Send Application To: JEA, Accounts Payable, P. O. Box 4910, Jacksonville, FL 32201-4019
(Original plus 2 copies) (Copies sent to anyone else in JEA must be marked "Courtesy Copy - Do Not Process".)

Application Number: _____ x _____ Application Date: _____ xx/xx/20xx
 JEA Purchase Order No: _____ XXXXXXXX Billing Period: _____ xx/xx/20xx thru xx/xx/20xx
 Project Name: _____ XXXXX XXX XXXXX XXXXX
 Project Authorization No. _____ XXXXXXXX Project Auth. Date: _____ xx/xx/20xx
 Contractor: _____ XXXXXXXXXXXXXXXX
 Contractor Address: _____ XXXXX XXXXXXX XXXXX Jacksonville, Florida XXXXX
 Contact Name: _____ XXXXXX Contact No. _____ Office (904)xxx-xxxx or Cellular (904)xxx-xxxx

Project Authorization Amount:	\$ _____ -
Supplemental Work Authorizations (SWA) & Change Orders	\$ _____ -
Total Amount Authorized:	\$ _____ -

Application is made for payment, as hereinafter shown, in connection with this contract:

Work in Place - see attached schedule:	\$ _____ -
Total Earned To Date:	\$ _____ -

Gross Retainage Withheld:	\$ _____ -
Retainage Released on Previous Applications:	\$ _____ -
Retainage Released on This Application:	\$ _____ -
Balance of Retainage Being Held After This Application:	\$ _____ -

Amount Previously Paid:	\$ _____ -
Gross Due This Application:	\$ _____ -
Less Retainage This Application:	\$ _____ -
Net Due This Application:	\$ _____ -

Retainage Released This Application:	\$ _____ -
Total Payment Due: (Net Due This Application + Retainage Released This Application)	\$ _____ -

The undersigned contractor hereby certifies that the person or persons named herein are duly licensed and bonded in the State of Florida, that the work performed and materials supplied fully comply with the terms and conditions of the Contract Documents; (2) all previous progress payments received from the JEA on account of work performed under the contract and project authorization referred to above have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with work covered by prior Applications for Payment in order said contract and project authorization, being Application for Payment number 1.

through its title to all work, materials and equipment included by this application for payment, whether incorporated in the project or not, will pass to the owner upon receipt of payment by the Contractor, free and clear of all liens.

Date: _____

 Contractor's Representative (Signature)

 Printed Name & Title

Notary Affidavit:
 State Of: _____ Florida _____ County of: _____
 Sworn to and subscribed before me this _____ day of _____
 Personally known _____ Or Produced identification _____

 (Type of Identification)

 Notary Public, State of Florida (Signature) _____ My Commission Expires _____

For Use of JEA Project Manager (XXXXXXXX)

Date Received _____	Approvals _____
---------------------	-----------------

Project Inspector: _____ Date: _____
 Project Manager: _____ Date: _____

JEA Application for Payment - Unit Price Contract

General Notes:

1. After the contract is awarded, the Project Manager should populate as much information
2. The information required on the General Proj. Info Tab of this workbook should be comp
3. Populate the descriptions, quantities and unit prices on the Schedule of Values sheets a
4. There is an area for SWA input at the bottom section of each Schedule of Value sheet.
5. The retention amounts on the Project Authorization and Payment Calculations sheet mu change from 10% to 5% retention if care is made to input the correct values.
6. This application format does not allow for payment of stored materials.