

# **EXHIBIT 1**

## **TECHNICAL SPECIFICATIONS**

### **Sanitary Sewer Evaluation Study for Ongoing Sewer Assessment and Rehabilitation Program (OSARP)**

**DeKalb County  
Department of Watershed Management**

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RFP 17-500456

Sanitary Sewer Evaluation Study for Ongoing Sewer Assessment and Rehabilitation Program (OSARP)

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**SECTION 01015  
CONTROL OF WORK**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

This section includes the general use of the site including properties inside and outside of the right of way, work affecting existing utilities, roadways, streets, driveways, and traffic patterns. This section also includes requirements for notification to adjacent landowners and occupants.

**1.02 PERSONNEL – COOPERATION WITHIN THIS CONTRACT**

- A. The Contractor shall furnish the manpower and equipment efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time stipulated in the Contract Documents. If at any time such project progression appears to the Owner to be inefficient, inappropriate, or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he or the Program Manager may order the Contractor to increase the project equipment and/or manpower, and the Contractor shall conform to such order. Failure of the Owner to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.
- B. All firms or persons authorized to perform any work under this Contract shall cooperate with the General Contractor and his subcontractors or trades, and shall assist in incorporating the work of other trades where necessary or required.
- C. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or as directed by the Owner or Program Manager.

**PART 2 – PRODUCTS**

(Not Used)

**PART 3 – EXECUTION**

**3.01 INSTALLATION**

**A. PRIVATE LAND**

The Contractor shall not enter or occupy any private land outside of easements, except by permission of the property owner and the County per the Public Notification requirements listed in all applicable Specification Sections.

**B. MAINTENANCE OF TRAFFIC**

- 1. Unless permission to close the street is received in writing from the proper authority, all excavated material shall be placed so vehicular and pedestrian traffic may be maintained at all times. If the Contractor's operations cause traffic hazards, he

shall repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety.

2. Detours around construction or assessment will be subject to the approval of the Owner and/or Program Manager. Where detours are permitted, the Contractor shall provide all necessary barricades and signs as required to divert the flow of traffic. While traffic is detoured, the Contractor shall expedite construction operations to minimize impacts to the flow of traffic. Allowable periods when traffic is being detoured will be strictly controlled by the Owner.
3. The Contractor shall take precautions to prevent injury to the public due to open trenches. Night watchmen may be required where special hazards exist, or police protection (jurisdiction specific) provided for traffic while work is in progress. The Contractor shall be fully responsible for damage or injuries whether or not police protection has been provided. Jurisdictional specific police officers will be required for traffic control associated with work in signalized intersections and on major and certain minor thoroughfares.

C. WORK WITHIN GDOT RIGHT-OF-WAY

1. All roadway restoration shall be done in accordance with the lawful requirements of the authorities within whose jurisdiction such pavement is located.
2. All highway utilities and traffic controls are to be maintained and work shall conform to the rules and regulations of the authorities, including the use of standard signs.
3. The Contractor shall furnish all such bonds or checks required by the highway authorities to ensure proper restoration of paved areas.

D. CARE AND PROTECTION OF PROPERTY

1. The Contractor shall be responsible for the preservation of all public and private property and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done.
2. All sidewalks disturbed by the Contractor's operations shall be restored to their original condition by the use of similar or comparable materials. All curbing shall be restored in a condition equal to the original construction and in accordance with the best modern practice.
3. Along the location of this work all fences, walks, bushes, trees, shrubbery, and other physical features shall be protected and restored in a thoroughly workmanlike manner. Fences and other features removed by the Contractor shall be replaced in the original location as soon as conditions permit. All grass areas beyond the limits of construction damaged by the Contractor shall be regraded and seeded.
4. The protection, removal, and replacement of existing physical features along the line of work shall be a part of the work under the Contract, and all costs in connection therewith shall be included in the unit and/or lump sum prices established under the items in the Contract Documents.

E. PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

1. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to

buildings, utilities in the street, such as pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.

2. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be considered as extra work and all costs in connection therewith shall be as outlined in the Contract Documents.
3. If, in the opinion of the Owner, permanent relocation of a utility is required, he may direct the Contractor, in writing, to perform the work. Work so ordered will be paid for at the Contract unit prices, if applicable, or as extra work under the General Conditions. If relocation of a privately owned utility is required, the Owner will notify the Utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the Owner and Utility, and shall have no claim for delay due to such relocation. The Contractor shall notify public utility companies in writing at least 48 hours (excluding Saturdays, Sundays, and legal holidays) before excavating in any public way.

#### F. WATER FOR CONSTRUCTION PURPOSES

Water required for cleaning and/or construction/assessment shall be the responsibility of the Contractor. However, the Contractor may request to use County water through dedicated hydrants as approved by the Count. The approval of the County shall be obtained BEFORE County water is used. There shall be installed in each and every connection to the County's potable water supply, a backflow preventer and calibrated metering device meeting the requirements of the County. The Contractor shall be responsible for obtaining a hydrant meter along with any applicable hydrant meter fees from the Owner for this water use. The Contractor shall report water usage on a monthly basis and/or as required of the fire hydrant program. At a minimum, water consumption and the corresponding meter serial number shall be reported. The Contractor shall be responsible for all costs, excluding water consumption fees, associated with hydrant meter(s).

#### G. MAINTENANCE OF FLOW

The Contractor shall at his own cost, provide for the flow of sewers, drains, and water courses interrupted during the progress of the work. The entire procedure of maintaining existing flow shall be fully discussed with the Owner well in advance of the interruption of any flow.

### 3.02 WORK COORDINATION

- A. The Contractor shall coordinate the Work with third parties (such as public utilities, other DeKalb County departments, and emergency service providers) in areas where such parties may have rights to underground property or facilities; and request maps or other descriptive information as to the nature and locations of such underground facilities or property.
- B. The Contractor shall also coordinate the Work with owners of private and public property where access is required for the performance of the work. Legal access will be acquired by the Contractor in accordance with the Contract Documents
- C. The Owner, through the Program Manager, will work with the Contractor to assign and schedule the work in a logical and efficient format. However, all items in this contract shall be priced so each item can be assigned independently or combined with other items at the Owner's sole

discretion in regard to both quantity and scope. There shall be no consideration of any claim for extra payment arising from a decision by the Owner to assign potential work items under this contract in any combinations or in combination with another contract utilizing alternates by the Department of Watershed Management at the prices specified herein.

### **3.03 CONDITIONS AT THE SITES**

- A. The Contractor shall make all necessary investigations to determine the existence and location of underground utilities and surface impacts that may be caused due to assessment activities.
- B. The Contractor will be held responsible for any damage to and for maintenance and protection of existing utilities, structures, and personal property.
- C. Nothing in these Contract Documents shall be construed as a guarantee that utilities are not located within the area of operations.

### **3.04 CLEANUP**

During the course of the work, the Contractor shall keep the site of his operations in as clean and neat a condition as possible. The Contractor shall dispose of any and all residues resulting from the construction work and, at the conclusion of the work; the Contractor shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operation. The Contractor shall leave the entire work site in a neat and orderly condition.

**END OF SECTION**

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**SECTION 01020**  
**ALLOWANCES**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

This section includes administrative and procedural requirements governing allowances.

**1.02 QUALIFICATIONS AND REQUIREMENTS**

- A. Contractor agrees any contingency or other allowance, if any, is for the sole use of the Owner to cover unanticipated costs for additional related work.
- B. Selected materials and equipment, and in some cases, installation is included in Contract Documents by cash allowances. Allowances are established to defer selection or scope until more information is available. Other requirements will be issued by a Change Order.
- C. Allowances are included in the Bid Tab for miscellaneous modifications, additional inspection and testing, additional associated work, and other unforeseen conditions. Inspection and testing allowances include the cost of engaging any third party inspection or testing agency if required, along with costs for reporting results as well as costs for actual inspections and tests.
- D. Procedures for submitting and handling Change Orders are included in General Conditions of these Contract Documents.
- E. The allowance does not include incidental labor required to assist the Owner, or costs for retesting on failure of previous tests and inspections. The allowance does not include costs of services not required by Contract Documents.
- F. Prior to final payment, an appropriate Change Order will be issued as recommended by the Owner to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.
- G. Any unused allowances will be returned to the Owner by deductive Change Order.

**1.03 SCHEDULE OF ALLOWANCES**

- A. Contingency Allowance:
  - 1. This item shall consist of miscellaneous work to be accomplished at the direction of the Owner. It shall include items of work consistent with and related to the project which may be necessary to the successful completion of the contractual agreement. It is expected the work under this item will be accomplished utilizing pay items indicated in the Bid Tab.
  - 2. All work performed under this section shall comply with the various sections of these specifications as appropriate to the specific items involved. This work shall be further described, by the Owner, in written form and/ or supplemental exhibits. In any event, no work will be allowed under this section without the prior written approval of the Owner.
- B. Cash Allowance for Additional Work:

This allowance provides for related sewer assessment work to be performed in conjunction with this project at the direction of the Owner. All work performed under this section shall comply with the various sections of these specifications and industry standards which are appropriate to the specific items involved. This work shall be further described, by the Owner, in written form and/or on modifications to the Contract Documents or supplemental exhibits. In any event, no work will be allowed under this section without the prior written approval by the Owner.

C. Owner Directed Site Restoration/Landscaping/Access/Erosion Control (County/Private Property):

1. This item directed by the Owner shall consist of miscellaneous work ancillary to the contracted work to be accomplished, said work being outside the scope of the bid items. This item will be restricted to work associated with clearing, access road construction, erosion and sediment control, and site restoration.
2. This item will not be considered for use for payment of items included in the scope of work for the various pay items under the Contract, i.e., access route construction for areas accessible by easement machine, etc.
3. Each request for use of the allowance pay item shall be submitted in the form of a Request for Information (RFI) form and will only be assigned and approved upon completion of an approved Request for Quote (RFQ)
4. For any unused allowance and prior to final payment, an appropriate Change Order will be issued as recommended by the Program Manager to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted
5. All work performed under this section shall comply with the various sections of these specifications as appropriate to the specific items involved. This work shall be further described, by the Owner, in written form and/ or supplemental exhibits. In any event, no work will be allowed under this section without the prior written approval of the Owner.

#### **1.04 SUBMITTALS**

- A. Submit proposals for purchase of products or systems included in allowances, in the form of Change Orders.
- B. Submit invoices or delivery slips to indicate quantities of materials delivered for use in fulfillment of each allowance.
- C. At Project Closeout, the unused amounts remaining in the various allowances will be credited to the Owner by Change Order.

