

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

SPECIAL PROVISION COUNTY: Spalding P.I.: N/A

Section 660—Sanitary Sewer Collection System

Delete Section 660 and substitute the following:

660.1 General Description

This Work consists of furnishing materials, labor, tools, equipment, and other items necessary for installing, removing, abandoning, relocating, and adjusting gravity sanitary sewer collection mains and sanitary sewer force mains and appurtenances according to the Plans and Specifications.

660.1.01 Definitions

- A. General Provisions 101 through 150
- B. The term “The Facility Owner” or “Utility Owner” shall be understood to mean “**City of Griffin Water and Wastewater or COGWW**”.
- C. The term “Project Manager” shall mean the authorized individual having the authority to give instructions pertaining to the work and to approve or reject the work. The “Project Manager” shall not however be authorized to revoke, alter, enlarge, relax, or release any requirements of the Contract, Plans, and Specifications, nor shall they act as an agent for the Contractor. All Contract items pertaining to the Utility Owner shall be coordinated with the City of Griffin’s (COG) Project Manager and the Utility Owner.

660.1.02 Related References

A. Standard Specifications

- Section 104 – Scope of Work
- Section 107 – Legal Regulations and Responsibility to the Public
- Section 108 – Prosecution and Progress
- Section 156 – GPS Specifications for Conveyance Structures GIS Mapping
- Section 205 – Roadway Excavation
- Section 207 – Excavation and Backfill for Minor Structures
- Section 209 – Subgrade Construction
- Section 210 – Grading Complete
- Section 310 – Graded Aggregate Construction
- Section 400 – Hot Mix Asphaltic Concrete Construction
- Section 402 – Hot Mix Recycled Asphaltic Concrete Construction
- Section 444 – Sawed Joints in Existing Pavements
- Section 500 – Concrete Structures
- Section 600 – Controlled Low Strength Flowable Fill
- Section 610 – Removal of Miscellaneous Roadway Items
- Section 611 – Relaying, Reconstructing or Adjusting to Grade of Miscellaneous Roadway Structures
- Section 615 – Jacking or Boring Pipe
- Section 668 – Miscellaneous Drainage Structures
- Section 801 – Fine Aggregate
- Section 810 - Roadway Materials

B. Related Documents

- 1. General Provisions 101 through 150.
- 2. All products supplied and all work performed shall be in accordance with **The Facility Owner’s Standard Specifications (City of Griffin Water and Wastewater)**, American Water Works Association (AWWA), GDOT

Utility Accommodation Policy and Standards, and the Georgia Environmental Protection Division (EPD). Latest revisions of all standards shall apply. Portions of the Owner's Standard Specifications are defined below for convenience, but this does not relieve the Contractor from the requirement to comply with the complete specification requirements of the Utility Owner. These documents can be reviewed online at the Utility Owner's website. Online specifications, standards and details can be reviewed at City of Griffin's Unified Development Code Articles 14-17:

[Unified Development Code | Griffin, GA | Municode Library](https://library.municode.com/ga/griffin/codes/unified_development_code)

(https://library.municode.com/ga/griffin/codes/unified_development_code).

660.1.03 Submittals

- A. General Provisions 101 through 150.
- B. Refer to The Facility Owner's (COGWW) Standard Specifications, current published edition, for sanitary sewer utility submittal requirements. Copies of all submittals and documentation shall be submitted to the COG, who shall distribute to the Utility Owner.
- C. Shop Drawings / Product Data
 1. Submit one digital copy of the following submittals to the COG Project Manager:
 - a. Product data, including size, dimension, capacity, pressure rating, accessories, and special features, installation instructions, and operating characteristics for all proposed materials to show compliance with the requirements of this Special Provision.
 - b. Test reports specified in the Quality Acceptance section of this Special Provision.
 - c. Pipe manufacturer certification of compliance with specifications.
 - d. Operation and maintenance literature, warranties, and other specified information.
 - e. The Contractor shall submit promptly to the Project Manager or his/her representative one digital copy of each material submittal prepared in accordance with the approved schedule, to be reviewed for acceptance by the Utility Owner's representative. After examination of such submittal drawings by the Utility Owner and the return thereof, the Contractor shall make such corrections to the drawings as have been indicated and shall furnish the Project Manager and Utility Owner with corrected copies. Regardless of corrections made in or approval given to such drawings by the Project Manager, the Contractor shall nevertheless be responsible for the accuracy of such drawings and for their conformity to the Plans and Specifications at the time the drawings are provided.
- B. Construction Record Documentation
 1. The Utility Owners may have certain GIS requirements that vary from the GDOT Specification Section 156. Therefore, the requirements of Section 156 and pay item 156-0100 shall be modified to meet the requirements herein as shown below:

The Contractor shall submit two (2) hard copy sets of utility record drawings that records changes and deviations from the Contract Drawings in sizes, lines or grade. Record also the exact final horizontal and vertical locations of underground utilities and appurtenances to an accuracy of +/- 0.1ft, referenced to permanent surface improvements. Drawings shall utilize West Georgia State Plane Coordinates (NAD83) for the horizontal datum and NAVD88 for the vertical datum and shall be legibly marked to record actual construction. Record drawings shall be submitted to the COG and the Facility Owner no later than 30 days after installation and prior to Final Acceptance of the Project. The Project Manager shall consult with the Utility Owner and together shall determine if the utility record drawings are complete prior to Final Acceptance of the project. Horizontal locations shall be referenced to Georgia State Plane Coordinates (West Zone feet). Reference all horizontal locations to the NAD83 datum (latest adjustment) and reference all vertical locations to the NAVD88 datum. All orthometric locations shall be referenced to Geoid 99/03. All points shall be verifiable by the Utility Owner control network. All Horizontal and Vertical location shall have no translation, rotation or angle adjustment. All points are subject to verification by the Utility Owner.
 2. Record Drawings shall be signed and sealed by a professional engineer or land surveyor registered in the State of Georgia.
 3. Record Drawings shall also be submitted in digital format as indicated in accordance with the City's current Electronic Utility File Guidelines.
 4. At the completion of the installation, testing and acceptance of the sanitary sewer main and appurtenances, the Project Manager shall receive from the Contractor two (2) sets of printed As-Built plans and electronic data prepared in accordance with the following requirements:

- a. The plans shall show all sanitary sewer system information As-Built in the field and any field changes made to the approved plans. The Contractor must furnish certification from a licensed engineer or surveyor attesting to the accuracy of all elevations, grades, manhole locations, and service locations. This certification and the certification of the engineer/land surveyor preparing the As-Builts must be shown on the drawings. As-Built drawings shall include utility plan sheets. Stationing of the gravity sewer and force main alignments, manholes and service laterals shall be required on the As-Builts along with the Point I.D.
- b. As-built plans shall be submitted on 11" x 17" drawing sheets and shall be submitted concurrently in an AutoCAD (.DWG or .DXF) or ESRI GIS (shape or geodatabase) drawing electronic format and Adobe PDF of entire project. As-built information for utility locations shall be shown on plans and submitted in ASCII text electronic format for each point. The water As-Builts must be printed from the electronic files supplied to the Project Manager concurrently with the As-Builts. These plans shall have been corrected to show all field changes made to the construction drawings. Hand marked copies prepared by the contractor will not be accepted for As-Builts.
- c. The information submitted electronically for As-Builts of gravity sewer lines shall include:

Manholes

- A.) Manhole ID by Station and Offset
- B.) North Coordinate
- C.) East Coordinate
- D.) Center of Manhole (Lid) Elevation
- E.) Invert (In and Out) Elevations
- F.) Each Manhole point shall include pipe(s) entering and leaving manhole. Pipe(s) size, Pipe Invert, Material, Type (i.e. Sewer line, service line or force main).

Cleanouts

- A.) Cleanout ID by Station and Offset
- B.) North Coordinate
- C.) East Coordinate
- D.) Center of Cleanout (Lid/Ground) Elevation
- E.) Invert (In and Out) Elevations
- F.) Each Cleanout point shall include pipe(s) entering and leaving manhole. Pipe(s) size, Pipe Invert, Material.

The requirements stated above shall supersede any other directions regarding collection of as-built information regarding sanitary sewer facilities found in Section 156 or elsewhere.

The following are specific guidelines for the preparation of the printed version of the As-Built drawings:

- A.) Sewer As-Built shall be a separate set of plans.
- B.) Depth of lateral and cleanout shall be shown.
- C.) All lateral connections shall show a distance along the gravity main from the upstream manhole or clean out connection.
- D.) All measurements of laterals should be kept between manholes and both sides shall add up to the distance between manholes.
- E.) The center of all manhole rims shall be located horizontally and vertically as described above.
- F.) Printed Record Drawings are to be clear and legible.
- G.) Profiles are to be included in all Record Drawings.
- H.) Roads and road names shall be shown on all plans.
- I.) Road right of way width or road utility easement width shall be shown on plans.
- J.) "Record Drawings" is to be in large clear print on plans.
- K.) Plan sheets shall be 11" x 17".
- L.) Scale set to same scale as original sidewalk/trail plan.
- M.) Ground water and solid rock encountered during construction will be noted on Record Drawing.
- N.) Sewer point I.D. shall be on plans, electronic data and ASCII or EXCEL data file. All point I.D.'s shall correspond.

