Policy Adopted 8-6-08
JWSC Revised 9-3-08

BRUNSWICK–GLYNN JOINT WATER AND SEWER COMMISSION

RECORD DRAWING (AS-BUILT) STANDARDS

1. Introduction.

Secondary only to proper design and construction, the documentation of installed water and wastewater infrastructure is of critical importance. Proper record drawings not only detail the location of the various system components, but in addition show other physical attributes that relate to system operation and maintenance, such as size, material, elevation/depth and pipe slope. For administrative purposes, they also record the contractor, engineer and surveyor along with the qualifying statements appropriate to their responsibilities on the project. The documentation of this broad range of information, and the capability of modern computerized systems, such as Geographic Information Systems (GIS), Computerized Maintenance Management and Asset Management Systems (CMMS), and Hydraulic Capacity Analysis Programs (HCAP), to store and use this information is essential for any utility concerned about the cost effective and efficient management of these assets over their design life. This cost, in turn, directly correlates with the costs of operation and maintenance and the rates charged to our customers. Therefore, in order to accurately document the numerous and significant aspects of newly installed water and wastewater infrastructure to be dedicated to the JWSC for ownership, operation and maintenance, and those privately owned systems who use potable water and discharge wastewater that affects the public systems under the authority of the JWSC, these standards are herein adopted by the Brunswick-Glynn JWSC to provide guidance and consistency.

2. General Statement of Purpose and Procedure.

These Record Drawing Standards are intended to detail what information is to be provided, how the information is to be characterized, and to what accuracy the information is to be provided. The guidance in these standards will provide consistency in the information that is to be provided, but allow some discretion on the part of the providers as to how this information is represented. The Record Drawing shall be provided in two separate phases.

Phase I will be considered the "*Preliminary Record Drawing*" phase and shall be the basis for the sanitary sewer system integrity/construction acceptability confirmation process conducted by the JWSC. This shall be provided after the completion of sewer construction and testing, and storm drain construction, but prior to the placement of curb/gutter and/or road paving, or such construction work within that phase. Contractors are encouraged to continue with other

aspects of construction, such as the installation of water lines and/or road grading/bedding work, during this phase. The *Preliminary Record Drawing* is being required in an effort to find and identify any defects in the sanitary sewer collection system that may require deep excavation work to make corrections, and provide some assurance to both the developer and the JWSC that the system integrity is acceptable before any concrete or asphalt roadwork is completed. The JWSC will begin the confirmation process within three (3) business days of the issuance of the signed receipt by the Glynn County Community Development Department Intake Desk of the *Preliminary Record Drawing.* It is the responsibility of the contractor to provide adequate vehicular access for this critical phase of JWSC activities in order to prevent delays.

The *Preliminary Record Drawing* shall provide the "as-built" horizontal and vertical information of all gravity sewer system components as herein required, and shall be provided in a plan view without profiles. This horizontal and elevation information is required for confirmation of line slopes between manholes, confirmation of lateral locations for properties to be served, and the production of line video reports required in the JWSC's GIS/CMMS Asset Management Program. Water system information should not be shown on the *Preliminary Record Drawing.* The *Preliminary Record Drawing*, as reviewed by the JWSC, shall serve as the basis for the sanitary sewer portion of the *Record Drawing* phase. Professional Statements are not required to be shown on the *Preliminary Record Drawings* as they are serving as working copies for review.

Phase II will be considered the "*Record Drawing*" phase and shall include any spatial or informational edits or adjustments made after the correction of any sanitary sewer system defects, errors, omissions and/or inaccuracies found during the *Preliminary Record Drawing* phase. The submittal of the *Record Drawing* shall be after the completion of all road construction work, or such construction work within an applicable construction phase. The *Record Drawing* shall include all water and wastewater infrastructure components and information as herein cited. The submittal of the *Record Drawing* shall be the basis for the scheduling of the Final Inspection of the water and wastewater facilities for approval by the JWSC. Statements required in paragraph 4, below, shall be shown on the submitted *Record Drawing.* The JWSC's Statement shall be affixed at the time of the Final Inspection by the appropriate JWSC officials if the *Record Drawing* is acceptable.

3. Responsibility for Information and Record Drawing Certification.

It is the intention of these Standards to recognize the fact that the development of the *Record Drawing* document needs to be a team effort to be both accurate and correct. The engineer, contractor, surveyor and the JWSC must all be involved to provide the meaningful product required. The engineer designs the systems and provides a statement, based on information provided by contractors,

surveyors and the JWSC, that the system has been constructed to design standards. The project contractor provides a statement confirming his compliance with material and workmanship standards. The surveyor provides a statement that the location and elevation of the installed system components are within allowed tolerances. The surveyor shall indicate all property boundaries on the survey submission, and indicate all survey references upon which the present boundary survey information is based. Finally, the JWSC must routinely inspect ongoing construction, witness testing and use its specialized equipment in the *Preliminary Record Drawing* phase to confirm locations, line slopes, structural integrity and other features unable to be observed or checked once infrastructure is buried.