#### **PART 2 – PRODUCTS**

(Not Used)

#### **PART 3 – EXECUTION**

(Not Used)

**END OF SECTION**

**SECTION 01025**  
**MEASUREMENT AND PAYMENT**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

Methods of measurement and payment for items of work under the Bidder's Unit Price Form.

**1.02 SUMMARY**

- A. The total bid price shall cover all work required by the Contract Documents. All costs in connection with the proper and successful completion of the work, including all materials, equipment, supplies, and appurtenances; providing all equipment and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in the unit and lump sum prices bid.
- B. All work not specifically set forth as a pay item in the Bidder's Unit Price Form shall be considered subsidiary obligations of Contractor and all costs in connection therewith shall be included in the prices bid.
- C. All estimated quantities stipulated in the Bidder's Unit Price Form or other Contract Documents are approximate and are to be used only:
  - 1. As a basis for estimating the probable cost of the Work.
  - 2. For the purpose of comparing the bids submitted for the Work.
- D. The basis of payment for work and materials will be the actual amount of work done and materials furnished. Payment for assessment and assessment-related activities or any other items of work for payment will be made on a linear foot, vertical foot, square foot, square yard, cubic yard, or each based on the Contractor's measurement, contingent on verification by the Owner or Owner's Representative. Contractor agrees he will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished.
- E. Pay requests for work performed shall be itemized by asset. The pay request should list each asset by ID number, describe the work performed per the payment bid form, provide the unit cost, and provide the extended cost. When seeking partial payment where work was attempted and could not be completed, adequate information should be provided on the pay request to justify the amount requested. Work performed on pipes should be listed in a separate table from work performed on manholes. The Program Manager will provide an example of the table format.
- F. Contractor agrees that the allowance is for the sole use of Owner to cover unanticipated costs associated with access and site restoration needs associated with the Work. .
- G. When submitting pay requests for periodic payment, the following documentation should be submitted at a minimum:
  - 1. Application Checklist
  - 2. Application for Payment Certification/Summary
  - 3. Schedule of Values Indicating Percent Complete per Pay Item.

4. Itemized Asset Spreadsheet (XML File) Indicating Work Performed at the Asset Level as described above. File to be provided in both Hard and Electronic Copy Format.
  5. Monthly Progress Narrative
  6. Copy of LSBE and Utilization Report/s
  7. Updated Schedule for Assigned Work Activities
  8. Photo Documentation of Construction Activities Illustrating Pre and Post Conditions for Division 2 Work and Other Extraordinary Findings.
- H. Additional instructions and/or requirements may be provided by the Program Manager at the project Kick-off meeting.

### **1.03 MEASUREMENT AND PAYMENT**

- A. GPS Locate and Data Collection – Manhole, Bid Pay Item 01056-1: Measurement for payment will be per each (EA). Payment will constitute full compensation to locate, take coordinates, and provide attribution information for each located manhole (and associated sewer line assets as applicable) per the direction provided in Section 01056. This payment includes compensation for all digital deliverables outlined in Section 01056.
- B. Closed Circuit Television (CCTV) Inspection, Sewer, Internal Pipe Inspection less than 18” Diameter, Bid Items 01510-1 to 01510-8.2: Measurement for payment will be per linear foot (LF) from center of manhole to center of manhole. Payment will constitute full compensation to perform a CCTV sewer pipe inspection on sanitary sewer mains as specified. Defect coding, header data, and coding of service lateral locations are required. There will be no separate payment made for light cleaning or data delivery. Payment shall only be made for the footage of sewer assessment between the manholes. Maintenance of traffic and associated traffic control measures required for the work shall be included in the unit price. Costs shall include, but are not limited to, labor, equipment, transportation, setup, tools, public notification, data management and all other related procedures and materials necessary to complete the inspections, in accordance with Section 01510.
- C. Closed Circuit Television (Pre-CCTV) Inspection, Sewer, Internal Pipe Inspection up to and including 36” Diameter, Bid Items 01510-8.1 – 01510-8.2: Measurement for payment will be per linear foot (LF) of line televised. Payment will constitute full compensation to perform a CCTV sewer pipe inspection on sanitary sewer mains as specified by the Program Manager. Defect coding, header data and coding of service lateral locations are not required. No Cleaning will be required. There will be no separate payment for data delivery. Payment shall only be made for the footage of sewer assessment between the manholes. Maintenance of traffic and associated traffic control measures required for the work shall be included in the unit price. Costs shall include, but are not limited to, labor, equipment, transportation, setup, tools, public notification, data management and all other related procedures and materials necessary to complete the inspections, in accordance with Section 01510 with the exclusions delineated above. This item will be utilized by the Program Manager as a pre-CCTV inspection to record pipe maintenance conditions. A follow-up CCTV will be required on the pipe as per Section 1.03, subparagraph B.
- D. Remove Protruding Connection, Bid Item 02956-1: Measurement for payment will be per each (EA) for each protruding connection removed. Payment will constitute full compensation for cutting and/or grinding down protruding service laterals, including, but not limited to, labor, equipment, transportation, tools, and all other related procedures and materials necessary to

produce the results specified in Section 02956. Removal of protruding connections will be done to remove obstructions and/or upsized sewers. Contractor will advise the Program Manager in writing prior to proceeding.

- E. Manhole Condition Assessment, Bid Item 01530-1: Measurement for payment will be per each (EA) manhole assessed. Payment will be full compensation for inspecting the full depth of the manhole, top and bottom conditions, and furnishing all labor, tools, equipment and assessment necessary to perform all work. Payment shall not be made until electronic data files and reports are delivered and show complete and accurate information.
  
- F. Bypass Pumping on 0" to and < 18" Diameter Pipe, Bid Item 01520-1 – 01520-2: Measurement for payment will be per linear feet (LF) of pipe segment for the size and flow classification category of bypass pumping and temporary flow control. Payment will be full compensation for furnishing all labor, materials, equipment, set-up, removal and incidentals necessary to produce the results specified in Section 01520.
  
- G. Owner Directed Work: Site Restoration/Landscaping/Access/Erosion Control (County/Private Property) Allowance: Provides for access road construction, major erosion and sediment control BMP installation, major site restoration work on private or County property outside the scope of the bid items or as directed by the Project Manager. Site restoration shall only be performed as directed where property has been damaged during the course of the work, not due to Contractor negligence. Each request for use of the allowance pay item shall be submitted in the form of a Request for Information (RFI) form and will only be assigned and approved upon completion of an approved Request for Quote (RFQ). For any unused allowance and prior to final payment, an appropriate Change Order will be issued as recommended by the Program Manager to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted. The following Items will not be measured for payment, but will be considered under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property) at the price agreed upon between the Owner and Contractor:
  - 1. Erosion Control Items: No measurement for payment will be made. No payment will be made for any portion of the Project when temporary erosion and sedimentation controls are not properly maintained. Quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property). Erosion and sedimentation control measures shall comply with the requirement of Sections 02110 and 02276 of these Specifications; the Georgia Erosion and Sedimentation Act of 1975, as amended; the Manual for Erosion and Sediment Control of Georgia, latest edition; and local soil erosion and sedimentation control ordinances.
  - 2. Easement Access Road: No Measurement for payment will be made. Where access is not obtainable by other means, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property).
  - 3. Easement Clearing,: No Measurement for payment will be made. Where clearing is necessitated, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property).
  - 4. Tree Protection Fence: No Measurement for payment will be made. Where Tree Protection Fence is necessitated, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property), installed

and maintained per Section 02110. Payment will constitute full compensation for all costs associated with tree protection fencing, including installation, maintenance, repair, and removal. Fence installation associated with Access Road construction (Item I) will not be considered for payment under this item.

5. Tree/Shrubbery Restoration: No Measurement for payment will be made. Where Tree/Shrubbery Restoration is necessitated, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property). Measurement for payment will be per each (EA) tree or bush removed and replaced for either native or ornamental types. Payment will constitute full compensation for removing and replacing trees or shrubbery on private property. Replacement may include removal and replanting, or replacing with new (as directed by the Owner) in accordance with Section 02110.
6. Chain Link Fence Removal & Replacement: No Measurement for payment will be made. Where removal of fencing is necessitated, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property). Payment will constitute full compensation for removing and replacing chain link fence, in kind, on public or private property in accordance with Section 02110. Fence work associated with Access Road construction (Item I) will not be considered for payment under this item.
7. Wood Fence Removal & Replacement: No Measurement for payment will be made. Where removal of fencing is necessitated, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property). Payment will constitute full compensation for removing and replacing wood fence, in kind, on public or private property in accordance with Section 02110.
8. Riprap: No measurement for payment will be made. Where rip rap is necessitated, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property). The Contractor will provide a cost breakdown to the Project Manager of all costs and quantities associated with installation of riprap in accordance with applicable specifications suitably installed and maintained per the Manual for Erosion and Sediment Control of Georgia, latest edition. Payment will constitute full compensation for all costs associated with riprap installation, including filter fabric underlayment at a minimum 18 inch depth, or as directed by the Owner. When crossing a stream or ditch, the quantity eligible for payment shall be limited to 10 feet upstream and 10 feet downstream of top of disturbed area and from five feet from the top of bank, across a creek or ditch, banks and bottoms, to five feet beyond top of bank. Any other areas at creeks or ditches disturbed by the Contractor requiring riprap shall be riprapped at no additional cost to the Owner.
9. Check Dam (Hay Bales): No Measurement for payment will be made. Where Check Dams are necessitated, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property). The Contractor will provide a cost breakdown to the Project Manager of all costs and quantities associated with installation of Check Dam in accordance with applicable specifications suitably installed and maintained per the Manual for Erosion and Sediment Control of Georgia, latest edition. Payment will be via the "Owner Directed Site Restoration/Landscaping/Access (County/Private Property) Allowance.

Payment will constitute full compensation for all costs associated with check dams, including grading, installation, maintenance, repair, and removal.