- A. The Contractor shall comply with applicable codes, ordinances, rules, regulations and laws of local, municipal, state or federal authorities having jurisdiction over the Project.
- B. Furnish manufactured items, pipe, fittings, precast concrete manholes, service components, and appurtenances from manufacturers having regularly produced such items as specified herein which have proven satisfactory in actual service, over at least a 5-year period, or as approved by the Utility Owner and COG.
- C. Regardless of tolerances permitted by industry standards specified herein, the Utility Owner or the COG Project Manager may reject pipe or appurtenances at the manufacturing plant or project site which have cracks, chips, blisters, rough interior or exterior surface, evidence of structural weakness, joint defects, or other imperfections that might in the opinion of the Project Manager contribute to reduced functional capability, accelerated deterioration or reduced structural strength.
- D. COG, the Utility Owner and the Utility Owner's consultant shall have the right to visit and inspect the work at any time. Along with the COG Inspector, the Utility Owner may also have an Inspector assigned to the project authorized to inspect portions or all of the utility work done and the preparation, fabrication, or manufacture of the materials to be used. The Utility Owner shall be able to advise COG Project Manager of any observed discrepancies or potential problems. The cost of these inspections shall be the responsibility of the Utility Owner.
- E. COG shall notify the Utility Owner before authorizing any changes or deviations which might affect the Utility Owner's facilities. Contractor shall notify COG and Utility Owner a minimum of 48 hours prior to beginning work on utilities.
- F. The Utility Owner shall be notified by COG Project Manager when all utility work is complete and ready for final inspection. The Utility Owner shall be invited to attend the final inspection and may provide a corrections list to COG Project Manager prior to the final inspection. Testing and Inspection requirements for sewer mains are detailed below.
- G. The Contractor shall verify the actual location and depth of all utilities prior to construction. All utilities and structures shall be protected during construction. Any damaged facilities shall be repaired or replaced at the Contractor's expense.
- H. The contract documents are complementary, and what is called for by any one shall be as binding as if called for by all. The intent of the documents is to describe all construction entailed in this project. The contractor will furnish all labor and materials, equipment, transportation, tools and appurtenances such as may be reasonably required under the terms of the contract to make each part of the work complete. The Drawings are intended to conform and agree with the Specifications; if, however, discrepancies occur, the Project Manager shall consult with the Utility Owner to decide which shall govern. Special specifications stated on the Drawings govern that particular piece of construction and have equal weight and importance as the printed specifications. In the event of any discrepancies between the Drawings and the figures written thereon, the figures are to be taken as correct.

660.2 Materials

MATERIALS, SERVICES AND FACILITIES

It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time. Any work necessary to be performed by the Contractor to complete the project on time after regular working hours, on Sundays or Legal Holidays, shall be performed without additional expense to the Owner.

CONTRACTOR'S TITLE TO MATERIALS

No materials or supplies for the work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him in the work, free from all liens, claims and/or encumbrances.

MATERIALS FURNISHED BY THE CONTRACTOR

The Contractor shall furnish all materials necessary except as otherwise specifically noted or specified. **For clarity on this requirement, refer to Sections 660.3.07.A.7, and 660.3.07.A.8.**

INSPECTION AND TESTING OF MATERIALS

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Project Manager. Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be

subject to inspection and testing to establish conformance with specifications and suitability for uses intended.

"OR APPROVED EQUAL" CLAUSE

Whenever a material, article or piece of equipment is identified on the plans or in the specifications by reference to manufacturer's or vendor's names, trade names, catalogue numbers, etc., it is intended merely to establish a standard; and any material, article, or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed, is in the opinion of the Utility Owner, of equal substance and function. It shall not be purchased or installed by the Contractor without the Utility Owner's written approval.

MATERIAL SPECIFICATIONS

All materials provided shall be in conformance with the requirements and standards set forth in The Facility Owner's Standard Specifications, current published edition. All materials used in the work including equipment shall be new and unused materials of a reputable U.S. Manufacturer conforming to the applicable requirements of these Standards, and no materials shall be used in the work until they have been approved by the Utility Owner. Any reference to an AWWA, ANSI or other such specification shall mean the latest revision published.

For clarity on this requirement as related to the Build America Buy America requirements, refer to Sections 660.3.07.A.7, and 660.3.07.A.8, and execute the Certification attached at the end of Special Provision 660.

660.2.01 Sanitary Sewer Piping systems and Appurtenances

For the convenience of the Contractor, a portion of the Utility Owner's material specifications is provided below:

A. SANITARY SEWER MAIN MATERIALS

DUCTILE IRON PIPE

Ductile Iron Pipe shall be designed in accordance with AWWA C150. The thickness and class of the pipe shall be governed by AWWA C150. For this project, thickness of all sanitary sewer ductile iron pipe shall be Special Thickness Class 50 as a minimum. Ductile Iron Pipe shall be manufactured in accordance with AWWA C151, and shall have an outside bitumastic coating per AWWA C151.

The interior lining of the pipe and fittings shall be Protecto 401 ceramic epoxy with a minimum thickness of 40 mils. **Both bare pipe and cement linings conforming to AWWA C104 are NOT allowed for any sanitary sewer pipe.** All DIP sanitary sewers shall be encased in polyethylene film, manufactured of virgin polyethylene material conforming to AWWA C105, Section 4.1.1. The polyethylene film shall have a minimum thickness of 8 mil. The polyethylene encasement material shall be provided in tube sizes adequate for the various sizes of pipe and shall be **GREEN in color** to designate wastewater.

Joints – DIP joints shall be of the bell and spigot type with push-on joints, conforming to AWWA C111, unless another type of restrained joint is required by the Utility Owner.

Fittings - All fittings and accessories shall be manufactured and furnished by the pipe supplier. They shall have bell and/or spigot configurations compatible with that of the pipe and shall have an equivalent wall thickness.

PRECAST CONCRETE MANHOLES

Precast manholes shall be constructed of Portland Cement concrete with a compressive strength of not less than 4,000 pounds per square inch at an age of 28 days. The minimum inside diameter of the manhole shall be as required by Standard Detail No. 402.04. The wall thickness shall not be less than 5 inches. Manholes over 12' deep shall be placed on a reinforced slab as shown on the detail sheets. Joints in the wall shall be tongue and groove type; Sections shall be joined using O-ring rubber gaskets, flexible plastic gaskets conforming to the applicable provisions of ASTM Standard Specification, Serial Designation C443, or an approved bitumastic joint material. Precast concrete manholes shall consist of precast reinforced concrete sections with eccentric, (or flat slab for shallow manholes) top section and a base section conforming with the typical manhole details as shown on the Standard Detail.

Each section of the precast manhole shall have not more than two holes for the purpose of handling and laying. These holes shall be sealed with cement mortar using one part Portland Cement to two parts clean sand, meeting ASTM Standard Specifications, Serial Designation C144.

Holes in precast bases to receive sewer pipe shall be precast at the factory at the required locations and heights. Knocking out of holes in the field will not be permitted; However, holes can be cored in the field with a coring

machine. The design, the materials used in, the manufacturing process and the transportation of precast manhole shall be subject to inspection at any time by COG. Materials found defective by COG will not be delivered to the job site. Material on the job site that is found defective shall be removed immediately after being notified that such materials are unacceptable. Precast manhole shall conform to ASTM C478.

Pre-molded rubber boots with stainless steel bands shall be used for connecting sewer pipe to manholes. These may be either the lock-in "Kor-NSeal" type as manufactured by National Pollution Control Systems, Inc. or the Effective 10/2012 300-26 cast-in type as manufactured by Interpace Division of Ball Rubber, Inc. or approved equal. In all cases, the boot shall be sized to suit the outside diameter of the type pipe being used.

The invert of manholes shall be constructed of concrete or brick in accordance with the Standard Details and shall have a cross section of the exact shape of the invert of the sewer which it connects, changes in size and grade being made gradually and evenly. Changes in the direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit. Inverts shall have a "smooth trowel" finish. The manhole bench shall be sloped 30 degrees from the manhole wall toward the invert. Manholes shall be provided with steps built into the wall as shown on the detailed drawings. Drop manholes will be required where the invert of any incoming line will be higher than two feet from the invert of the outlet pipe. All manholes shall be watertight when completely built.

Safety platforms shall be constructed within the manhole in accordance with OSHA regulations and the details in these Standards.

Manhole steps shall be of #4 steel reinforcing bars covered with Polypropylene Plastic or rubber and shall be supplied with depth rings and other necessary appurtenances. The manhole steps shall conform to the applicable provisions of ASTM Specification C478, and shall be similar to and of equal quality to the "Sure Foot" by Oliver Tire and Rubber Company of Oakland, California or "PSI-PF" by M.A. Industries, Inc. of Peachtree City, Georgia. The step shall be factory built into the precast sections.

Manhole Frames and Covers shall be cast iron with a coat of asphaltic paint applied at the foundry. The frame and cover shall be as shown on the detail drawings. All covers shall have "Sewer" printed on them. Manhole frame and covers shall be as manufactured by Neenah R-1765 (365 lbs.) in paved roads, parking lots and driveways, and Neenah R-1779 (300 lbs.) for non-traffic areas, or approved equal. Manhole frames shall be cast in the cone if located in non- traffic areas.

Waterproof manhole covers shall be cast iron with a coat of asphaltic paint applied at the foundry as shown on the drawings with a "bolted-down" lid. All covers shall have "Sewer" printed on them. Waterproof manhole frame and covers shall be as manufactured by Neenah Foundry Company R-1915-F2 (435 lbs.) or approved equal. Manhole frames shall be cast in the cone if located in non-traffic areas.

Manhole Foundation - The manhole base shall be set on a compacted mat of Size #57 crushed stone graded level at the thickness shown on the standard detail drawings. In wet areas, the crushed stone mat shall be thickened as needed to provide a non-yielding foundation.

Brickwork required to complete the precast concrete manhole shall be constructed using 1 part portland cement to 2 parts clean sand, meeting ASTM Specifications, Serial Designation C 144, thoroughly mixed to a workable plastic mixture. Brickwork shall be constructed in a neat and workmanlike manner. Cement mortar shall be used to grout interior exposed brick joints and faces. No more than 3 courses of brick with 9 inch maximum total depth of bricks may be used to adjust manhole covers.

Doghouse Manhole - Materials required to construct a doghouse manhole are the same as those required for a standard manhole, except that the bottom precast section of the manhole shall come complete with manufacturer formed u-shape notches shaped and located to fit the existing sewer main. The section shall have a cored and booted opening set for the proposed pipe entering the manhole. The concrete base, footing and gravel foundation requirements are the same as are required for a standard manhole. The doghouse opening shall be carefully grouted with non-shrink cement. The top portion of the existing pipe within the doghouse manhole shall not be removed until authorized by the COG Inspector.

CONCRETE AND MORTAR

Concrete shall consist of Portland cement, a fine aggregate, a coarse aggregate and water. Portland cement shall conform to Fed. Spec. SS-C-19 lb. Fine aggregate shall be a clean, sharp, well-graded sand conforming to Fed. Spec. SS-S-51. Coarse aggregate shall be uniformly graded broken stone or gravel which will pass a 1-1/2 inch screen and be retained on a 1/4 inch screen. Aggregate shall be free of clay, loam silt, or organic matter. Water used for concrete shall be clean and free from vegetable, sewage or organic matter and the total amount used shall not exceed six (6) gallons per sack of cement. Forms may be of wood or metal properly braced to prevent bulging. Concrete shall be thoroughly mixed and well vibrated into forms and around fittings. Exposed surfaces of concrete

shall be protected from premature drying by being kept covered and moist for a period of seven days. After the forms have been removed, the voids in the interior surface, if any, shall be properly filled with cement mortar and the whole surface rubbed uniformly with neat cement.