4. Required Record Drawing Statements.

Contractor's Statement: The water and/or wastewater piping systems, as shown on these *Record Drawings*, have been constructed in substantial compliance with the Standards and Specifications for this project and in consideration of the two (2) year workmanship and materials warranty. Any significant deviations from the materials specified or workmanship standards required have been approved by the engineer and the JWSC prior to installation. This information has been reviewed by a principal of the company or an executive officer, as cited below, and to the best of his/her knowledge and belief these Record Drawings are accurate and complete.

Company Name: _____
Principal/Officer Signature (printed): _____
Principal/Officer Signature: _____
Date Signed: _____

Engineer's Statement: These Record Drawings have been prepared based on construction, location, elevation and testing information provided by the Contractor, Surveyor and the JWSC. This information has been reviewed by the engineer of record, as cited below, and to the best of his/her knowledge and belief these Record Drawings are consistent with the design intent of the approved site development plans and any approved modifications or changes.

Engineer's Name (printed): _____
Engineer's Signature: _____
GA Professional Engineer Registration Number: _____
Date Signed: _____

Surveyor's Statement: To the best of my knowledge and belief the Water and/or Wastewater Record Drawings shown hereon have been prepared in conformance with the JWSC Record Drawing Standards and are an accurate representation of the field conditions based upon above ground visible evidence of system components, and the engineering, contractor and JWSC information provided.

Surveyor's Name (printed): _____
Surveyor's Signature: _____
Surveyor's GA Registered Land Surveyor Number: _____
Date Signed: _____

JWSC's Statement: These Record Drawings have been prepared and confirmed based on periodic field observations during construction, field testing, CCTV and physical inspections of system components by JWSC Staff. This information has been reviewed by JWSC Superintendents and Construction Inspection Staff, as cited below, and to the best of their knowledge and belief these Record Drawings are accurate and complete in accordance with adopted JWSC Record Drawing Standards and Specifications.

Water Distribution Superintendent Name (printed): _____
Water Distribution Superintendent Signature: _____
Date signed:_____
Wastewater Collection Superintendent Name (printed): _____
Wastewater Collection Superintendent Signature: _____
Date signed:_____
Project Inspector Name (printed): _____
Project Inspector Name Signature: _____
Date signed:_____

5. Required Accuracy Standards and Datum to be Used for Water and Wastewater Components.

a. The horizontal datum for the project site shall be based on Georgia State Plane, East Zone, and NAD83 with sub-meter accuracy.

b. Horizontal locations of *unburied* infrastructure components (i.e., water valve boxes, water service ends/meters, air-release valve boxes, approximate centers of sewer manholes, sewer service end/clean-outs, the approximate center of lift station wet wells and valve pits) shall have an accuracy of +/- 1.0 foot. Horizontal locations of *buried* infrastructure components, (i.e., water mains, water service lines, sewer mains, sewer service lines and sewer force mains) shall be as provided by the contractor or other party to the project, with the goal being for the line to be within +/- 3.0 foot of the actual location on the ground. (Note: The Contractor is encouraged to use appropriate detecting equipment to mark the buried lines at 50 foot intervals for the Surveyors where notes on construction drawings are inadequate; however, the contractor is ultimately responsible for the degree of accuracy achieved.)

c. The vertical datum for the project site shall be based on NAVD88. Vertical survey work shall be published in feet to 0.01 with accuracy within a 0.1 of a foot. Where compliance with approved plans rests on closer tolerances, the surveyor may be requested to verify elevation differences in feet between two or more points to an accuracy of +/- 0.03 of a foot.

d. Property, boundary and any applicable easement lines shall be provided with horizontal accuracies of +/- 0.50 of a foot.

6. Format and Content Information to be Shown On Record Drawings.

a. Project or Subdivision name.

b. Drawing scale of 1 inch to 50 feet or larger or as appropriate for presentation on standard 24” X 36” sheets, with north arrow prominently displayed.

c. A legend showing definitions of symbols, scale, and horizontal and vertical datum of survey utilized on *Record Drawing*.

d. General location map, using an insert of a published highway or road map, at a scale suitable to show major roads, road names and intersections to provide a clear understanding of location.

e. Developer’s name, address and phone number.

f. Name and address for legal process of service agent (registered agent) for developer.

g. Statements of Engineer, Contractor, Surveyor and JWSC as shown in paragraph 3, above (on *Record Drawing* only).

h. Gravity Collection and Force Mains (on *Preliminary Record Drawing* and *Record Drawing*):

1. Provide actual rim elevations and inverts of all pipes entering/leaving the manholes. Where elevation differential between inverts is less than 0.1 of a foot, the center of the manhole invert elevation between the incoming and outgoing lines will be acceptable, excepting where drop manholes have been installed.