10. Inlet Sediment Trap, No measurement for payment will be made: The Contractor will provide a cost breakdown to the Project Manager of all costs and quantities associated with installation of Inlet Sediment Trap in accordance with applicable specifications suitably installed and maintained per the Manual for Erosion and Sediment Control of Georgia, latest edition. Payment will be via the "Owner Directed Site Restoration/Landscaping/Access (County/Private Property) Allowance. Payment will constitute full compensation for all costs associated with inlet sediment traps at existing storm water inlet structures, including installation, maintenance, repair, and removal. Contractor shall be responsible for installing the number of sedimentation traps to adequately capture silt, thus minimizing silt leaving construction site.
11. Temporary Creek Crossings: No measurement for payment will be made: The Contractor will provide a cost breakdown to the Project Manager of all costs and quantities associated with installation of Temporary Creek Crossing in accordance with applicable specifications suitably installed and maintained per the Manual for Erosion and Sediment Control of Georgia, latest edition. Payment will be via the "Owner Directed Site Restoration/Landscaping/Access (County/Private Property) Allowance. Payment will constitute full compensation for all costs associated with temporary stream (creek) crossings, each up to 40 foot span as measured from top of bank to top of bank, and shall include all necessary materials and labor to install, maintain, remove, and dispose.
12. Sodding: No Measurement for payment will be made. Where Sodding is necessitated, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property). Payment will constitute full compensation for fine grading, fertilizing, and sodding previously landscaped areas on public or private property in accordance with Section 02485. Disturbed areas shall be sodded only when directed to do so by the Owner.
13. Seeding: No Measurement for payment will be made. Where seeding is necessitated, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property). Payment will constitute full compensation for fine grading, fertilizing, and sodding previously landscaped areas on public or private property in accordance with Section 02486. Grass seeding shall match in kind the existing adjacent grass of previously landscaped areas. .No separate payment will be made for required soil preparation and/or topsoil.
14. Silt Fence: No Measurement for payment will be made. Where Silt Fence is necessitated, quantities for payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property).for Type C silt fence, either single row or double row, suitably installed and maintained per the Manual for Erosion and Sediment control of Georgia, latest edition. Payment will constitute full compensation for all costs associated with silt fence, including installation, maintenance, repair, and removal.
15. Road Pavement Patch: No Measurement for payment will be made. Where Road Pavement Patch is necessitated, payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property). Payment will constitute full compensation for removal and disposal of existing pavement and placement of

new pavement including restoration of existing pavement markings. The price shall include, but not be limited to, labor, equipment, materials, transportation, permit acquisition and tools required to perform the work in accordance with the Georgia Department of Transportation Standard Patching Details (Number 1401). (Note: A copy of the Standard Details is available online at <http://www.dot.state.ga.us/>). Maintenance of traffic and associated traffic control measures required for the work shall be included in the unit price bid.

16. Sewer, External Point Repair: No Measurement for payment will be made. Where External Point Repairs are necessitated, payment shall be based upon actual quantities authorized by the Owner to be paid under the Allowance for Owner Directed Site Restoration/Landscaping/Access (County/Private Property). External Point Repairs, All Diameters, All Pipe Materials, All Depth Categories, Bid Payment will constitute full compensation for each external point repair including, but not limited to, labor, materials, equipment, dewatering, pavement saw cutting, excavation, removing, and disposing excavated materials if replaced with imported material per Section 02324, shoring, disposing all waste materials, transportation, safely maintaining open pit until repairs are completed, installing new piping, installing flexible repair couplings, post-construction CCTV quality control inspection, and backfilling per Section 02730. Payment may be withheld due to failure to submit all post-installation CCTV video and other required quality control documentation for the work. No separate payment shall be made for concrete collars and couplings or rebuilding pipe penetrations and existing manhole inverts considered incidental to the Work. The point repair depth shall be considered the same as the average sewer main depth for measurement and payment purposes regardless of the actual excavation depth required. The average sewer main pipeline depth shall as measured from the pipe invert to the existing ground level at the upstream and downstream manhole. Each point repair shall include replacing a section of sewer main pipe up to twelve (12) linear feet in length, replacing up to one (1) service reconnection including furnishing and installing necessary service connection pipe, fittings and flexible coupling for a complete reinstatement of the sewer collection piping assembly. Payment will not be remitted to repair any damage to the surrounding areas caused by the Contractor in performance of the Work unless specifically authorized in writing by the Owner's Representative. Traffic control measures for work in low-traffic or residential areas shall be included in the unit price. Traffic control measures required for work in high-traffic or commercial areas will be paid when authorized by the Owner's Representative.

- I. Adjusting Manhole Height Up To 12", Bid Item 02607-1: Measurement for payment will be per each (EA) manhole for removing the casting frame and building up the chimney section of the manhole no more than 12 inches (reuse existing casting frame and cover or substitute frame and cover provided by Owner). Payment will constitute full compensation for all costs for uncovering and/or adjusting each manhole to grade or higher. All associated costs will be included in the unit price bid, including, but not limited to, labor, equipment, transportation, tools, and all other related procedures and materials necessary to produce the results specified in Section 02607. Contractor will advise the Program Manager in writing prior to proceeding. There shall be no distinctions made for diameter of the manhole or its material composition. No separate payment shall be made for resetting existing manhole frames and covers. This work shall be considered an integral part of raising manholes. Maintenance of traffic and associated traffic control measures required for the work shall be included in the unit price bid.

- J. Adjusting Manhole Height Greater Than 12", Bid Item 02607-2: Measurement for payment will be per vertical foot (VF) of manhole replaced exclusive of the manhole frame height. No separate



payment will be made for 12” or less height adjustment Bid item 02607-1 above. Payment will constitute full compensation for all costs for uncovering and/or adjusting each manhole to grade or higher will be included in the unit price, including, but not limited to, labor, equipment, transportation, tools, and all other related procedures and materials necessary to produce the results specified in Section 02607. The Contractor will advise the Program Manager in writing prior to proceeding. There shall be no distinctions made for diameter of the manhole or its material composition. No separate payment shall be made for resetting existing or new Owner provided manhole frames and covers. This work shall be considered an integral part of raising manholes. Maintenance of traffic and associated traffic control measures required for the work shall be included in the unit price bid.

- K. Locate & Expose Manhole, Street & Non-Street, Bid Items 02607-4 & 5: Measurement for payment will be per each (EA) buried manhole located and exposed. There shall be no distinctions made for the diameter or invert depth of the manhole exposed. Manholes located beneath brick, cobbles, concrete or asphalt pavement sections will be considered “beneath street section”. All other locations shall be considered “non-street section.” Payment shall be made at the bid price for each buried manhole acceptably located and exposed and will constitute full compensation for furnishing all labor, materials, tools, and equipment necessary to perform all work. Buried manholes in approximate proximity of location indicated on provided County records or marked in the field will not be paid for as locate & Expose, but will be covered under other items (i.e., Adjust MH Height).
- L. Owner Directed Site Restoration/Landscaping/Access/Erosion Control (County/Private Property) Allowance, Bid Item 01020-4: Provides for access road construction, major erosion and sediment control BMP installation, major site restoration work on private or County property outside the scope of the bid items or as directed by the Project Manager. Site restoration shall only be performed as directed where property has been damaged during the course of the work, not due to Contractor negligence. Each request for use of the allowance pay item shall be submitted in the form of a Request for Information (RFI) form and will only be assigned and approved upon completion of an approved Request for Quote (RFQ). For any unused allowance and prior to final payment, an appropriate Change Order will be issued as recommended by the Program Manager to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted

#### **1.04 ALLOWANCES**

- A. The Contractor shall include in their Bidder’s Unit Price Form all allowances stated in the Contract Documents.
- B. The Contractor shall cause work covered by these allowances to be performed for such amounts as estimated by the Contractor and agreed upon and directed by the Owner. However, the Contractor will not be required to employ persons against whom a reasonable objection is made. If the cost, when determined, is more than or less than the allowance, the Contract sum shall be adjusted via Change Order as an additional payment to the Contractor or as a credit to the Owner, accordingly.
- C. Schedule of Allowances
  - 1. Contingency Allowance: As Specified in Section 01020
  - 2. Cash Allowance for Additional Work: As Specified in Section 01020
  - 3. Owner Directed Site Restoration/Landscaping/Access/Erosion Control (County/Private Property): As Specified in Section 1020.

**END OF SECTION**

**SECTION 01030**  
**SPECIAL PROJECT PROCEDURES**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

This section includes responsibilities and requirements of the Contractor specific to this project.

**PART 2 – PRODUCTS**

(Not Used)

**PART 3 – EXECUTION**

**3.01 INSTALLATION**

- A. The Contractor shall provide labor and material in a timely manner and of sufficient quantities to result in the performance of, but not limited to, the following:
1. Daily removal of all sanitary debris, work debris and trash resulting from any work activities identified within the Contract Documents. Disposal locations for any sanitary debris and/or hazardous materials shall be approved prior to disposal. Disposal of sanitary debris and/or hazardous materials shall be disposed only at approved locations. Manifests of hauling and disposal of such material shall be submitted to the Program Manager by the Contractor.
  2. If any discrepancies exist between drawings and specifications, the more stringent shall apply.
  3. Coordinate with all trades and other Owner or Program Manager work that may occur at or near the project location as generally described below.
  4. It is this Contractor's responsibility to advise the Program Manager as to any discrepancies in the work of others prior to starting the work.
  5. All field engineering and layout required for this work shall be the responsibility of this Contractor.
  6. All protection of finished work, including the work of others shall be the responsibility of this Contractor.
  7. The Contractor agrees to attend meetings promptly and their company will be represented with an authorized field representative and an authorized office representative capable and responsible for committing to delivery, manpower and completion dates for their work assignments
  8. The Contractor agrees all forms and reports (including technical data reports and forms) required by the Owner and Program Manager will be completed as required of these Specifications or as otherwise directed. Failure to submit these completed on time could result in a delay in payment.
  9. The Contractor agrees all Change Order work will be agreed upon in writing and signed by the Program Manager and the Owner before this work will begin.

10. The Contractor agrees to properly protect all materials and Owner assets from damage resulting from Contractor's work activities and assumes responsibility to replacement of such materials at their cost. This cost will be assessed by back charge and incorporated into a change order by the end of the month.
11. The Contractor agrees to properly protect all materials from damage by weather and assumes responsibility to replacement of such materials at their cost.
12. The Contractor agrees to work within the defined work hours of the Owner being typically 8:00 a.m. to 5 p.m. or other hours as directed by the Owner or Program Manager to adhere to the requirements of the Work, including those related to Public Outreach and Notification. The Contractor agrees to perform all necessary overtime to get their work back on schedule if necessary. If due to this Contractor's failure to perform in a timely manner, premium time is required by any other Contractor(s) to bring the project back to the original schedule, the cost of such premium time shall be borne solely by the Contractor.
  - a. The Contractor agrees to honor the following County holidays unless authorized to work by the Owner/Program Manager
    - 1) New Year's Day
    - 2) MLK Day
    - 3) President's Day
    - 4) Memorial Day
    - 5) Independence Day
    - 6) Labor Day
    - 7) Veteran's Day
    - 8) Thanksgiving Day
    - 9) Christmas Day
13. The Contractor agrees to provide certificates of insurance prior to their mobilization. Prior to commencing work the Contractor agrees to provide a current copy of the workman's compensation and liability insurance certificate.
14. The Contractor assumes responsibility for insurance coverage on all their equipment and tools against theft and damage. No claims will be registered against the Owner for loss of same. The Contractor will not lien the project for payment of any claims on equipment loss or damage due to vandalism or any other form.
15. The Contractor will abide by all OSHA requirements and/or instruction from the Program Manager and/or supervising and/or competent field personnel to make a safe work area. OSHA requirements to be the minimum safety level accepted.
16. Contractor agrees to respond to all Contractor change notifications within 24 hours and further to provide the Program Manager and/or Owner with the complete change estimate cost data within 7 calendar days.
17. Contractor shall provide fulltime onsite supervision of their work.
18. Contractor agrees with the performance schedule for each assessment assignment as established by the Program Manager and will provide any necessary measures required to achieve and maintain this schedule at no additional cost to the Owner, Program Manager and Owner's Representative.