All mortar shall be composed of one part Portland cement to three parts sand, conforming to these specifications. All concrete shall have a compressive strength of not less than 3,000 pounds per square inch at an age of 28 days.

REINFORCING STEEL

Bars for concrete reinforcement shall be of the sizes, lengths and bent as shown on plans. Bars shall be ASTM Specifications A-615 Grade 60. All steel shall be free from rust, scale or any foreign coating.

BRICK

All brick shall be best grade, hard-burned, common, giving a ringing sound when struck and acceptable to the City. Only bricks presenting a regular and smooth face shall be used. When submerged in water for 24 hours, they shall not absorb more than 10% of their weight in water. Brick shall be culled when delivered on the ground, and all imperfect brick are to be immediately removed from the work. All salmon, soft or arch brick or brick made of alluvial soil will be rejected. All brick used in the work shall be of uniform size.

SUBGRADE STABILIZER STONE, TYPE I

Stabilizer for subgrade shall be either approved crushed stone or gravel, uniformly graded from 1/4" to 1-1/4" in size. (#57 Stone)

STEEL CASING PIPE

Steel casing pipe shall have a wall thickness of 0.500" with a minimum yield strength of 35,000 psi and shall conform to the requirements of ASTM A139. It shall be fully coated on the exterior and interior with a bitumastic coating. The casing pipe diameter shall be six to eight inches greater than the "bell" diameter of the carrier pipe. Wherever steel casing is required, the carrier pipe shall be ductile iron pipe with push-on joints. Approved casing spacers shall be used to secure the sewer line on grade throughout the length of the casing.

SERVICE WYES AND BENDS

Wyes and bends shall be equal in quality to the materials of the pipeline being installed.

660.2.02 Delivery, Storage, and Handling

- A. Handle pipe, fittings, valves, and accessories carefully to prevent damage. Handle pipe by rolling on skids, forklift, or front-end loader. Do not use material damaged in handling. Slings, hooks, or pipe tongs shall be padded and used in such a manner as to prevent damage to the exterior coatings or internal lining of the pipe. Do not use chains in handling pipe, fittings, or appurtenances.
- B. To unload pipe, carefully lift and lower it into position using approved padded slings, hooks, or clamps. Furnish equipment and facilities for unloading, handling, distributing, and storing pipe, fittings, valves, and accessories. Make equipment available at all times for use in unloading. Do not roll, drop or dump materials. Any materials dropped or dumped shall be subject to rejection without additional justification.
- C. Stored materials including salvaged materials shall be kept in suitable areas safe from damage. The interior of all pipe, fittings, and other appurtenances shall be kept free from dirt or foreign matter at all times. Store and support plastic pipe to prevent sagging and bending. Store plastic pipe and gaskets to prevent exposure to direct sunlight. Valves and hydrants shall be stored and protected from damage by freezing.
- D. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tier shall be kept off the ground on timbers, rails, or concrete.

660.3 Construction Requirements

660.3.01 Personnel

- A. General Provisions 101 through 150.
- B. Construction and installation of all sanitary sewer utilities shall be performed by a Contractor prequalified/registered with GDOT.
- C. All work specified in this section shall be performed by a Contractor with a valid Utility Contractor's license issued by the State of Georgia. Sanitary sewer service line installation shall be performed by either a Utility Contractor licensed in the State of Georgia or by a Master Plumber licensed in the State of Georgia.

D. SUPERINTENDENCE BY CONTRACTOR

At the site of the work, the Contractor shall employ a construction superintendent or foreman who shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to COG and the Utility Owner and shall be one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll.

E. COMPETENT LABOR

The Contractor shall employ only competent and skilled workers on the project. The Contractor shall have a competent superintendent or foreman present at all times when the work is in progress and with authority to receive orders and execute the work. The Contractor shall, upon demand from COG or the Utility Owner, immediately remove any superintendent, foreman or worker whom COG or the Utility Owner may consider incompetent or undesirable.

660.3.02 Equipment

- A. Ensure all equipment used is in conformance with the requirements and standards set forth in The Facility Owner's Standard Specifications. The Contractor shall provide all necessary equipment in good repair for the expeditious construction of the work. Any equipment not adapted for the work, in such repair as to be dangerous to the project or workers, shall not be used.

660.3.03 Preparation

General Provisions 101 through 150.

660.3.04 Fabrication

General Provisions 101 through 150.

660.3.05 General

A. CONTRACTOR'S OBLIGATIONS

The Contractor shall and will, in good workmanlike manner do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with the plans and drawings covered by this contract any and all supplemental plans and drawings, and in accordance with the directions of the Project Manager as given from time to time during the progress of the work. He/she shall furnish, erect, maintain and remove such construction plant and such temporary works as may be required. He/she alone shall be responsible for the safety, efficiency and adequacy of the plant, appliances, and methods, and for any damage which may result from their failure of their improper construction, maintenance, or operation.

The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the Contract and specifications, and shall do, carry on, and complete the entire work to the satisfaction of the Project Manager.

B. CONTRACTOR'S RESPONSIBILITY

The Contractor shall be responsible for all material and work until they are finally accepted by the Project Manager and shall repair at his own expense any damage that they sustain before their final acceptance. The Contractor shall be responsible for all damages caused by him of whatever nature and must settle all claims arising from such damage without cost to the Owner. The Contractor shall act as defendant in, and bear the expense of each and every suit of any and every nature which may be brought against him/her, COG, or the Utility Owner, by reason of, or connected with the work under the Contract.

C. PUBLIC CONVENIENCE AND SAFETY

Materials stored at the site of the work shall be so placed and the work shall, at all times, be so conducted as to cause no greater obstruction to traffic than is considered permissible by the COG. No roadway shall be closed or opened except by express permission of the COG and the Contractor's proper notification of local fire and police departments. Precaution shall be exercised at all times for the protection of persons and property. The safety provisions of applicable laws, building and construction codes shall be observed. Machinery, equipment and other hazards shall be guarded in accordance with the safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America to extent that such provisions are not in contravention of applicable laws.

D. PROTECTION OF WORK AND PROPERTY - EMERGENCY

The Contractor shall at all times safely guard the project from injury or loss in connection with this contract. At all

times, the Contractor shall safely guard and protect his own work, and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury unless such be caused directly by errors contained in the contract or by the Project Manager, or his duly authorized representative.

In case of an emergency which threatens loss or injury of property, and/or safety of life, the Contractor will be allowed to act, without previous instructions from the Project Manager in a diligent manner. He shall notify the Project Manager immediately thereafter. Where the Contractor has not taken action but has notified the Project Manager of an emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the Project Manager.

E. CORRECTION OF WORK

All work, all materials, whether incorporated in the work or not, all processes of manufacture, and all methods of construction shall be at all times and places subject to the review of the Utility Owner who shall be the final judge of the quality and suitability of the work, material, processes of manufacture and methods of construction for the purposes for which they are used. Should they fail to meet approval, they shall be forthwith reconstructed, made good, replaced and/or corrected, as the case may be, by the Contractor at his own expense. Rejected material shall immediately be removed from the site.

F. COORDINATION WITH OTHER CONTRACTORS

The Contractor shall coordinate his operations with those of other contractors. Cooperation will be required in the arrangement for the storage of materials and in the detailed execution of the work. The Contractor, including his Subcontractors shall keep informed of the progress and the detail work of other Contractors and shall notify the Project Manager immediately of lack of progress or defective workmanship on the part of other contractors. Failure of a Contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by him of the status of the work as being satisfactory for proper coordination with his own work.

G. OWNER'S EXAMINATION OF WORK COMPLETED

At the request of the Project Manager or Utility Owner or their representatives, the Contractor shall, at any time before final acceptance of the work, remove, or uncover such portions of the finished work as may be directed. After examination the Contractor shall restore said portions of the work to the standard required by the Specifications. Should the work thus exposed or examined prove acceptable, the uncovering or removing, and the replacing or making good of the parts removed, shall be paid for as Extra Work, but should the work so exposed or examined prove unacceptable, the uncovering or removing, and the restoration shall be at the Contractor's expense.

H. NOTIFICATION OF CONSTRUCTION

Prior to the commencement of construction, the Contractor shall give written notice to each property owner and/or business owner. The notice shall include the nature of the construction, the approximate duration of the construction, and the Contractor's name and contact information.

I. PRIOR NOTIFICATION OF SERVICE INTERRUPTION

The Contractor shall organize his work in such a way that water and sewer service will remain uninterrupted except for short periods of time when connections are being made. When it is necessary for water or sewer service to be interrupted, the Contractor shall first receive approval from the Utility Owner and shall then notify all affected customers of the proposed time of interruption and the expected duration. Notification shall be in person whenever possible. When in person notification is not possible, a written notice shall be distributed to each residence or business. Ideally, both in person notification and a written notice shall be given.

Notification shall be sufficiently prior to the interruption of service so as to allow customers to make necessary arrangements to their personal or business schedules. Notice of any planned service interruption must be submitted to the Utility Owner 48 hours prior to that service interruption. 24 hours shall be considered a standard minimum notification to any customer.

The Contractor shall maintain a log of times, dates, duration, the addresses affected, and the reason for any interruption of water service.

The Contractor will notify the Utility Owner as soon as possible upon the occurrence of any unplanned service interruption of water or sewer services.

J. BASIC EQUIPMENT REQUIRED

The nature of the work is such that due to the proximity of existing facilities, there is the possibility that existing water and/or sewer services or mains may be damaged and necessitate immediate repair. Consequently it is essential that the Contractor not perform any work unless certain basic and essential tools and materials are present on the job site. Tools and materials considered basic and essential shall include but not be limited to:

- All tools and materials necessary to repair a four (4) inch or six (6) inch sanitary sewer service,
- All tools and materials necessary to repair a three-quarter inch (¾) or one (1) inch copper or galvanized iron water service,
- All tools and materials necessary to correctly perform the construction currently underway,
- Any additional equipment or material that the Owner’s Representative may require,
- Valve wrench with extension, and
- Fire Hydrant wrench.