2. Show actual location of manholes, service clean-outs/stub-out posts, isolation and air release valves, sewer mains, force mains and service lines as shown by plans, contractor mark-ups and/or JWSC confirmation process, as applicable.

3. Provide State Plane Coordinates of manholes, isolation and air release valves in a reference table on the drawing, not on the plotted point.

4. Show pipe diameter, length, material and grade on gravity sewer lines.

5. Show storm drain crossings and lengths of ductile iron or concrete

encased pipe, as shown by plans, contractor mark-ups and/or JWSC confirmation process, as applicable.

6. Show service lateral stationing of each service connection to the main as a measurement upstream from the downstream manhole that is perpendicular to the located clean-out/stub-out marker. Show the distance in feet left or right from the station, (facing in the upstream direction), going toward the property line. Show the depth of the service pipe at the marker as provided by the plans or contractor mark-ups. Show the tax assessors' parcel identification number, and the platted subdivision lot number of the served lot or E-911 address. This information shall be provided in a reference table on the drawing(s) either on a separate sheet or on the drawing where other pertinent information is not blocked.

7. On Record Drawing" only, show distance behind marked curb and one adjacent property corner.

8. Delineate all sanitary sewer easements to be dedicated. Easement widths shall be in compliance with adopted Construction, Specifications and Procedures Standards unless otherwise approved.

i. Sewer Lift Stations and Force Mains (on *Preliminary Record Drawing* and *Record Drawing)*:

1. Provide actual elevations of wet well influent line invert(s), bottom of wet well at lowest point, top of slab over wet well, and top of discharge line leaving wet well going to valve pit vault if a submersible lift station. If the station is a not a submersible facility, provide elevations of the pump room floor and top of pump suction intakes in addition to other required elevations delineated above. These elevations shall be shown on the lift station facility detail page.

2. Provide the location, diameter, length and pipe type of force mains, location of all air release valves and elevation of discharge line at gravity sewer interface or force main discharge connection point to another force main and any associated check or closure valves.

3. Graphically show all facility property lines to include lines showing the access road to the facility through private properties if applicable. The property, on which a lift station is constructed, shall be conveyed to the appropriate governmental entity by deed "in-fee simple." The lot size and dimensions shall be determined on a site by site basis by the JWSC. Distance and bearings shall not be shown on *Record Drawings*. Deeds filed conveying fee simple title

in the property shall portray the required legal metes and bounds descriptions on a separate survey to be provided with the deed(s).

j. Potable Water System Detail Requirements (on *Record Drawing* only):

1. Show actual location of water valves, fire hydrants and hydrant valves, water service leads to served properties and service markers/connections at served properties as observed; or when unobserved, as shown by plans, contractor mark-ups and/or depicted during the JWSC confirmation process, as applicable.

2. Provide State Plane Coordinates of isolation valves, fire hydrants, water service ends at served properties in a reference table on the drawing, not on the plotted point.

3. Show distances from adjacent property corners, curb lines or other relevant fixed points as applicable and common.

4. Show pipe diameter, length between valves, bends, tees and pipe material as shown by plans, contractor mark-ups and/or depicted during the JWSC confirmation process.

5. Delineate all water easements to be dedicated. Easement widths shall be in compliance with adopted Construction, Specifications and Procedures Standards unless otherwise approved.

7. **Record Drawing Submittals.**

a. A minimum of two (2) copies of the *Preliminary Record Drawing* shall be provided to the JWSC for inspection and confirmation purposes. No professional statements are required on this submittal. The JWSC staff will utilize these drawings to inspect the construction, develop a defect punch-list if applicable, insure that all construction defects are corrected, and finally confirm the locations of observed and buried infrastructure and/or edit the drawing(s) as necessary. The *Preliminary Record Drawing* as edited (if applicable), will then be provided to the developer or his representative and serve as the basis for the correction or adjustment of the *Record Drawing* if appropriate and necessary.

b. A minimum of two (2) paper copies and one (1) mylar copy of the Record Drawing" with all required professional statements affixed, and a CD of an electronic file, in a suitable digital format for accurate insertion into the JWSC ESRI Geographic Information System, and a PDF will be required. The electronic files shall at a minimum show all applicable components of the water and wastewater system, property boundaries and any

easement(s) as shown in the *Record Drawing* submitted. All points representing infrastructure components shall be clearly labeled in a logical and codified manner, as to its description or name (i.e., Fire Hydrant – FH; Water Valve – WV; Sanitary sewer manhole – SSMH; etc.). A reduction of multiple drawing layers is requested to minimize insertion preparation issues as this file is placed into GIS. It is recommended that separate layers of water, wastewater and boundaries be provided if at all possible without major disruption of the engineering or surveying company policies and standards of practice.

End of Standards.