**B. RESPONSIBILITY FOR OVERFLOWS/SPILLS AND DAMAGE TO PROPERTY AND UTILITIES:**

1. It shall be the responsibility of the Contractor to schedule and perform the Work in a manner not causing or contributing to incidences of sanitary sewer overflows (SSOs) as defined in the latest Consent Decree.
2. In the event the Contractor's activities cause or contribute to SSOs (including work related building backups), the Contractor shall immediately take appropriate action to contain and/or stop the overflow, clean up the spillage, and disinfect the area affected by the SSO. Simultaneously, the Contractor will notify the Owner's Dispatch Center, the Owner, and the Program Manager to provide information concerning location, cause, volume of the SSO, and assessment whether the spill entered a stream or storm drain and assist in completing associated spill investigative paperwork. The Contractor shall be familiar with the details of spill response referred to in the Sanitary Sewer Overflow Contingency and Emergency Response Plan (CERP) approved by Owner. This document can be found on Department of Watershed Management website under the Consent Decree Program or upon request to the Owner or Program Manager.
3. The Contractor shall indemnify and hold harmless the Owner and the Owner's Representatives (including the Program Manager) for any fines or third-party claims for personal or property damage arising out of an SSO that is fully or partially the responsibility of the Contractor, including the legal, engineering, and administrative expenses of the Owner and Owner's Representatives (including the Program Manager) in defending such fines and claims.
4. Any damage to public or private property due to the work performed by the Contractor is the sole responsibility of the Contractor. Any damage to municipal or private utilities caused by the Contractor's equipment or operation shall be repaired in a manner approved by the Owner/Program Manager at the Contractor's expense. Any damage caused by the Contractor to utilities or property belonging to other entities shall be repaired by the Contractor to the satisfaction of the utility/property owner at the Contractor's sole expense. Any equipment stuck or left in the sewer line/lateral shall be retrieved by the Contractor within twenty-four (24) hours. The Contractor will notify the Owner and/or Project Manager immediately of such an incident. The equipment will be removed at the sole expense of the Contractor or depending upon circumstances at costs agreed upon by the Owner/Project Manager. Any damage to the Contractor's equipment is the Contractor's sole responsibility. If the equipment is stuck or left in the sewer line/lateral and causes a SSO, then the Contractor is liable for the SSO and all associated damages.
5. The Owner (and the Program Manager) reserves the right to make any repairs or retrieve any equipment and charge the Contractor accordingly.

#### C. RELOCATIONS

The Contractor shall be responsible for the relocation and all associated work of structures, including but not limited to light poles, signs, sign poles, fences, piping, conduits, and drains that interfere with the positioning and execution of the Work. The cost associated with such relocations shall be included in the bid price as identified in the Bid Tab.

#### D. EXISTING UNDERGROUND PIPING, STRUCTURES, AND UTILITIES

1. The attention of the Contractor is drawn to the fact that during any earth disturbing activity, the possibility exists of the Contractor encountering various water, gas, telephone, electrical, or other utility lines not indicated on drawings or located in the

field. The Contractor shall exercise extreme care before and during any land disturbing activity to locate and flag these lines so as to avoid damage to the existing lines. Should damage occur to existing County water and/or sewer line, the Contractor shall repair the line at no cost to the Owner if directed to do so by the Owner/Project Manager.

2. The work assignments will be through work orders and associated GIS mapping through the Mobile Mapping Tool and maps which will not indicate the location of other underground facilities. Should such be provided by the Owner/Project Manager, the locations of existing underground piping structures and utilities are shown without express or implied representation, assurance, or guarantee that they are complete or correct or that they represent a true picture of underground piping to be encountered?
3. The existing piping and utilities that interfere with any assessment or construction to facilitate assessments shall be rerouted as shown, specified, or required. Before any piping and utilities not shown on the Drawings are disturbed, the Contractor shall notify the Program Manager of the location of the pipeline or utility and shall reroute or relocate the pipeline or utility as directed.
4. The Contractor shall exercise care in locating existing piping and utilities. All utilities, which do not interfere with complete work, shall be carefully protected against damage. Any existing utilities damaged in any way by the Contractor shall be restored or replaced by the Contractor at its expense as directed by the Program Manager.

E. HAZARDOUS LOCATIONS

The existing wet wells, manholes and related areas may be considered hazardous locations, in that explosive concentrations of sewage gas may be present.

F. WATER FOR CONSTRUCTION PURPOSES

Water required for cleaning and/or construction/assessment shall be the responsibility of the Contractor. However, the Contractor may request to use County water through dedicated hydrants as approved by the Count. The approval of the County shall be obtained BEFORE County water is used. There shall be installed in each and every connection to the County's potable water supply, a backflow preventer and calibrated metering device meeting the requirements of the County. The Contractor shall be responsible for obtaining a hydrant meter along with any applicable hydrant meter fees from the Owner for this water use. The Contractor shall report water usage on a monthly basis and/or as required of the fire hydrant program. At a minimum, water consumption and the corresponding meter serial number shall be reported. The Contractor shall be responsible for all costs, excluding water consumption fees, associated with hydrant meter(s).

G. MOBILE MAPPING TOOL

The Contractor will be required to provide updates and edits to a live web mapping tool that will be displaying field work as well as the current status of field efforts. The Contractor shall provide their own tablet or laptop with internet connection (via air card or data plan or tablet), with one per crew minimum. Contractor shall provide an email address so that the Program Manager may set up a login for Contractor access to the web mapping tool. It is expected that the Contractor will be able to perform simple edits to the web map including, but not limited to, placing points on assets on

which work is being performed that will include tabulated attribute information such as current work status, type of work being performed and other tracking variables for the web tool as directed by the Program Manager. Program Manager shall provide up to three hours of instruction on how the contractor shall populate the live web mapping tool.

**END OF SECTION**

**SECTION 01041**  
**PROJECT COORDINATION**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

The work under this Section includes the requirements of the Contractor to use standard methods of construction planning, coordination, inspection, scheduling and cost value documentation necessary for the proper and complete performance of the Work.

**1.02 RELATED SECTIONS**

This Section applies to the work of every division and every section of these Specifications.

**1.03 QUALIFICATIONS AND REQUIREMENTS**

- A. Management of the Project shall be through the use of standard methods of construction planning, inspection, scheduling and cost value documentation.

**1.04 RESPONSIBILITY FOR COORDINATION**

- A. Carefully coordinate work with all other contractors and/or subcontractors to ensure proper and adequate interface of the work of other assessment and rehabilitation activities at or near the assigned sewer collection and transmission system and every section of these Specifications.
- B. The Contractor shall coordinate operations with all utility companies in or adjacent to the area of Contractor's work. The Contractor shall require said utilities to identify in the field their property and provide drawings as necessary to locate them.
- C. The Contractor shall schedule the Contractor's Work so that the Contractor does not interrupt the operation of any existing facility, including water mains and sewers. In the event certain tie-ins or other operations make it absolutely necessary to interrupt the operation of existing facilities, the Owner will be notified and such work will be done at a time and in a manner acceptable to the Owner/Program Manager.
- D. The Contractor shall coordinate with all property owners and governing authorities impacted by the execution of work activities as to not prevent access or cause service interruptions to critical public institutions such as hospitals, schools, police and fire services, etc. and any other businesses deemed necessary for public welfare and safety. The Contractor shall notify the Program Manager of any related coordination efforts required prior to commencing work activities that may cause impacts.

**PART 2 – PRODUCTS**

(Not Used)

**PART 3 – EXECUTION**

**3.01 PREPARATION**

- A. Inspection



1. Prior to performing any work under a section, the Contractor shall carefully inspect the installed work of other trades and verify all such work is complete to the point where the work under the section may properly commence.
2. The Contractor shall verify all materials, equipment and products to be installed under a section may be installed in strict accordance with the original design and pertinent reviewed shop drawings.

B. Discrepancies

1. In the event of discrepancy, the Contractor will immediately notify the Program Manager.

### **3.02 REQUIREMENTS**

- A. The Contractor shall coordinate the work with the Owner/Program Manager so the construction will not restrain or hinder the operation of existing water or wastewater facilities. If, at any time, any portion of the water or wastewater facilities is scheduled to be out of service, the Contractor must obtain prior approval from the Owner as to the date, time, and length of time that such facilities are out of service.
- B. Connections to the existing facilities, temporary service interruptions and/or alteration of existing facilities will be made at times when the piping, asset, or facility involved is not in use, or at times, as established by the Owner, when the piping, asset, or facility involved can be conveniently interrupted for the period needed to execute the work activity involved.
- C. After having coordinated the work with the Owner, the Contractor shall notify the Program Manager of the time, time limits, and methods of each connection or alteration and have the approval of the Program Manager before any work is undertaken on the connections or alterations.
- D. Before any roadway or facilities are blocked off, the Owner's approval shall be obtained to coordinate operations for water and wastewater facilities and assets, and any signage, plating, bypass pumping, sinking of bypass conduits, ramping, stream crossings, or any other temporary accommodation work shall be implemented by the Contractor as directed by the Program Manager.

**END OF SECTION**

**SECTION 01045**  
**CUTTING AND PATCHING**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

This section includes the Contractor's responsibility for all cutting, fitting, and patching, including excavation and backfill required to complete the work or to:

- A. Make several parts fit together properly.
- B. Uncover portions of the Work to provide for installation of ill-timed work.
- C. Remove and replace defective work.
- D. Remove and replace work not conforming to requirements of Contract Documents.
- E. Remove samples of installed work as specified for testing.

**1.02 RELATED SECTIONS**

- A. Section 01010: Summary of Work.
- B. Division 2 Specifications: Site Work.