K. TRAFFIC CONTROL AND DETOURS

The Contractor shall organize his work in such a way as to minimize the impact on traffic flow on streets and highways. No local street shall be cut or blocked without prior approval from the City. No state highway or route shall be cut, blocked, or have traffic restricted without prior approval from the Georgia Department of Transportation.

Traffic is to be maintained on all roads and streets which must be crossed by the proposed facilities. If the open-cut method is approved and employed, one lane must be open to traffic at all times.

The Contractor shall notify GDOT and/or the City prior to performing any work which disrupts the normal flow of traffic, and shall utilize appropriate warning signs, flagmen, and other procedures necessary to ensure safety and minimize inconvenience to the public. The Contractor shall coordinate all necessary permitting for lane closures with the proper authority.

If it is determined by GDOT and/or the City that traffic flow shall not be impeded during certain hours (i.e. "rush hour"), the Contractor shall organize his work accordingly. No extra payment will be made for delays resulting from any traffic related restrictions on working hours.

L. CONTRACTOR IDENTIFICATION AND LANGUAGE REQUIREMENTS

The construction foreman shall carry a name badge that identifies the utility company for whom he/she is working. At least one person in each operation or location shall be fluent in English. This individual shall have knowledge of what his or her company is doing and why.

M. PERMISSION TO ENTER PRIVATE PROPERTY

Comply with Section 107—Legal Regulations and Responsibility to the Public.

Through an agreement between the City and the Contractor; the Contractor is given the permission to enter upon private properties found outside the project’s construction limits. This permission is granted for the sole purpose of activities relating to the installation and/or adjustments of distribution facilities only and is limited to the area of existing easements obtained by the company. Such permission to enter upon private properties is temporary and such rights commence upon project award and automatically expire upon completion and project final acceptance by the City.

In all cases where it is necessary to enter upon private property; it is the Contractors sole responsibility to minimize any disruptions to personal property in the commencement of such work thereof. Additionally, the following restrictions and requirements apply:

1. All Work is limited to the installation, relocation, or replacement of distribution facilities, including the Work necessary to restore each private property as required in number 6 of this subsection.
2. Notify the Engineer and the private property owner, and resident 72 hours before commencing Work on said private property.
3. Only vehicles and equipment required for the Work are allowed on any private property.
4. Do not store any materials, vehicles, or equipment on any private property longer than the duration required to perform the Work.
5. Do not use any private property as an on-site detour or vehicle path.
6. Immediately following any construction located on private property, restore all areas of the same parcel to a condition substantially the same as existed immediately prior to any such disturbances, including without limitation, any and all necessary repairs, and replacement of grassing, landscaping and pavement which may be removed and excavated by the Contractor. Ensure all necessary repairs are made to restore the original contours and re-establish the ground cover to control erosion.

660.3.06 Construction Specifics

A. Finding Existing Underground Utilities and Obstructions

1. Comply with Subsection 107.13 and Subsection 107.21.
2. According to the best information available to GDOT, all known water lines, sewer lines, gas lines, telephone conduits, drainage structures, etc. are shown on the Plans. However, to find such installations, use an electronic pipe and cable finder in locating existing installations or obstructions to the work.
3. When unforeseen conflicts require Plan changes, perform the work as altered according to Subsection 104.03 and Subsection 104.04.
4. Follow all Utility Owner customer notification requirements and obtain approval from the Utility Owner and COG Project Manager prior to disrupting any existing water services as required to install the water facilities shown on the Plans.
5. The accuracy of information furnished by the plans as to underground and surface structures, foundation conditions, character of soil, position and quantity of ground and subsoil water, etc., are not guaranteed by the City. Bidders must satisfy themselves by personal examination and by such other means as they desire with respect to actual conditions in the nature of the ground and subsoil water and in regard to the locations of existing underground or surface structures. Unforeseen conditions shall not constitute a claim for increased compensation under the terms of the contract, nor constitute a basis for the cancellation thereof. If conditions are found to be such that the construction methods herein described are inappropriate or insufficient, the Utility Owner shall have the authority to modify the required construction methods as necessary.
6. It is the responsibility of the Contractor to locate and protect all underground utilities and structures. No utility is to be moved or disturbed without the approval of the utility company. Any damage caused by water or sewer line installation to any utility or structure shall be immediately reported to the Project Manager and repaired at the Contractor's expense.

B. Jack and Bore

1. Comply with Section 615 and with Utility Owner's Specifications for main installations by jack and bore.

C. Excavation and Construction

1. It shall be expressly understood that these specifications are for installation of all sanitary sewer mains and appurtenances.
2. All work shall conform to the applicable provisions of specifications prepared by the AWWA, ANSI and ASTM of latest revision except as otherwise specified herein.
3. Compliance with applicable safety regulations is the responsibility of each company engaged in the work. The City assumes no responsibility for the actions of others on the job site. It is the responsibility of those installing sanitary sewer lines and appurtenances to conform to OSHA regulations.
4. Trench and Manhole Excavation

Sanitary sewer lines shall normally be installed by open-cut trench excavation. Pipe trenches shall be excavated straight and true to grade and line and in the location shown on the plans. Trenches shall be dug so that the pipe can be laid to the alignment and depth required, and the trench shall be of such width and shall be braced and drained so that the workmen may work therein safely and efficiently. No chocking under the pipe will be permitted. All joints shall be as specified herein. Excavation must be made under the bell of each pipe so that the entire length of the pipe will lie uniformly on the bottom of the trench and the pipe weight shall not rest on the bells. Trenches shall be free of water during the work.

Trenches shall have a minimum width of twelve (12) inches plus the diameter of the outside of the bell of the sewer main and the maximum trench width at the centerline of the pipe shall not be more than the nominal diameter of the pipe plus two feet. In unpaved areas, the trenches may have a greater width than this, beginning at one foot above the top of the pipe and extending to the ground surface, if such width is necessary or desirable. However, in paved areas, the width of the trench from top to bottom shall not exceed the nominal diameter of the pipe plus two feet.

In cases where a sanitary sewer crosses a water main, there shall be a minimum vertical clearance of 18 inches separation between the mains. Both mains shall be D.I.P. At crossings, one full length of sewer pipe must be located so that both joints are as far from the water main as possible. In cases where sanitary sewer mains parallel water mains, there shall be a minimum of ten (10) feet horizontal separation maintained between the mains. These distances are measured edge to edge.

No excavation shall be made under highways, streets, alleys or private property until satisfactory arrangements have been made with the State, City, County or owners of the property to be crossed. All excavated material shall be placed so as to not interfere with public travel on the streets and highways along which the lines are laid. Not more than 100 feet of trench shall be opened on any line in advance of pipe laying.

When possible, all crossings of paved highways or driveways by pipe line shall be made by boring or jacking the pipe under the pavement and shall be done in such manner as not to damage the pavement or foundation, unless the casing or pipe is in solid rock, in which case the crossing shall be made by the open cut method, cased bore using a rock cutting head, or by tunneling.

Wherever streets, roads, or driveways are cut, they shall be immediately backfilled and compacted after the pipe is laid and shall be maintained in first-class condition as passable at all times until repaved. Backfilling, compaction, dressing and clean-up shall be kept as close to the line laying crew as practical, and negligence in this work will not be tolerated.

In excavation and backfilling and laying pipe, care must be taken not to remove or injure any water, sewer, gas or other pipes, conduits or other structures without an order from the Designer. When an obstruction is encountered, the Contractor shall notify the Designer who will have the Owners of the obstruction adjust same or make necessary changes in grade and/or alignment to avoid such obstruction. Any house connection, drains or other structures damaged by the Contractor shall be repaired or replaced immediately.

All excavation shall be placed on one side of the trench, unless permission is given by the City to place it on both sides. Excavation materials shall be so placed as not to endanger the work and so that free access may be had at all times to all parts of the trench and to all fire hydrants or water valve boxes, etc. All shade trees, shrubs, etc., shall be protected.

The excavation for manholes shall extend to a firm, acceptable foundation and leave not less than 24 inches in the clear between their exterior surface and the embankment or timber that may be used to protect it.

The Contractor shall furnish, install and maintain such sheathing, bracing, etc., as may be required to support the sides of the excavation and to prevent any movement that might injure the pipe, or cause sloughing of the street or trench, or otherwise injure or delay the work or interfere with adjoining structures.

Construction occurring around active sanitary sewerage systems shall be done in such a way so as to prevent the spillage of sewage.

5. Rock Excavation

All materials shall be considered as rock which cannot be excavated except by drilling, blasting or wedging. It shall consist of undecomposed stone in solid layers or of boulders of not less than one-half cubic yard. Wherever rock is encountered in the excavation, it shall be removed by suitable means. If blasting is used for removal of rock, the contractor shall take all proper safety precautions. He shall comply with all rules and regulations for the protection of life and property that may be imposed by any public body having jurisdiction relative to the handling, storing and use of explosives. He is fully responsible for filing for and acquiring any blasting permits which may be required by those agencies with such jurisdiction. Before blasting, the Contractor shall cover the excavation with heavy timbers and mats in such a manner as to prevent damage to persons or the adjacent property. Rock excavation near existing pipelines or other structures shall be conducted with the utmost care to avoid damage. The Contractor shall be wholly responsible for any damage resulting from blasting, and any injury or damage to structures or property shall be promptly repaired by the Contractor to the satisfaction of COG and property owner.

Rock in trenches shall be excavated over the horizontal limits of excavation and to depths as follows:

Size of Pipeline (Inches)	Depth of Excavation Below (Bottom of Pipe, Inches)
4 and Less	4
4 to 6	6
8 to 18	8
18 to 30	10

The undercut space shall then be brought up to grade by backfilling with subgrade stabilizer stone. In rock excavation, the backfill from the bottom of the trench to one foot above the top of the pipe shall be finely pulverized soil, free from rocks and stones. The rest of the backfill shall not contain over 75% broken stone, and the maximum sized stone placed in the trench shall not weigh over 50 pounds. Excess rock and fragments of rock weighing more than 50 pounds shall be loaded and hauled to disposal. If it is necessary, in order to comply with these specifications, selected backfill shall be borrowed and hauled to the trenches in rock excavation. Sides of the trench shall be trimmed of projecting rock that will interfere with backfilling operations. Rock excavation by blasting shall be at least 75 feet in advance of pipe laying.

6. Installation of Sanitary Sewer

Construction stake-out will be required prior to construction of sanitary sewer lines. As a minimum, the horizontal alignment will be staked at 100-foot intervals and each manhole will be located with a centerline stake and two offset hubs. "Cuts" to invert elevations will be shown for each manhole entry and exit pipe. A copy of the stake-out notes will be provided to the City.

Pipe and accessories shall at all times be handled with care to avoid damage. Whether moved by hand, skidways or hoists, material shall not be dropped or bumped. The interior of all pipe shall be kept free from dirt and foreign matter at all times. Each joint of pipe shall be unloaded opposite or near the place where it is to be laid in the trench. All such material that is defective in manufacture or has been damaged in transit or after delivery shall be removed from the job site.

All pipe and specials shall be of the dimensions and laid to the line and grade as shown on the plans and as established by the design professional and as approved by COG. Wyes and/or service connections and stubs from manholes shall be placed where shown on plans and as approved by COG. All such connections shall be blanked off with suitable stopper and made watertight with jute and cement mortar.

The preferred order of construction is to connect to existing sanitary sewers after all other construction is complete and conditionally accepted by the City. Connections to existing sanitary sewers can be done at the beginning of construction, however, the new main shall be plugged where it enters either the existing manhole or the new doghouse manhole over an existing sanitary sewer, and the plug shall remain in place until the project is conditionally accepted.

Sanitary sewer pipes shall be joined by "push-on" joints using elastomeric gaskets to affect the pressure seal. The ends of pipe to be joined and the gaskets shall be cleaned immediately before assembly, and the assembly shall be made as recommended by the pipe manufacturer. Lubricant used must be non-toxic and supplied or approved for use by the pipe manufacturer. Sanitary sewer pipes shall be laid in the uphill direction with the bells pointing upgrade. Any variation from this procedure shall require approval from the City.

Bell holes shall be provided of sufficient size to allow ample room for making the pipe joints without putting any load on the bell of the pipe. The bottom of the trench between bell holes shall be carefully graded so that the pipe barrel will rest on a solid foundation for its entire length as shown on the plans. Pipe shall be laid with joints close and even, butting all around, so that it will form a close concentric joint with adjoining pipe with no sagging at the hub and so that a true surface is given to the invert throughout the entire length of the sewers. After the pipe is laid, backfilling shall be completed as directed in Section 660.3.06.C.10.

The Contractor will be required to provide and operate any equipment necessary to keep the trenches free from water while pipe is being laid and the joints made. The installed pipe shall not be used for draining water from the ditch.

Pipe grades shall be obtained by use of a laser and double checked with a surveying level and rod. Completed sewers shall be tested between manholes with lanterns or reflected light and shall show 100% of the full circle of the pipe from manhole to manhole without obstruction.

Sewers shall be laid tight and the rate of infiltration in any section of line between adjacent manholes shall not exceed 0 GPD per inch diameter of pipe per mile of line when the trenches are saturated with water.

ALL OPENINGS ALONG THE LINE OF THE SEWERS SHALL BE SECURELY CLOSED AT NIGHT, DURING SUSPENSION OF WORK, AND AT THE END OF EACH WORK PERIOD, WITH A WATER-TIGHT STOPPER.

NO LENGTH OF PIPE SHALL BE LAID UNTIL ONE PRECEDING IT SHALL HAVE SUFFICIENT QUANTITY OF FINE EARTH TAMPED AROUND IT TO HOLD IT FIRMLY IN PLACE.

7. Making of Joints

When joining gravity sewer pipe, both the spigot end and the bell end of the pipe shall be perfectly clean and

free from dirt, oil, grease, or other foreign matter. The spigot end shall be lightly coated with the lubricant recommended and furnished by the manufacturer, and the pipe then shall be securely and firmly seated in the bell end of the adjoining pipe. In making the joint, the spigot end of the pipe, after being cleaned and coated with lubricant, shall not be allowed to touch the sides or bottom of the trench before being inserted in the bell end of the adjoining pipe. In addition to the above, joints shall be made in strict accordance with the specifications and recommendations of the manufacturer.

8. Subgrade and Pipe Bedding

All Ductile Iron pipe shall have a minimum of Class "C" bedding. All PVC pipe shall have a minimum bedding as described below and shown in the standard details (402.17). Wherever water or wet soil is encountered, Class "B" bedding shall be provided for D.I.P. If specifically designated on the plans, Class "A" or "B" bedding may be required. A description of Class "A", "B", and "C" bedding is as follows:

- a.) Class "A" Bedding (Detail 402.14) Class "A" bedding refers to bedding with concrete cradle, arch or encasement. The Contractor shall conform to details shown in the detailed drawings when Class "A" bedding is required.
- b.) Class "B" Bedding (Detail 402.15) The pipe shall be bedded in Subgrade Stabilizer Stone (#57 Stone), or other suitable materials approved by the City. The bedding shall be placed on a flat trench bottom with a minimum thickness beneath the pipe of one-eighth the outside pipe diameter, but not less than 6 inches (150 mm) and sliced under the haunches of the pipe with a shovel or other suitable tool to height of one-half the outside pipe diameter, or to the horizontal centerline. The initial backfill shall be hand placed to a level of 12" (300 mm) over the top of the pipe and shall consist of finely divided materials free from debris, organic material, and large rocks or stones.
- c.) Class "C" Bedding (Detail 402.16) The pipe shall be bedded in subgrade stabilizer stone placed on a flat trench bottom. The bedding material shall have a minimum thickness beneath the pipe of 6" (150 mm) or one-eighth of the outside diameter of the pipe, whichever is greater and sliced under the haunches of the pipe with a shovel or other suitable tool to a height of one-sixth of the outside diameter of the pipe. The initial backfill shall be hand placed to a level of 12" (300 mm) over the top of the pipe and shall consist of finely divided materials free from debris, organic material, and large rocks or stones. Bedding materials shall be Subgrade Stabilizer Stone (#57 Stone).
- d.) Special Bedding for PVC Pipe (Detail 402.17) PVC pipe shall be bedded in Subgrade Stabilizer Stone (#57 Stone), or other suitable materials approved by COG. The bedding shall be placed on a flat trench bottom with a minimum thickness beneath the pipe of one-fourth the outside pipe diameter, but not less than 6 inches (150 mm) and sliced under the haunches of the pipe with a shovel or other suitable tool to height of two-thirds the outside pipe diameter. The initial backfill shall be hand placed to a level of 12" (300 mm) over the top of the pipe and shall consist of finely divided materials free from debris, organic material, and large rocks or stones.

9. Dewatering Trenches

The Contractor shall do all necessary pumping or bailing, build all drains and do all other work necessary at his own expense to keep the trenches clear of water during the progress of the work. No structure shall be built or pipe shall be laid in water, and water shall not be allowed to flow over or rise upon any concrete, masonry or pipe until the same has been inspected and the concrete or joint material has thoroughly set. All water pumped, bailed or otherwise removed from the trench or other excavation shall be conveyed in a proper manner to a suitable place of discharge where it will not cause injury to the public health or to public or private property or to work completed or in progress, or to the surface of the streets or cause any interference with the use of same by the public. All soil and erosion control standards must be followed during dewatering operations. Best management practices must be used.

10. Backfilling and Compaction

After the pipe has been laid, backfilling shall be done in two (2) distinct operations. In general, all backfill beneath, around and to a depth of twelve (12") inches above the top of the pipe shall be placed by hand in four (4") inch layers for the full width of the trench and thoroughly compacted by hand with vibratory equipment. The remainder of the backfill shall be placed in 6" layers and compacted to the top of the trench, either by pneumatic hand tamps, hydro- tamps, or other approved methods. Care shall be taken so that the pipe is not laterally displaced during backfilling operations. The backfill lifts shall be placed by an approved method in accordance with that hereinafter specified.

Backfill materials shall be the excavated materials without bricks, stone, foreign matter or corrosive materials, where not otherwise specified or indicated on the plans.

Backfill under permanent concrete or bituminous pavement and as elsewhere specified or indicated on the

plans shall be compacted graded aggregate base free from large stones and containing not more than ten percent (10%) by weight of loam or clay. This backfill shall be compacted to one hundred percent (100%) as determined by the Standard Proctor test. Mechanical vibrating equipment shall be used to achieve the required compaction. Pavement shall be replaced immediately after the backfilling is completed.

Backfill under gravel or crushed stone surfaced roadways shall be the approved suitable excavated material placed in six (6) inch layers thoroughly compacted for the full depth and width of the trench, compacted with mechanical vibrating equipment to ninety-eight percent (98%) as determined by the Standard Proctor Test. Backfill material from pipe bedding to ground surface by shall be excavated earth free from large stones and other debris.

Backfill in unpaved areas shall be the approved suitable excavated material placed in six (6) inch layers thoroughly compacted for the full depth and width of the trench, compacted with mechanical vibrating equipment to ninety-five percent (95%) as determined by the Standard Proctor Test. Backfill material from pipe bedding to ground surface by shall be excavated earth free from large stones and other debris.

Contractor shall fully restore and replace all pavement, sidewalks, landscapes, surface structures, etc., removed or disturbed as part of the work to a condition equal to or better than before the work began to the satisfaction of COG.

Where sheeting is used in connection with the work, it is in no case to be withdrawn before the trench is sufficiently filled to prevent damage to banks, road surfaces, adjacent pipes, adjacent structures or adjacent property, public or private.

11. Stream Crossings

The preferred method of crossing a river, stream, creek, impoundments, or wet weather ditch is with a minimum of two feet of cover between the lowest point in the stream and the top of outside diameter of the pipe. Ductile iron pipe is required for all stream crossings and shall extend a minimum of ten feet (10') beyond the top of bank on each side.

Precast concrete collars may be required to prevent flotation.

The stream bed and banks at the crossing site shall be protected from erosion with the use of rip-rap, as defined and sized in the Manual For Erosion and Sediment Control In Georgia, Appendix C - Construction Materials, 1997 or most current edition.

Aerial crossings will require detailed plans and will be allowed only when, in the City's opinion, there is no reasonable alternative.

Erosion control measures shall be installed prior to installing pipe across any stream. All work should be performed when stream flows are at their lowest, and all work should be performed as quickly and safely as possible. As soon as conditions permit, the stream bed shall be cleared of all falsework, debris, and other obstructions placed therein or caused by the construction operations.