**1.03 SUBMITTALS**

- A. Submit a written request to the Program Manager well in advance of executing any cutting or alteration affecting:
  - 1. Work of the Owner or any separated contractor.
  - 2. Structural value or integrity of any element of the Project.
  - 3. Integrity or effectiveness of weather exposed or moisture resistant elements or systems.
  - 4. Efficiency, operational life, maintenance or safety of operational elements.
  - 5. Visual qualities of sight exposed elements.
- B. Requests shall include:
  - 1. Identification of the Project.
  - 2. Description of the affected work.
  - 3. The necessity for cutting, alteration or excavation.
  - 4. Effect on work of Owner or any separate contractor, or on structural or weatherproof integrity of Project.
  - 5. Description of proposed work:
    - a. Scope of cutting, patching, alteration, or excavation.

- b. Trades who will execute the work.
- c. Products proposed to be used.
- d. Extent of refinishing to be done.
- e. Plan to protect existing below and/or above grade structures, pipelines, etc.
- 6. Alternatives to cutting and patching.
- 7. Cost proposal, when applicable.
- 8. Written permission of any separate contractor whose work will be affected.
- C. Submit written notice to Program Manager designating the date and the time the work will be uncovered.

## **PART 2 – PRODUCTS**

### **2.01 MATERIALS**

Comply with specifications and standards for each specific product involved.

## **PART 3 – EXECUTION**

### **3.01 PREPARATION**

- A. Inspect existing conditions of Project, including elements subject to damage or to movement during cutting and patching.
- B. After uncovering work, inspect conditions affecting installation of products, or performance of work.
- C. Report unsatisfactory or questionable conditions to Program Manager in writing. Do not proceed with work until Program Manager has approved further instructions.
- D. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.
- E. Provide devices and methods to protect other portions of Project from damage.
- F. Provide protection from the elements for the portion of the Project potentially exposed by cutting and patch work, and maintain excavations free from water.

### **3.02 INSTALLATION**

- A. Execute cutting and demolition by methods preventing damage to other work, and will provide proper surfaces to receive installation of repair.
- B. Execute excavating and backfilling by methods preventing settlement or damage to other work.
- C. Employ original Installer or Fabricator or perform cutting and patching for:
  - 1. Weather exposed or moisture resistant elements.
  - 2. Sight exposed finished surfaces.

- D. Execute fitting and adjustment of products to provide a finished installation complying with specified products, functions, tolerances, and finishes.
- E. Restore work cut or removed and install new products to provide completed work in accordance with the requirements of the Contract Documents.
- F. Fit work airtight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.
- G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
  - 1. For continuous surfaces, refinish to nearest intersection.
  - 2. For an assembly, refinish entire unit.

**END OF SECTION**

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**SECTION 01056**  
**GPS DATA COLLECTION**

**PART 1 – GENERAL**

**1.01 WORK FOR THIS SECTION**

- A. The purpose of this work is to establish the position of asset points in the sanitary sewer collection system using the Global Positioning System (GPS); establish the minimum quality of data; and, specify how the data will be delivered. The GPS position will be established for newly identified sanitary sewer system assets and corrected in the event of existing incorrectly mapped assets. GPS position will also be gathered for locations as noted in all other Sections of these Specifications.
- B. GPS capture is required as described below.
  - 1. Horizontal position of all manholes with an accuracy of  $\pm$  one (1) meter. This applies to all manholes that are on Right-of-Way and all manholes off Right-of-Way.
  - 2. When GPS capture cannot be achieved on manholes, due to canopy or building interferences, the position will be obtained by conventional survey methods tied to the stated reference system at the mapping grade accuracy listed above.

**1.02 SUBMITTALS**

- A. The Contractor shall provide to the Program Manager in writing the following information prior to the set deadline, or at the indicated frequency, whichever is applicable.

<u>Type of Submittal</u>	<u>Time/Frequency of Submittal</u>
1. Digital Data related to New Assets	Weekly
2. Digital Data and revisions related to Existing Assets	Weekly

\*Other submittals required at frequency as directed by the Program Manager for other assessment activities that include GPS data collection such as Smoke Testing, Dye Testing and additional assessments.

- B. The Contractor shall provide the Program Manager with written documentation indicating all Crew Leaders/Field Supervisors responsible for obtaining GPS data have received the proper training and where required the requisite experience.

**1.03 RELATED SECTIONS**

- A. The Work of the following Sections apply to the Work of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of the Work.
  - 1. 01510: Sanitary Sewer Main Television & Sonar Inspection
  - 2. 01530: Manhole Condition Assessment
  - 3. 01555: Acoustic Sewer Inspections
  - 4. 01550: Smoke Testing

- 5. 01560: Dye Testing
- 6. 02956: Sanitary Sewer Cleaning

#### **1.04 EXPERIENCED WORKERS**

- A. Supervisor of the field crews shall have received proper training in this function and have a minimum of three years' experience in performing such work including safe working practices, etc.

#### **1.05 REFERENCE COORDINATE SYSTEM**

- A. The horizontal (X&Y) position of points will be referenced to the Georgia State Plane West NAD-83 coordinate system.

#### **1.06 PROVIDED BY Owner/Program Manager**

- A. A map of each area of work will be provided by the Program Manager from the Owner's existing GIS map. The map will contain, when available, streets with names, aerial imagery, sewer manholes with asset IDs and sewer lines with existing GIS information available.

#### **1.07 CALIBRATION**

- A. Calibration shall be carried out in accordance with the GPS equipment manufacturer's instructions. Additional calibrations may be required during the course of the working day for large fluctuations of temperature and/or humidity, also in accordance with the manufacturer's instructions and tolerances.

#### **1.08 INTERFERENCE**

- A. Contractor must obtain a GPS position of sanitary point structures regardless of the overhead conditions or other nearby obstructions interfering with satellite signals, at no additional cost. Coverage conditions will not allow all positions to be obtained by setting directly over the point to be obtained. Contractor may use rangefinders or conventional surveying methods to obtain the position of the point.

### **PART 2 – PRODUCTS (NOT USED)**

### **PART 3 – EXECUTION**

#### **3.01 General**

- A. The Contractor shall furnish all labor, tools, materials, software and equipment necessary for capturing the position of all points specified.

#### **3.02 Preparation**

- A. Mission Planning: Contractor shall plan the collection of GPS data, using the appropriate software, to optimize the accuracy and speed of data collection while minimizing the impact and interference on traffic and other activities.

**3.03 DATA**

A. The inventory database deliverable(s) for newly discovered assets or existing mapped assets with incorrect existing position shall be submitted as an ESRI shape file or geodatabase with each feature type represented in a different feature class (manholes, mains, etc.). Each attribute for manholes and mains are to be populated as provided in the attribute templates provided below. The data must be in the correct datum capable to be integrated into County’s ESRI ArcGIS system which is the County’s standard GIS software.

B. Manholes Attributes Template

ID	Northing	Easting	Depth	Size	Material

C. Asset IDs for manholes are to be provided by DWM via the guidance in this Specification Section. Asset IDs for newly identified assets found by the Contractor not in the existing mapped system inventory will be coordinated with the Owner and Program Manager and assigned and populated within the digital GIS deliverable. Northing and easting coordinates shall be populated in system as notated in these Specifications. Manhole depth shall be measured to the nearest 0.1 ft. Manhole depth is to include extent from rim elevation directly above the outflow invert to bottom of outflow invert elevation. Size of manhole is the manhole diameter measured in inches. Manhole wall material (along with any apparent coating) shall be populated with numerical coding described as follows;

Text Code	Description
1	None
2	Precast
3	Brick
4	Block
5	Poured
6	Brick and Concrete
7	VCP
8	PVC
9	Stone and Mortar

D. Also, any asset ID information as indicated in the field shall be recorded.

E. Sewer Mains Attributes Template

US_Manhole_ID	DS_Manhole_ID	US_MH_Depth	DS_MH_Depth	Diameter	Material




- F. Asset IDs for assets are to be provided by DWM via the guidance in this Specification Section. Asset IDs for newly identified assets found by the Contractor not in the existing mapped system inventory will be coordinated with the Owner and Program Manager and assigned and populated within the digital GIS deliverable. Upstream and downstream manhole depths (US MH Depth & DS MH Depth) shall be measured to the nearest 0.1 ft. and include the extent from rim elevation directly above the outflow invert to the outflow invert elevation. Main diameters shall be measured in inches and rounded to the nearest inch. Main material shall be populated with text coding described as follows;

Text Code	Description
VCP	Vitrified Clay Pipe
Truss	Truss
PVC	Polyvinyl Chloride Pipe
Concrete	Concrete Pipe
RCP	Reinforced Concrete Pipe
DIP	Ductile Iron Pipe
CIP	Cast Iron Pipe
CMP	Corrugated Metal Pipe
Tile	Tile
Brick	Brick

- G. For assets with only incorrect coordinate location information but already located within the mapped inventory, only the corrected coordinates will be provided. Necessary data will be logged so that uncorrected positions can be post-processed and coordinated with DWM GIS division, at the discretion of the Owner and Program Manager, to obtain more accurate positions.
- H. For other assessment activities, including Smoke Testing, Dye Testing, Acoustic Inspection, and any other activity described in these Specifications, coordinates will be gathered per the instruction procedures of each respective assessment Specification Section. The GPS data collection for these activities as well as others should adhere to the coordinate system, accuracy level, and all additional procedures outlined in this Specification Section.

### 3.04 DELIVERABLES

- A. Map corrections to the printed map will be illustrated on the printed map with red markings and delivered at the completion of each week. Supplemental sketches will be provided, as necessary, to clearly depict the actual site conditions.
- B. Coordinate and attribute data will be provided in GIS digital format on a weekly basis as described in these Specifications or as directed by the Program Manager.

**END OF SECTION**

**SECTION 01060**  
**REGULATORY REQUIREMENTS**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. Contractors general responsibilities for adhering to all county, state, and federal regulatory divisions rules, regulations, and laws even when plans do not indicate required permitting actions required for the project.
- B. Permits and Responsibilities: The Contractor shall, without additional expense to the Owner, comply with any applicable federal, state, County and municipal laws, codes and regulations, in connection with the execution of the Work.
- C. The Contractor shall take proper safety and health precautions to protect the Work, the workers, the public and the property of others.
- D. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the Work, except for any completed unit of work thereof which may heretofore have been accepted.
- E. Business Licenses: The Contractor shall provide the Owner, on the proper form, proof of being licensed to do business within DeKalb County; proof of proper business licenses shall also be provided by the Contractor for any and all subcontractors coming under the jurisdiction of this Contract.