Erosion control measures can include, but is not limited to, the following items:

- a.) Silt fencing, types A, B, and/or C
- b.) Erosion control checkdams
- c.) Channel diversion through temporary storm drain pipe.
- d.) Rock filter dams

The construction and installation of these various structures are detailed in the Manual For Erosion And Sedimentation Control In Georgia or the Georgia Department of Transportation Standards and Construction Details, both of which are available for purchase by the Contractor.

12. Casing for Sanitary Sewers

Where pipe is required to be installed under railroads, highways, streets or other facilities by jacking or boring methods, construction shall be done in a manner that will not interfere with the operation of the utility, and shall not weaken the roadbed or structure.

Casing pipe shall be installed at the locations shown on the plans. Unless directed otherwise, the installation procedure shall be the dry bore method. The hole is to be mechanically bored and cased through the soil by a cutting head on a continuous auger mounted inside the casing pipe. The installation of the casing and boring of the hole shall be done simultaneously by jacking. The diameter of the bore shall conform to the outside diameter and circumference of the casing pipe as closely as practicable. Any voids which develop during the installation operation shall be pressure grouted. Each segment of the casing pipe shall be welded (full circumference butt weld) to the adjoining segment. The completed casing shall have no sags or crowns which

cause the grade for any segment to be less than the minimum slope for the size pipe being installed.

Excavation material will be removed and placed at the top of the working pit. Backfill material and methods of backfilling and tamping shall be as required above. Carrier pipe shall be D.I.P. and shall be inserted within the casing by use of approved casing spacers. At each end of the casing pipe, the void between the carrier pipe and casing shall be sealed with brick and mortar.

13. Bracing, Sheeting, and/or Shoring

Whenever the condition of the ground is such that it is necessary to protect the work, the street, the roadway or the workmen, the sides of the trench shall be supported with suitable bracing, sheeting and/or shoring to be furnished by the Contractor at his own expense.

14. Location and Protection of Existing Underground Utilities

It is the responsibility of the Contractor to locate the underground utilities and to protect same. Utility lines or services damaged by the Contractor shall be repaired by the Contractor at his own expense.

15. Connection to the Existing COG Sanitary Sewer System

- a.) The Contractor shall make all required connections to COG Water's sewer system for line extensions beginning at the existing sewer line. COG's Inspector will supervise the connection and all associated work. All other types of connections shall be made by COG.
- b.) The Contractor shall give COG a minimum of 48 hours notice prior to any sewer system work.
- c.) The Contractor will provide proper traffic control devices and certified personnel to direct traffic if required.
- d.) All connections to existing manholes shall be properly cored with a coring machine; "Knocking-out" of a hole in the manhole for a connection is not permitted.
- e.) The timing of the Contractor's connection to the City's water system shall be pre-arranged with the City and Utility Owner.

16. Street Cuts

- a.) All paved roads will be bored and cased. A bore must be attempted before consideration will be given to cutting the street.
- b.) Existing roadways shall not be open cut unless permission is granted by the Georgia D.O.T., COG, or Spalding County. Submittal of an authorization letter from the appropriate governing agency is required.
- c.) One lane of traffic shall be maintained open at all times. Construction work shall be limited to time between 9 A.M. and 4 P.M.
- d.) The Contractor shall furnish traffic control devices and certified personnel to direct traffic, if required.
- e.) The above requirements may be altered with the written approval of COG in extenuating circumstances.
- f.) Assuming that a road bore has been attempted and failed, and that the Contractor has received permission to open cut a road, pavement replacement shall adhere to the following guidelines:
- g.) Removing and replacing pavement shall consist of removing the type of pavement and base encountered, and replacing same to its original shape, appearance and riding quality, in accordance with the detailed plans. Where possible, all pipe under existing paved driveways will be either free bored or installed in casing. Free bores under driveways will be made with D.I.P. Casing will be required where the installation is under any roadway. Carrier pipe shall be D.I.P.
 - i. Concrete pavement shall be replaced with pavement of a thickness equal to that removed, or 6" for driveways and 8" for roads, whichever is thicker. The concrete shall meet the specifications of the D.O.T. for concrete paving.
 - ii. Where bitumastic paving is replaced, a base course of 3000 psi concrete shall be placed over the ditch line. The concrete shall be 6" thick for driveways and parking lots and 8" thick for public roads. The top of this base course shall be left with a rough float finish 1-1/2" below the surface of the existing paving. After the concrete has attained its strength, a tack coat of AC-15 or equal shall be applied at the rate of 0.25 gallons per square yard, and a plant mix surface course applied over this, and finished off level with existing pavement.
 - iii. Unless otherwise directed in writing, all pavement shall be removed to a width of the trench plus 12" on each side as shown on the detailed drawings. Under normal circumstances, the maximum allowable trench width shall be the nominal diameter of the pipe plus 24 inches.

17. Standard Detailed Drawings

Installation of sewer mains, service laterals, manholes, casings, cleanouts, etc. shall be made in accordance with the Standard Detailed Drawings. These documents can be reviewed online at the Utility Owner's website. For COG, online specifications, standards and details can be reviewed Unified Development Code | Griffin, GA | Municode Library (https://library.municode.com/ga/griffin/codes/unified_development_code).

18. Clean-Up

The Contractor shall remove all unused material, excess rock and earth, and all other debris from the construction site as closely behind the work as practical. If the contractor fails to maintain clean-up responsibilities as directed by COG or its representative, COG may choose to use their own forces to do so, followed by an invoice to the Contractor for the City's work. All trenches shall be backfilled and tamped before the end of each day's work.

Prior to requesting the final inspection, the Contractor shall do the following:

- a.) Remove and dispose of in an acceptable manner all shipping timbers, shipping bands, excess materials, broken material, crates, boxes and any other material brought to the job site.
- b.) Repair or replace any work damaged by the sewer line construction.
- c.) Regrade and smooth all shoulder areas disturbed by the sewer line construction.
- d.) All easement areas shall be cleared of trees, stumps and other debris and left in a condition such that the easement can be maintained by bush-hog equipment.
- e.) All shoulders, ditches, culverts, and other areas impacted by the sanitary sewer construction shall be at the proper grades and smooth in appearance.
- f.) All manhole covers shall be brought to grade.
- g.) A uniform stand of grass or mulch for erosion protection, as defined in the Manual For Erosion and Sediment Control In Georgia, is required over all construction easements and sanitary sewer easements prior to the City's acceptance of the sanitary sewer.
- h.) If work is performed on a Georgia D.O.T., City, or Spalding County right-of-way, a letter from the governing agency is required to be submitted after construction is complete stating that grassing, clean-up, drainage, etc. is acceptable.
- i.) Outfall sewers shall require Army COE Post-Construction Notification if Pre-Construction Notification was obtained for Wetlands Nationwide Permit.

19. Barricades

The Contractor shall provide, erect and maintain all necessary barricades, suitable and sufficient red lights, danger signals and necessary precautions for the protection of the work and the safety of the public. Street closures must be approved by the City. Streets closed to traffic shall be protected by effective barricades on which shall be placed acceptable warning signs. Barricades shall extend completely across the street which is to be closed, and shall be illuminated at night by lights not farther than (5) feet apart, and lights shall be kept burning from sunset to sunrise.

20. Grassing

All areas outside structures and along pipelines where the earth is disturbed shall be grassed. After the soil has been properly prepared, the seed shall be planted. After the seeds have been planted, the moisture content of the soil shall be maintained at the optimum amount to insure germination of the seed and growth of the grass.

Immediately after the initial watering of seeded areas, the contractor shall apply a mat of hay or rye, wheat or oat straw over the area at a uniform rate of not less than 1-1/2 ton of mat to the acre. The minimum depth of the straw shall be 2 inches and the maximum depth 3 inches. After placing mat or hay or straw, emulsified asphalt shall be sprayed over the mat at a uniform rate of 0.15 gallon per square yard. After the grass has shown a satisfactory growth (approximately 30 days after planting), nitrate of soda shall be applied at a uniform rate of 100 pounds per acre, followed by sufficient water to dissolve the fertilizer.

The Contractor shall do all maintenance work necessary to keep all planted areas in satisfactory condition until the work is finally accepted. This shall include mowing, repairing washes that occur, reseeding, and water as required to produce a healthy and growing stand of grass. Mowing will be required to remove tall and obnoxious weeds before they go to seed.

It is the intent of these specifications to produce a stand of grass that is alive and growing, without any bare spots larger than one square foot. The Contractor shall repeat all work, including plowing, fertilizing, watering, and seeding as necessary to produce a satisfactory stand.

660.3.07 Quality Acceptance

A. Materials Certification

For certain products, assemblies and materials, in lieu of normal sampling and testing procedures by the Contractor, the Utility Owner and COG may accept from the Contractor the manufacturer's certification with respect to the product involved under the conditions set forth in the following paragraphs:

1. Material certifications shall be provided to COG, who shall distribute to the Utility Owner. Material certifications shall be approved by COG and the Utility Owner prior to construction. The certification shall state/specify that the named product conforms to these specifications and requirements of the Utility Owner and COG, and representative samples thereof have been sampled and tested as specified.
2. The certification shall either:
 - a.) Be accompanied by a certified copy of the test results, or
 - b.) Certify such test results are on file with the manufacturer and will be furnished to the Utility Owner and COG Project Manager upon demand.
3. The certification shall state/specify the name and address of the manufacturer and the testing agency and the date of tests; and sets forth the means of identification which shall permit field determination of the product delivered to the project as being the product covered by the certification.
4. Submit certification with two copies of the covered product to the COG Project Manager and the Utility Owner.
5. Neither COG nor the Utility Owner will be responsible for any costs of certification or for any costs of the sampling and testing of products in connection therewith.
6. COG and the Utility Owner reserve the right to require samples and test products for compliance with pertinent requirements irrespective of prior certification of the products by the manufacturer. Any materials that fail to meet specification requirements will be rejected.
7. **In accordance with the BUY AMERICA requirements of the Federal regulations (23 U.S.C. 313 and 23 CFR 635.410) all manufacturing processes for steel, iron and manufactured products furnished for permanent incorporation into the work on this project shall occur in the United States. The only exceptions to this requirement are (i) the production of pig iron and the processing, pelletizing and reduction of iron ore, which may occur in another country and, (ii) manufactured products that do not include steel and iron components. Other than these exceptions, all melting, rolling, extruding, machining, bending, grinding, drilling, coating, etc. must occur in the United States.**
 - a.) Products of steel include, but are not limited to, such products as structural steel piles, reinforcing steel, structural plate, steel culverts, guardrail, steel supports for signs, signals and luminaires. Products of iron include, but are not limited to, such products as cast iron frames and grates and ductile iron pipe. Coatings include, but are not limited to, the applications of epoxy, galvanizing and paint. The coating material is not limited to this clause, only the application process.
 - b.) A Certificate of Compliance shall be furnished for steel and iron products as part of the backup information with the billing. The form for this certification entitled "Buy America Certificate of Compliance" is attached to this agreement and shall be provided to the CITY upon completion of 80% of the agreement amount. Records to be maintained by the CITY for this certification shall include a signed mill test report and/or a signed certification by a supplier, distributor, fabricator, or manufacturer that has handled the steel or iron product affirming that every process, including the application of a coating, performed on the steel or iron product has been carried out in the United States of America, except as allowed by this Section. The lack of these certifications will be justification for rejection of the steel and/or iron product or nonpayment of the work.
 - c.) The requirements of said law and regulations do not prevent the use of miscellaneous steel or iron components, subcomponents and hardware necessary to encase, assemble and construct the above products, manufactured products that are not predominantly steel or iron, or a minimal use of foreign steel and iron materials, if the cost of such materials used does not exceed one-tenth of one percent (0.1%) of the total contract price or \$2,500.00, whichever is greater.
8. **In addition to the BUY AMERICA requirements of the Federal regulations (23 U.S.C. 313 and 23 CFR 635.410) outlined in Section 4 above, the BUILD AMERICA, BUY AMERICA ACT ("BABA") set forth under the Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, §§ 70901-52, extends coverage of BUY AMERICA to include construction materials used for this project. Under BABA all construction materials furnished for permanent incorporation into the work on this project shall be manufactured in**

the United States. The White House Office of Management and Budget (OMB) Memorandum M-22-11, Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure, defines a “construction material” as an article, material, or supply that is or consists primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall. Items excluded from construction materials under OMB Memo M-22-11 are: items of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives.

- a.) Items that consist of two or more of the above-listed construction materials that have been combined together through a manufacturing process, and items that include at least one of the above-listed construction materials combined with a material that is not listed through a manufacturing process, should be treated as manufactured products, rather than as construction materials. Manufactured products that do not contain steel and iron components are not subject to BUY AMERICA requirements as set forth under Section 4 above.
- b.) The BUY AMERICA preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to this project. It does not apply to tools, equipment, and supplies brought to the construction site and removed at or before the completion of this project (e.g., temporary aluminum scaffolding). Additionally, the BUY AMERICA preference does not apply to equipment and furnishings that are used at or within the finished infrastructure project but are not permanently affixed to the project or an integral part of the structure (e.g., movable chairs, desks, or computer equipment).
- c.) A Certificate of Compliance shall be furnished for Construction Materials, as part of the backup information with the billing and on material furnished according to the actual cost account agreement. The form for this certification entitled “Build America, Buy America Certificate of Compliance for Construction Materials” is attached to this agreement and shall be provided to the CITY upon completion of 80% of the agreement amount. Records to be maintained by the CONTRACTOR and the CITY for this certification shall include a signed mill test report and/or documentation by a supplier, distributor, fabricator, or manufacturer that has handled the construction materials affirming that all manufacturing, to include at least the final manufacturing process and the immediately preceding manufacturing stage has been carried out in the United States of America, except as allowed by this Section. The lack of these certifications will be justification for rejection of the construction materials or nonpayment of the work. **A COPY OF CERTIFICATE OF COMPLIANCE FOR EXECUTION IS ATTACHED AT END OF SPECIAL PROVISION 660.**

B. Sanitary Sewer System Inspection and Testing

1. Inspection will be done by the COG and the Utility Owner. Notifications to both parties must be provided two (2) days prior to any construction of water or sanitary sewer facilities.
2. The Project Manager and the Utility Owner shall be notified when specific inspections are required so that the inspection time can be scheduled.
3. Under no circumstances shall any homes, buildings or plumbing fixtures be connected to the sewer main until the sewer main is inspected and approved by the Utility Owner.
4. Upon request, the Contractor shall furnish the Inspector with appropriate copies of the manufacturer's certification that the materials to be used meet the materials requirements of these specifications. The Inspector may reject any materials not meeting specifications or any faulty or damaged materials. Any materials so rejected must be removed from the project immediately and must be prominently marked so that they can be spotted on this or any other project.
5. Authorized representatives of COG and the Utility Owner, which may include appropriate city, county, state or federal agencies, shall have access to the site for inspection at any time.
6. The Project Manager and the Utility Owner may at any time direct that he/she be allowed to see any pipe work, bedding, manhole, A&V, or other appurtenance. If the Project Manager or the Utility Owner so directs, all pipe work shall be left open until the Inspector views the work. The trench may be backfilled with the approval of the Inspector if the work is not inspected by the close of the working day. No lot services/laterals/clean-outs shall be backfilled without the approval of the Inspector. The COG inspector may direct that the Contractor notify the Utility Owner and receive inspection approval prior to concealing certain work such as manhole foundations, pipe bedding, wyes, bends, service laterals, or other appurtenances.
7. All lines designed to operate as gravity sanitary sewers and all force mains shall be successfully tested. Tests

of installed piping shall be completed as described below. All piping to be tested must satisfactorily comply with these tests before being eligible for acceptance. These tests must be performed in the presence of the City's or Utilities Owner Inspector in order for the test to be accepted as valid.

8. The Contractor shall complete the project and shall have cleaned up the job site prior to requesting a final project inspection. The Project Manager may terminate the inspection and direct further work at any time he feels that the project is not substantially complete and ready for inspection. Manhole frames and covers shall be to final grade (whatever elevation that may be: flush or 18" above grade), and cleaned out prior to scheduling the inspection. The Contractor shall furnish adequate personnel to check manholes and clean-outs and give assistance needed by the Project Manager.
9. The representative of COG and the Utility Owner will normally visually inspect all sanitary sewer lines and appurtenances for conformance to the specifications and will check the measurements shown on the As-Builts for accuracy. The representative will observe certain minimum tests as described below to insure all lines are watertight. Any of the following tests may also be required at the discretion of the Project Manager and the Utility Owner:
 - a. Measurement of Infiltration
 - b. Exfiltration Test (Low Air Pressure Test)
 - c. Deflection Test
 - d. Mandrel Test for Flexible Pipe (PVC)
 - e. CCTV Inspection
 - f. Cleansing Velocity/Slope Test
 - g. Manhole Construction
 - h. Compaction Testing

10. Minimum Tests

All new gravity sewer lines constructed will be tested for infiltration, exfiltration, and deflection. Flexible pipe sewers (PVC) shall be subjected to the Mandrel Test. The Contractor will be responsible for coordinating a CCTV inspection of the sewer main with COG. Slopes of sewer mains that are close to minimum grade will be checked to ensure cleansing velocity. COG may require manholes to be subjected to a vacuum test to check potential infiltration. The backfill in the trench above the pipeline will be subjected to compaction tests as detailed below. Any defects located during testing must be corrected before construction of the project may proceed. All costs associated with testing will be paid by the Contractor. Tests will be performed as follows:

A. Measurement of Infiltration

In no case will an infiltration rate greater than **0 GPD** per inch diameter per mile of pipe be allowed. Any visible or audible leak must be dug up and repaired. Any increase in flow between two adjacent manholes must be corrected.

B. Exfiltration Test (Low Air Pressure Test)

After completing backfill of a gravity sewer line section, conduct a low pressure air test of all pipe constructed, using methods and devices acceptable to COG. Perform such test using the following general procedures:

- i. Temporarily plug line segment between two manholes using plugs having air-tight fittings through which low pressure air can be introduced into the pipe segment being tested.
- ii. Introduce low pressure air into the test pipe segment until the internal air pressure reaches 4.5 psig above ground water pressure, if any.
- iii. Wait at least two minutes for air temperature in the test segment to stabilize while internal air pressure remains no less than 3.5 psig above ground water pressure.
- iv. Bleed internal air pressure to exactly 3.5 psig above ground water pressure.
- v. Accurately determine the elapsed time for internal pressure to drop to 2.5 psig above ground water pressure
- vi. The air test is acceptable if elapsed time is no less than shown by the following table:

Pipe Dia. Inches	Seconds Per 100 Ft. of Pipe	Pipe Dia. Inches	Seconds Per 100 Ft. of Pipe
6	17	30	85
8	23	36	102

10	28	42	119
12	34	48	136
15	43	54	153
18	51	60	170
21	60	66	187
24	68	72	204

Air leakage time is based on pipe being damp. If pipe and joints are dry, dampen line if helpful in meeting air test time requirement. Permanently correct leakage determined by air testing, and repeat operations until the inspector witnesses a successful test on each line segment.

C. Deflection Test

Every section of sewer line will be visually checked for deflection. A passing section shall show 100% of a full circle when observed from one end. This may be done using mirrors to reflect sun light or by using lamps. Any section which fails this visual test shall be further checked as follows: The section shall have water run through it sufficient to fill any sags that may exist. Then it shall have a television camera pulled through it to check for sags. Any sag holding more than one inch of water will require that the pipe be removed and replaced to proper grade after which the section shall be televised again to verify correction.

D. Mandrel Test for Flexible Pipe (PVC)

All PVC gravity sewer mains shall be subjected to the Mandrel Test. The procedure for testing flexible pipe for maximum allowable deflection shall be generally as follows. See ASTM specifications for mandrel dimensions and more details.