**1.02 ROADWAY PERMITTING**

- A. The Contractor is responsible for obtaining road opening permits from the DeKalb County Department of Public Works Transportation Division at (770)492-5222, including providing any required restoration bonds.
- B. The Contractor is responsible for obtaining all road opening permits required by the GDOT. The Contractor is not permitted to make any type of cuts on roadways requiring a permit from the GDOT until such time as the permit is provided and prominently displayed on-site.
  - 1. All documents necessary for said application must be provided by the Contractor to the Owner and Program Manager.
- C. Traffic control shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), latest edition.

**1.03 EPD stream buffer Permits Activities**

- A. Buffers on state waters are valuable in protecting and conserving land and water resources, therefore buffers should be protected. The buffer variance process will apply to all projects legally eligible for variances and to all state waters having vegetation wrested from the channel by normal stream flow, provided adequate erosion control measures are incorporated in the project plans and specifications and are implemented. The following activities do not require application to or approval from the Division:

1. stream crossings for water lines or stream crossing for sewer lines occurring at an angle, as measured from the point of crossing, within 25 degrees of perpendicular to the stream and cause a width of disturbance of not more than 50 feet within the buffer; or
2. where drainage structures must be constructed within the twenty-five (25) foot buffer area of any state water not classified as a trout stream; or
3. where roadway drainage structures must be constructed within the twenty-five (25) foot buffer area of any state waters or the fifty (50) foot buffer of any trout stream; or
4. construction of public water system reservoirs

#### **1.04 ACOE Permits for MISCELLANEOUS Activities**

- A. Section 404 of the Clean Water Act requires all dredge and fill activities affecting the Nation's waters, including wetlands and other special aquatic sites to be permitted by a Nationwide Permit (NWP), Regional Permit, or Individual Permit, unless otherwise exempted.
- B. All Department of Army Corps of Engineers (ACOE) Permits shall be obtained by the Owner. The Contractor shall be responsible for complying with all required permits and shall perform restoration activities where temporary dewatering of areas is required.
- C. The ACOE has the authority to review project work within the Nation's water and to issue individual permits or approve the use of Nationwide and Regional Permits. The Environmental Protection Agency (EPA), Georgia Environmental Protection Division (EPD) and other natural resource agencies provide a key role in the review and establishing conditions of the permits.
- D. Work in jurisdictional waters, jurisdictional wetlands and bank stabilization activities shall not commence until all permits have been issued.
- E. Some NWPs require project proponents to notify Corps district engineers prior to commencing NWP activities. These notifications are called pre-construction notifications (PCNs), and they provide district engineers with opportunities to confirm whether or not the proposed activities qualify for NWP authorization. For most NWPs, the district engineer has to respond to a notification within 45 days of receipt of a complete PCN (see General Condition 31). If, after reviewing the PCN, the district engineer determines the proposed activity qualifies for NWP authorization, the district engineer issues an NWP verification letter to the project proponent. The NWP verification may contain special conditions ensuring the NWP activity results in minimal individual and cumulative effects on the aquatic environment and the Corps public interest review factors.

#### **1.05 Quality Assurance**

- A. Contractor shall perform all work under this Section in accordance with all pertinent Rules and regulations including, but not necessarily limited to, those stated herein and these Specifications, the more stringent provisions shall govern.
- B. The Contractor shall allow access to ACOE, EPA and other enforcing personnel should they wish to visit the work sites. This includes assisting with transportation as may be required along easements, if necessary.

## **PART 2 – PRODUCTS**

### **2.01 Materials**

- A. Materials required to comply with these regulations shall include bank stabilization materials, materials for construction of temporary roads or crossings, sandbags and rebar for reconstruction of beaver dams, mats for temporary road access.
- B. Mats consist of wooden, rubber or metal structures capable of distributing the weight of heavy equipment to prevent soil displacement in wetland conditions.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

Provide all materials and promptly take actions necessary to achieve effective compliance with regulations in accordance with Section 404 of the Clean Water Act, the enforcing agency (ACOE) and these Specifications.

### **3.02 EPD STREAM BUFFER PERMIT CONDITIONS**

Variance applications will be reviewed by the Director only where the applicant provides reasonable evidence that impacts to the buffer have been avoided or minimized to the fullest extent practicable and only in the following cases:

- A. The project involves the construction or repair of a structure which, by its nature, must be located within the buffer. Such structures include dams, public water supply intake structures, detention/retention ponds, waste water discharges, docks including access ways, boat launches including access ways, and stabilization of areas of public access to water; or
- B. The project will result in the restoration or enhancement to improve water quality and/or aquatic habitat quality; or
- C. Buffer intrusion is necessary to provide reasonable access to a property or properties; or
- D. The intrusion is for gravity-flow sewer lines that cannot reasonably be placed outside the buffer, and stream crossings and vegetative disturbance are minimized; or
- E. Crossing for utility lines, including but not limited to gas, liquid, power, telephone, and other pipelines, provided the number of crossings and the amount of vegetative disturbance are minimized; or
- F. Recreational foot trails and viewing areas, providing impacts to the buffer are minimal; or
- G. The project involves construction of one (1) single family home for residential use by the owner of the subject property and, at the time of adoption of this rule, there is no opportunity to develop the home under any reasonable design configuration unless a buffer variance is granted. Variances will be considered for such single family homes only if construction is initiated or local government approval is obtained prior to the effective date of this rule; or
- H. For non-trout waters, the proposed land disturbing activity within the buffer will require a permit from the United States Army Corps of Engineers under Section 404 of the federal Water Pollution

Control Act Amendment of 1972, 33 U.S.C. Section 1344, and the Corps of Engineers has approved a mitigation plan to be implemented as a condition of such a permit; or

- I. For non-trout waters, a plan is provided for buffer intrusion showing, even with the proposed land disturbing activity within the buffer, the completed project will result in maintained or improved water quality downstream of the project; or
- J. For non-trout waters, the project with a proposed land disturbing activity within the buffer is located in, or upstream and within ten linear miles of, a stream segment, or,
- K. listed as impaired under Section 303(d) of the federal Water Pollution Control Act Amendment of 1972, 33 U.S.C. Section 1313(d) and a plan is provided showing the completed project will result in maintained or improved water quality in such listed stream segment and the project has no adverse impact relative to the pollutants of concern in such stream segment; or
- L. For non-trout waters, the proposed land disturbing activity within the buffer is not eligible for a permit from the United States Army Corps of Engineers under Section 404 of the federal Water Pollution Control Act Amendment of 1972, 33 U.S.C. Section 1344, includes required mitigation in accordance with current EPD "Stream Buffer Variance Mitigation Guidance" document, and involves:
  - 1. piping, filling, or re-routing of non-jurisdictional Waters of the U.S.; or
  - 2. stream buffer impacts due to new infrastructure projects adjacent to state waters (jurisdictional and non-jurisdictional Waters of the U.S.). This criterion shall not apply to maintenance and/or modification to existing infrastructure, which are covered under 391-3-7.05(2)(a).
  - 3. If the buffer impact will be temporary, the buffer variance request shall include the following information at a minimum:
    - a. A site map including locations of all state waters, wetlands, floodplain boundaries and other natural features, as determined by field survey.
    - b. A description of the shape, size, topography, slope, soils, vegetation and other physical characteristics of the property.
    - c. A dated and numbered detailed site plan showing the locations of all structures, impervious surfaces, and the boundaries of the area of soil disturbance, both inside and outside of the buffer. The exact area of the buffer to be impacted shall be accurately and clearly indicated.
    - d. A description of the project, with details of the buffer disturbance, including estimated length of time for the disturbance and justification for why the disturbance is necessary.
    - e. A calculation of the total area and length of buffer disturbance.
    - f. A letter from the issuing authority (if other than the Division and as applicable) stating it is aware of the project.
    - g. An erosion, sedimentation and pollution control plan, where applicable.
    - h. Proposed mitigation, if any, for the buffer disturbance and a restoration and re-vegetation plan, if applicable.
    - i. Any other reasonable information related to the project the Division may deem necessary to effectively evaluate the variance request. Division shall determine if this information is needed within 20 business days of receipt.

- j. Application shall be on forms provided by the Division.
4. If the buffer impact will be permanent, the buffer variance request shall include all of the information in Sections (3)(a) thru (j) above, with the exception of (3)(h). A buffer variance request with permanent impact shall also include the following additional information:
- a. For non-trout waters, a copy of the permit application, supporting documentation, and proposed mitigation plan, if applicable, as submitted to the United States Army Corps of Engineers under Section 404 of the federal Water Pollution Control Act Amendment of 1972, 33 U.S.C. Section 1344, if applicable.
  - b. A buffer mitigation plan addressing impacts to critical buffer functions, including water quality, floodplain, watershed and ecological functions based on an evaluation of existing buffer conditions and predicted post construction buffer conditions pursuant to Section (7)(c) herein.
  - c. A plan for stormwater control once site stabilization is achieved, where applicable.
  - d. For variance requests made under Sections (2)(i) and (2)(j), the application shall include the following water quality information:
    - i. For variance requests under Section (2)(i), the application must include documentation that post-development conditions of the project will meet the four primary (water quality, downstream channel protection, overbank flood protection, and extreme flood protection) performance requirements in the Georgia Stormwater Management Manual or the equivalent.
    - ii. If the proposed variance is in, or within 10 linear miles of and upstream of, a stream segment listed as impaired under Section 303(d) of the federal Water Pollution Control Act Amendment of 1972, 33 U.S.C. Section 1313(d), the application must include predicted pollutant loading under pre- and post-development conditions as estimated by models accepted by the Division. In addition, the applicant must document how the proposed project is in compliance with the TMDL implementation plan, if available, as required in Subsection 391-3-7-.05(5)(i).
5. Upon receipt of a completed application in accordance with Sections 391-3-7-.05(3) or 391-3-7-.05(4), the Division shall consider the completed application and the following factors in determining whether to issue a variance:
- a. The shape, size, topography, slope, soils, vegetation and other physical characteristics of the property; and
  - b. The locations of all state waters on the property as determined from field inspection; and
  - c. The location and extent of buffer intrusion; and
  - d. Whether reasonable alternative project designs, such as the use of retaining walls, are possible which do not require buffer intrusion or which require less buffer intrusion; and
  - e. Where the buffer impact is temporary, the buffer restoration plan is low or no maintenance, and the plan provides net gain in buffer value/function (i.e.