- i. Completely flush the line making sure the pipe is clean of any mud or trash that would hinder the passage of the mandrel.
- ii. During the final flushing of the line, attach a floating block or ball to the end of the mandrel pull rope and float the rope through the line. (A nylon ski rope is recommended).
- iii. After the rope is threaded through the line, connect the pull rope to the mandrel and place the mandrel in the entrance of the pipe.
- iv. Connect a second rope to the back of the mandrel. This will enable the mandrel to be retrieved if excessive deflection is encountered.
- v. Draw the mandrel through the sanitary sewer line.
- vi. An increasing resistance to pull is an indication of excessive deflection. If this occurs mark the rope to note the location. Televising the sanitary sewer section to identify the extent of the problem and develop a plan, subject to COG approval, for correcting the problem.
- vii. Retest after correcting the problem

E. CCTV Inspection

All sewer lines shall be televised and a film of the inspection made before the final plat is signed and again before the final acceptance of the sewer lines. Prior to televising the mains, the mains shall be flushed with water so that sags are apparent. The Contractor shall be responsible for coordinating the CCTV inspection with the City. Any faulty pipe noted such as sagged pipes, broken pipes, bad joints, etc., will be dug up and will be corrected. Internal grouting to repair new lines will not be allowed. After correction of the discrepancies, the line will be re-televised.

F. Cleansing Velocity / Slope Test

The Inspector shall observe the Contractor's survey of the inverts to check the grade of the sewer mains. If the sewer main has been installed flatter than the minimum grade required to provide cleansing velocity, the line shall be dug up and reinstalled at the proper grade.

G. Manhole Construction

Every manhole will be visually inspected to check for plugging of lift holes, use of connecting boots, use of joint material, leakage, proper invert construction, proper setting of frame and cover. Vacuum testing of the manhole structure will be required at the City's discretion.

H. Compaction Testing

Compaction testing will be required for sanitary sewers constructed in paved areas or where pavement is planned. A minimum of five tests per 1,000 feet of sanitary sewer will be conducted at varying depths. COG may require additional compaction tests be conducted in any other areas where the City's Inspector suspects the backfill has not been compacted in accordance with these specifications. All trenches failing to meet compaction requirements shall be excavated and recompact and retested. This process shall continue until a passing test is achieved. All costs of compaction testing shall be the responsibility of the Contractor.

Any defects found by any of these tests must be corrected before construction of the project may conclude.

660.3.08 Contractor Warranty and Maintenance

- A. General Provisions 101 through 150.
- B. All water and sanitary sewer structures erected under this contract shall be fully guaranteed by the Contractor for a period of two years from the date of final inspection and acceptance by the Project Manager and Utility Owner. The date that some or all of the water or sanitary sewer system is placed into service has no relation with the date that the guarantee begins. This guarantee shall cover any and all defects in workmanship or materials that may develop in this specified time, and any failure in such workmanship or materials shall be repaired or replaced to the satisfaction of the Utility Owner by the Contractor at his own expense.
- C. All equipment of whatever nature incorporated in the work covered by this contract shall carry the same guarantee as outlined above for construction. Failure of any equipment or part thereof within the specified time shall be corrected to the satisfaction of the Utility Owner, at the Contractor's expense. It is the intent of these specifications that all pipe lines, both underground and above ground, together with all appurtenances attached thereto and any driveways or other property restoration items, under this contract, shall be classified as structures. Neither the final certificate of payment nor any provision in the contract documents nor partial or entire occupancy of the premises by the Utility Owner shall constitute an acceptance of work not done in accordance with the contract documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.

660.4 Measurement

Incidentals including excavation, backfilling, testing, pavement removal, and other incidentals required for the installation of sanitary sewer items are not measured for separate payment and shall be included in the applicable Pay Items below. Any item of work required by the plans but not listed as a pay item shall be covered by the pay items listed for measurement below. Sanitary Sewer mains, service laterals, and other associated Items of work in this Specification, complete, in place, and accepted, are measured for payment as follows:

- A. Adjust Existing Sanitary Sewer Manhole Frame and Cover to Grade

Payment for adjusting existing sanitary sewer manhole frames and covers to final grade shall be made at the unit price bid per each frame and cover set to the final grade. The unit price bid shall include all materials, tools, equipment, traffic control and labor necessary to complete the work as shown on the detailed drawings. Care should be taken to prevent any debris from falling into the manhole. Where excess stone, brick, mortar, etc. has fallen into the manhole due to the lowering or raising of the frame and cover, the Contractor shall not be entitled to receive payment for the raising of the structure until the objectionable debris has been removed by the Contractor. The use of "Rite-Height" Adapters or similar inserts are not allowed to be used in lieu of raising the frame and cover. Only one lump sum payment shall be made to the Contractor per manhole, regardless of how many minor adjustments will be necessary to get the manhole cover flush with the final grade. New/Proposed manholes shall not be included in the count for quantities of this item, as this item covers only existing (existing before the bid of this project) manhole frames and covers that require a height adjustment.

- B. GPS Data Collection and Submittal

The collection, preparation, and submittal of required Record Drawing data as described in Section 660.1.03 above shall be considered incidental to the water and sewer work required for this project and no extra payment shall be made for the survey work required and information gathered and submitted to the Utility Owner.

- C. Rock Excavation for Sanitary Sewer Installation

Solid Rock excavated and removed in accordance with Utility Owner specifications shall be measured per cubic yard. Payment shall be made to the Contractor at the Unit Price bid per cubic yard. To be paid for, material

considered solid rock must meet the definitions for solid rock included in the Facility Owner's specifications. Solid Rock excavated and removed in accordance with Utility Owner specifications shall be measured and paid for at the unit price bid per cubic yard for solid rock in the path of the new sanitary sewer main. Rock excavated shall be removed and disposed of at a site away from the backfill for the sanitary sewer main, i.e., the rock shall not be used for backfill in any COG trench. Payment width for solid rock excavation is limited to the diameter of the sanitary sewer main plus 4 feet.

D. Traffic Control

Measures used for traffic control shall be in accordance with the Georgia DOT MUTCD and all traffic control shall be implemented in accordance with the City and GDOT requirements. Payment for all traffic control measures shall be included in the Traffic Control bid item, including all lane closures, flagmen, sign boards, cones, jersey barriers, detours, signage and other incidentals required by the government entity controlling the right-of-way.

660.4.01 Limits

General Provisions 101 through 150.

660.5 Payment

The Contract Unit Price for each Item, complete and accepted, shall include all costs incidental to the construction of the Item according to the Plans and as specified in this Section. The unit prices bid shall include due allowance for the salvage value of all materials removed from existing or temporary lines and not installed in the completed work. All such surplus items shall become the property of the Contractor unless such surplus items are specified to be salvaged. Payment for any Item listed below is full compensation for the Item or Items complete in place. Items of construction required but not included herein as a pay item shall not be measured for payment and shall be included in the costs/payments for the pay items listed.

A. Adjust Existing Sanitary Sewer Manhole Frame and Cover to Grade

Payment for adjusting existing sanitary sewer manhole frames and covers to final grade shall be made at the unit price bid per each frame and cover set to the final grade. The unit price bid shall include all materials, tools, equipment, traffic control and labor necessary to complete the work as shown on the detailed drawings. Care should be taken to prevent any debris from falling into the manhole. Where excess stone, brick, mortar, etc. has fallen into the manhole due to the lowering or raising of the frame and cover, the Contractor shall not be entitled to receive payment for the raising of the structure until the objectionable debris has been removed by the Contractor. The use of "Rite-Height" Adapters or similar inserts are not allowed to be used in lieu of raising the frame and cover. Only one lump sum payment shall be made to the Contractor per manhole, regardless of how many minor adjustments will be necessary to get the manhole cover flush with the final grade. New/Proposed manholes shall not be included in the count for quantities of this item, as this item covers only existing (existing before the bid of this project) manhole frames and covers that require a height adjustment.

B. GPS Data Collection and Submittal

The collection, preparation, and submittal of required Record Drawing data as described in Section 660.1.03 above shall be considered incidental to the water and sewer work required for this project and no extra payment shall be made for the survey work required and information gathered and submitted to the Utility Owner.

C. Rock Excavation for Sanitary Sewer Installation

Solid Rock excavated and removed in accordance with Utility Owner specifications shall be measured per cubic yard. Payment shall be made to the Contractor at the Unit Price bid per cubic yard. To be paid for, material considered solid rock must meet the definitions for solid rock included in the Facility Owner's specifications. Solid Rock excavated and removed in accordance with Utility Owner specifications shall be measured and paid for at the unit price bid per cubic yard for solid rock in the path of the new sanitary sewer main. Rock excavated shall be removed and disposed of at a site away from the backfill for the sanitary sewer main, i.e., the rock shall not be used for backfill in any COG trench. Payment width for solid rock excavation is limited to the diameter of the sanitary sewer main plus 4 feet.

D. Traffic Control

Measures used for traffic control shall be in accordance with the Georgia DOT MUTCD and all traffic control shall be implemented in accordance with the City and GDOT requirements. Payment for all traffic control measures shall be included in the Traffic Control bid item, including all lane closures, flagmen, sign boards, cones, jersey barriers, detours, signage and other incidentals required by the government entity controlling the right-of-way.

660.5.01 Adjustments

General Provisions 101 through 150.

660.6 OTHER REQUIREMENTS

No part of these specifications is intended to relieve the Contractor of his responsibility to comply with requirements of the Georgia D.O.T., the Georgia DNR, the NRCS, the USACOE, the EPA, the EPD, Cobb County, City of COG or other appropriate regulatory agency.



Original 12/22/2022

BUILD AMERICA, BUY AMERICA CERTIFICATE OF COMPLIANCE FOR CONSTRUCTION MATERIALS

Date _____, 20_____ We, __

(UTILITY/RAILROAD OWNER)

Address: _____

Hereby certify that we are in compliance with the "BUILD AMERICA, BUY AMERICA" ("BABA") requirements of the Infrastructure Investment and Jobs Act ("IIJA"), as set forth under Pub. L. No. 117-58, §§ 70901-52, and that all construction materials as defined under BABA furnished for the referenced project, have been produced in the United States of America.

P.I. No. 0015042- _____
COBB COUNTY

We further certify that as required, we will maintain all records and documents pertinent to the BABA requirements, at the address given above, for not less than 3 years from the date of project completion and acceptance, if we do not provide the records and documents during invoicing. If all records and documents pertinent to the BABA requirements are delivered during invoicing, then we will maintain all records and documents pertinent to the BABA requirements for not less than three (3) years from the date conditional final payment has been received by the COMPANY. These files will be available for inspection and verification by the Department and/or FHWA.

Signed by _____ Title _____
(Officer of Organization)

Subscribed and sworn to before me this _____ day of _____, _____.

Notary Public/Justice of the Peace

My Commission Expires: _____