- water quality, floodplain, watershed, ecological perspectives), the application will be approved unless the Director declines the application based on the exceptional existing buffer value/function; and
- f. Whether issuance of the variance is at least as protective of natural resources and the environment, and including wildlife habitat; and
  - g. The current condition of the existing buffer, to be determined by:
    - i. The extent the existing buffer vegetation is disturbed;
    - ii. The hydrologic function of the buffer;
    - iii. Stream characteristics such as bank vegetative cover, bank stability, prior channel alteration, or sediment deposition; and
  - h. The extent the encroachment into the buffer may reasonably impair buffer functions.
    - i. The value of mitigation activities conducted pursuant to this rule, particularly Subsections 391-3-7-.05(7)(c) and 391-3-7-.05(7)(d) herein, and shall take regional differences into consideration on-site or downstream, to be determined by development techniques or other measures contributing to the maintenance or improvement of water quality, including the use of low impact designs and integrated best management practices, and reduction in effective impervious surface area; and
6. The long-term water quality impacts of the proposed variance, as well as the construction impacts. For applications made under Subsections 391-3-7.05(2)(i) or 391-3-7.05(2)(j), the following criteria, reflecting regional differences in the state, shall be used by the Director to assist in determining whether the project seeking a variance will, when completed and with approved mitigation, result in maintained or improved water quality downstream of the project and minimal net impact to the buffer:
- a. Division will assume the existing water quality conditions are commensurate with an undeveloped forested watershed unless the applicant provides documentation to the contrary. If the applicant chooses to provide baseline documentation, site and/or stream reach specific water quality, habitat, and/or biological data would be needed to document existing conditions. If additional data are needed to document existing conditions, the applicant may need to submit a monitoring plan and have it approved by the Division prior to collecting any monitoring data. Existing local data may be used, if available and of acceptable quality to the Division.
  - b. The results of the predicted pollutant loading under pre- and post-development conditions as estimated by models accepted by the Division indicate existing water quality conditions will be maintained or improved.
  - c. Projects for which a land disturbing activity is proposed within the buffer of a 303(d) listed stream, or upstream and within 10 linear miles of a 303(d) listed stream, the results of the model demonstrate the project has no adverse impact relative to the pollutants of concern in such stream segment.
7. Within 60 days of receipt of a complete buffer variance application, the Division will either provide written comments to the applicant or propose to issue a variance. When the Division proposes to issue a variance, it will send out a public advisory to

all citizens and groups who request to receive the advisories. The applicant will then publish a notice in the legal organ of the local jurisdiction. The public advisory and public notice shall describe the proposed buffer modification, the location of the variance, where the public can go to review site plans, and where comments should be sent. The public shall have 30 days from the date of publication of the notice in the legal organ to comment on a variance proposal.

8. In all cases in which a buffer variance is issued, the following conditions shall apply:
  - a. The variance shall be the minimum reduction in buffer width necessary to provide relief. Streams shall not be piped if a buffer width reduction is sufficient to provide relief.
  - b. Disturbance of existing buffer vegetation shall be minimized.
  - c. Required mitigation shall offset the buffer encroachment and any loss of buffer functions. Where lost functions cannot be replaced, mitigation shall provide other buffer functions that are beneficial. Buffer functions include, but are not limited to:
    - i. temperature control (shading);
    - ii. stream bank stabilization;
    - iii. trapping of sediments, if any;
    - iv. removal of nutrients, heavy metals, pesticides and other pollutants;
    - v. aquatic habitat and food chain;
    - vi. terrestrial habitat, food chain and migration corridor; and
    - vii. buffering of flood flows.
  - d. Mitigation should be on-site when possible. Depending on site conditions, acceptable forms of mitigation may include but are not limited to:
    - i. Restoration of the buffer to a naturally vegetated state;
    - ii. Bioengineering of channels to reduce bank erosion and improve habitat;
    - iii. Creation or restoration of wetlands;
    - iv. Stormwater management to better maintain the pre-development flow regime (with consideration given to downstream effects) that exceeds the requirements of applicable ordinances at the time of application;
    - v. Reduction in pollution sources, such as on-site water quality treatment or improving the level of treatment of septic systems;
    - vi. Other forms of mitigation that protects or improves water quality and/or aquatic wildlife habitat;
    - vii. An increase in buffer width elsewhere on the property;
    - viii. Mitigation required under a Clean Water Act Section 404 or Nationwide permit issued by the U.S. Army Corps of Engineers;
    - ix. Those described in the most recent publication of the Georgia Stormwater Management Manual.
  - e. Forms of mitigation which are *not* acceptable include:



- i. Activities already required by the Georgia Erosion and Sedimentation Act, such as the minimal use of best management practices;
    - ii. Activities, already required by other federal, state and local laws, except as described in 391-3-7.05(7)(d) above. Corps of Engineers mitigation is acceptable.
  - f. The Division will not place a condition on a variance requiring a landowner to deed property or the development rights of property to the state or to any other entity. The landowner may voluntarily preserve property or the development rights of property as a mitigation option with the agreement of the Division.
- 9. If a variance issued by the Director is acceptable to the issuing authority, the variance shall be included as a condition of permitting and therefore, becomes a part of the permit for the proposed land disturbing activity project. If a stream buffer variance is not acceptable to the issuing authority, the issuing authority may issue a land disturbing permit without allowing encroachment into the buffer.
- 10. A general variance is provided for piping of trout streams with an average annual flow of 25 gpm or less.
- 11. To obtain this general variance in Section 391-3-7.05(9) for encroaching on the buffer of a trout stream, the applicant must submit information to the issuing authority or EPD if there is no issuing authority demonstrating that the average annual flow in the stream is 25 gpm or less. There are two acceptable methods for making this determination.
  - a. The USGS unit area runoff map may be used to determine the threshold acreage producing an average annual flow of 25 gpm or less.
  - b. The applicant may submit a hydrologic analysis certified by a Registered Professional Engineer or Geologist presenting information sufficient to estimate the average annual flow of each stream to be piped is 25 gpm or less with a high level of certainty.
- 12. Any stream piping performed in accordance with this general variance in Section 391-3-7.05(9) shall be subject to the following terms:
  - a. The total length of stream piped in any one property shall not exceed 200 feet.
  - b. Any project involving more than 200 ft. of piping will require an individual variance for the entire project. The general variance may not be applied to a portion of a project; e.g., it is not permissible to pipe 200 ft. of a stream under the general variance and seek an individual variance for an additional length of pipe.
  - c. The downstream end of the pipe shall terminate at least 25 ft. before the property boundary.
  - d. The applicant for a Land Disturbing Activity Permit shall notify the appropriate issuing authority of the precise location and extent of all streams piping as part of the land disturbing activity permit application. The issuing authority (if other than the Division) shall compile this information and convey it to the Division annually.
  - e. Where piping of a stream increases the velocity of stream flow at the downstream end of the pipe, appropriate controls shall be employed to

reduce flow velocity to the predevelopment level. Plans for such controls must be submitted as part of the land disturbing activity permit.

### 3.03 ACOE Permit Conditions

- A. General: NWP including, but not limited to, 3, 13, 14, and 33 apply to activities anticipated on this project. Each permit contains specific criteria that must be satisfied to be in compliance with the permit. In addition, 15 general permit conditions cover all Nationwide Permits. Both specific criteria and general permit conditions are applicable to this project.
- B. NWP 3 (Maintenance)
  - 1. Application: For all serviceable structures of fill requiring rehabilitation and/or replacement, including raising manholes.
  - 2. Permit Conditions: Use best management practices such as construction mats, proper erosion and sedimentation control and high-flotation tires on heavy equipment.
- C. NWP 13 (Bank Stabilization)
  - 1. Application: For all rehabilitation/replacement activities along stream banks and other areas.
  - 2. Permit Conditions:
    - a. No material is placed in excess of the minimum needed for erosion protection.
    - b. The bank stabilization activity is less than 500 feet in length without approval by the ACOE.
    - c. The activity will not exceed an average of 1 cubic yard per running foot placed along the bank below the plane of the ordinary high water mark or the high tide line.
    - d. No material is placed in any special aquatic site, including wetlands.
    - e. No material is of the type, or is placed in any location, or in any manner, so as to impair surface water flow into or out of any wetland area.
    - f. No material is placed in a manner to be eroded by normal or expected high flows.
- D. NWP 14 (Road Crossings)
  - 1. Application: For all rehabilitation/replacement activities requiring road crossings of wetlands and streams.
  - 2. Permit Conditions
    - a. The width of fill is limited to the minimum necessary for the actual crossing.
    - b. The crossing is culverted, bridged, or otherwise designed to prevent the restriction of, and to withstand, expected high flows, and to prevent the restriction of low flows and the movement of aquatic organisms. The width of the fill is limited to the minimum necessary for the actual crossing.
    - c. The fill placed in the waters of the United States is limited to a filled area of no more than 1/3 acre. Furthermore, no more than a total of 200 linear feet of the fill for the roadway can occur in special aquatic sites, including wetlands.

- d. The crossing, including all attendance features, both temporary and permanent, is part of a single and complete project for crossing a water of the United States.

E. NWP 33 (Temporary Construction, Access and Dewatering)

1. Application: For temporary dewatering and access road construction activities.
2. Permit Conditions
  - a. Temporary fill must be entirely removed to upland areas, or dredged material returned to its original location, following completion of the construction activity, and the affected areas must be returned to pre-construction conditions.
  - b. Cofferdams or other structures cannot be used to dewater wetlands or other aquatic sites so as to change their use.
  - c. The permittee has notified the ACOE District Engineer prior to use of this permit. The notification must include a restoration plan.

### 3.04 Restoration

A. All wetland areas, streams, creeks and other areas containing bodies of water shall be restored as specified below:

1. Beaver Dam Removal and Replacement: The approved permitted activity may include breaching of a beaver dam at locations provided in the permit application. The location of the prescribed breach must not be changed without prior coordination with the Construction Manager or appointed liaison. Explosives are prohibited for beaver dam removal. If beaver dams are required to be breached, all beaver dams removed shall be restored as specified herein.
  - a. Restoration shall be done with sandbags filled  $\frac{3}{4}$  full with materials from the site; preferably sandy soils.
  - b. Sandbags shall be placed in a staggered fashion to prevent a common seam from developing.
  - c. Number 4 steel reinforcement bar shall be used to fortify sandbag dams.
  - d. Reinforcement bar shall be driven a minimum of 2 feet below substrate and spaced per construction detail.
  - e. Bottom row of sandbags shall be embedded a minimum of 6 inches below ground surface, or until resting on compacted substrate, whichever is deeper.
  - f. Top elevation of sandbags should be determined by surveying the water elevation prior to removal of the dam.
  - g. All excavation and fill activities should be conducted by non-mechanical means. Bobcat-type tractors may be used to transfer construction supplies.
  - h. Dam shall be designed to allow flow over its middle section with the downstream channel lined with a row of sandbags.
  - i. Quality Assurance: After construction, the restored dam will be inspected by the Program Manager or an appointed liaison to ensuring the proper restoration techniques were employed. Afterwards, the beaver dam will be monitored for one growing season to ensure success. The Contractor will be responsible for reconstruction of any failed dam.

2. Temporary Access Roads and Crossings
  - a. Must comply with any applicable permits.
  - b. Temporary construction roads may be constructed by earthen fill or crushed rock, or a combination of the two, for wetland or stream crossings.
  - c. Temporary construction roads for stream crossings must be constructed with materials able to withstand expected high flows.
  - d. Prior to placing fill within a wetland or stream, filter fabric should be placed beneath the fill area. The fabric will facilitate removal of the temporary fill materials.
  - e. All materials placed in a wetland or stream must be removed to an upland area following construction.
  - f. If culverts are required for a crossing, they must be designed to withstand and to prevent the restriction of expected high flows, and also to prevent the restriction of low flows and movement of aquatic organisms. Culverts must be removed and stream banks stabilized following the construction.
- B. Existing stream banks and buffers surrounding bodies of water must be restored to at least existing conditions status with the exception of cleared easements and access for sanitary sewer asset inspection, operation and maintenance.

**END OF SECTION**

**SECTION 01070**  
**ABBREVIATIONS AND SYMBOLS**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

This section includes a list of applicable abbreviations for technical societies, organizations, and bodies relevant to the work. Whenever reference is made to the furnishing of materials or testing thereof to conform to the standards of any technical society, organization, or body, it shall be construed to mean the latest standard, code, specification or tentative specification adopted and published at the time of advertisement for Bids. Such standards are made a part hereof to the extent which is indicated or intended.

**1.02 DEFINITIONS AND ABBREVIATIONS**

AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturer's Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACOE	Army Corps of Engineers
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies
AFBMA	Anti-Friction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AI	Asphalt Institute
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute

APA	American Plywood Association
APHA	American Public Health Association
API	American Petroleum Institute
APWA	American Public Works Association
ARC	Appalachian Regional Commission
AREA	American Railway Engineering Association
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
CCTV	Closed Circuit Television
CD	Consent Decree
CFR	Code of Federal Regulations
CIPP	Cured-In Place Pipe
CMAA	Crane Manufacturers Association of America
CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute
CTI	Cooling Tower Institute
DEMA	Diesel Engine Manufacturers Association
DIP	Ductile Iron Pipe
DT	Dye Testing
DVD	Digital Video Disc

DWM	DeKalb County Department of Watershed Management
EDA	Economic Development Administration
EIA	Electronic Industries Association
EIA	Electronic Industries Association
EPA	Environmental Protection Agency
EPD	Georgia Environmental Protection Division
FCC	Federal Communications Commission
FmHA	Farmers Home Administration
FS	Federal Specifications
GDOT	Georgia Department of Transportation
GIS	Geographic Information System
GPM	Gallons per Minute
GPS	Global Positioning System
HEI	Heat Exchange Institute
I/I	Infiltration and Inflow
IEEE	Institute of Electronic and Electrical Engineers
IES	Illuminating Engineering Society
IPC	Institute of Printed Circuits
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
LACP	Lateral Assessment and Certification Program
MACP	Manhole Assessment and Certification Program
MBMA	Metal Building Manufacturers Association
MCA	Manhole Condition Assessment
MMA	Monorail Manufacturers Association
MSS	Manufacturers Standardization Society of the Valve and Fitting Industry

MUTCD	Manual for Uniform Traffic Control Devices
NAAMM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NASSCO	National Association of Sewer Service Companies
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NCPI	National Clay Pipe Institute
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NRMA	National Ready-Mix Association
NTP	Notice to Proceed
NWP	Army Corps of Engineers Nationwide Permit
OSARP	Ongoing Sewer Assessment and Rehabilitation Program
OSHA	Occupational Safety and Health Administration
PACP	Pipeline Assessment & Certification Program
PASARP	Priority Areas Sewer Assessment and Rehabilitation Program
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PCN	Army Corps of Engineers Preconstruction Notification
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride Pipe
QA/QC	Quality Assurance / Quality Control
RFI	Request for Information
SBC	Southern Building Code
SMACNA	Sheet Metal and Air Conditioning Contractors National Association



SSO	Sanitary Sewer Overflow
SSPC	Steel Structures Painting Council
ST	Smoke Testing
TAI	The Asphalt Institute
TCA	Tile Council of America
TEMA	Tubular Exchangers Manufacturers Association
TISCIT	Totally Integrated Sonar and CCTV Inspection Technique
UBC	Uniform Building Code
UL	Underwriters Laboratories
USDC	United States Department of Commerce
WCTS	Wastewater Collection and Transmission System
WPCF	Water Pollution Control Federation

**END OF SECTION**

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**SECTION 01200**  
**PROJECT MEETINGS**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

This section includes general requirements for project-related meetings with the Owner and Program Manager required throughout the project life cycle including, but not limited to: pre-assessment meetings, progress meetings, pre-installation meetings, and inspection tours.

**1.02 RELATED SECTIONS**

- A. Section 01010: Summary of Work
- B. Section 01300: Submittals

**1.03 RESPONSIBILITY**

- A. The Program Manager will determine the agenda for and chair the meetings described below; and also shall prescribe the format for the documentation of the meetings to be produced by the Contractor.
- B. Periodic progress meetings and specially called progress meetings throughout the progress of the Work shall be held at times to be determined by the Program Manager, but at least on a monthly basis.
- C. The Contractor shall have the following specific responsibilities:
  - 1. Distribute agenda for meetings
  - 2. Distribute written notice of each meeting a minimum of seven days in advance of meeting date to all parties involved
  - 3. Make physical arrangements for meetings
  - 4. Record minutes, in the format to be provided by the Program Manager, to include significant proceedings, decisions and action items
  - 5. Provide and record a sign-in sheet for all attendees
  - 6. Reproduce and submit word-processed minutes, within two working days after each meeting, to the Program Manager for approval before further distribution. After approval, distribute copies as follows:
    - a. to all participants in the meeting
    - b. to all parties affected by decisions made at meeting
    - c. to all other parties as may be designated by the Owner or Program Manager
- D. Representatives of contractors, subcontractors and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents.
- E. The Owner shall attend progress meetings to ascertain the work is expedited consistent with the Contract Documents and the project schedules.

#### 1.04 START-UP MEETING

- A. The Program Manager will schedule this meeting within 5 days of the issuance of the Notice to Proceed.
- B. The location of the meeting will be designated by the Program Manager.
- C. The following parties shall attend the meeting:
  - 1. Owner
  - 2. Program Manager
  - 3. Contractor's Superintendent and/or Representative
  - 4. Subcontractors as appropriate to the agenda
  - 5. Other agency representatives (EPD, EPA, DWM, etc.) as appropriate to the agenda
  - 6. Representatives of suppliers and manufacturers as appropriate to the agenda
  - 7. Others as requested by the Owner or Contractor
- D. Suggested Agenda:
  - 1. Distribution and discussion of:
  - 2. List of major subcontractors and suppliers.
  - 3. Projected Project Schedules.
  - 4. Critical work sequencing.
  - 5. Major equipment deliveries and priorities.
  - 6. Project Coordination.
  - 7. Designation of responsible personnel.
  - 8. Procedures and processing of:
  - 9. Field decisions.
  - 10. Proposal requests.
  - 11. Submittals.
  - 12. Change Orders.
  - 13. Applications for Payment.
  - 14. Adequacy of distribution of Contract Documents.
  - 15. Procedures for maintaining Record Documents.
  - 16. Temporary utilities.
  - 17. Safety and first aid procedures.
  - 18. Security procedures.

#### 1.05 ASSESSMENT PROGRESS MEETINGS

- A. **Scheduling:** Meetings shall be conducted at least every other week throughout the assessment phase or at other intervals directed by the Program Manager. Meeting frequency may be reduced at the request of the Program Manager.
- B. **Location of the meetings:** Capital Improvement Program (CIP) office or other location designated by the Program Manager.

C. **Attendance:**

1. Owner/User group representative(s), as appropriate
2. Program Manager's representative (at its option)
3. Resident Project Representative
4. Contractor's Project Manager, Superintendent, and other representative(s) as appropriate
5. Subcontractors and suppliers as appropriate to the agenda
6. Others as appropriate

D. **Suggested minimum agenda:**

1. Review and approval of minutes of previous meeting
2. Actual vs. scheduled progress since previous meeting
3. Planned activities for the next two weeks
4. Problems with and revisions to schedule
5. Corrective measures and procedures to regain projected schedule
6. Contract and/or Record Document clarifications
7. Field observations, problems, and conflicts
8. Quality control
9. Actual and potential changes and their impacts
10. Review proposed changes for:
  - a. Effect on Schedule and on completion date.
  - b. Effect on other components of the Project.
11. Safety issues

**1.06 INSPECTION TOURS**

- A. Formal inspection tours shall be made of the job progress for the Owner and any other officials as the occasion warrants and as scheduled by the Program Manager.
- B. If requested by the Program Manager, the Contractor shall be prepared to show and explain work completed and in progress throughout the Project to the inspection parties.

**END OF SECTION**

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## SECTION 01300

### SUBMITTALS

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. Provisions in this Section are mandatory procedures for preparing and submitting equipment data sheets, assessment reports, procedures, schedules, certifications or any other submittals to be prepared and submitted as required of the Contract Documents.
- B. Submissions shall be in orderly sequence and timed to cause no delay in the Work.
- C. Delays occasioned by requirement of submissions of any required submittal data not in accordance with Contract Documents are Contractor's responsibility, and will not be considered valid justification for extension of Contract Time.
- D. Commence no portion of work requiring submittals until submittal has been acted upon by the Program Manager.
- E. Project delays or delays in the purchasing of materials or equipment occasioned by the requirement for resubmission of submittal data initially rejected by the Program Manager and/or the Owner, or are not originally in accordance with the Contract Documents upon review by the Program Manager and/or Owner, are the Contractor's sole responsibility and will not be considered valid justification for time extensions.
- F. No portion of the Work requiring the review of submittal data shall be commenced until each such submittal has been reviewed by the Program Manager and/or Owner, and the action required on the returned submittal does not require a correction and resubmittal (i.e., "Reviewed" or "Revise and Resubmit," or similar notation); and further, each installer shall have possession of such final reviewed submittal prior to commencing its portion of the Work.
- G. At the time of submission the Contractor shall clearly delineate any deviations in the submittals from the requirements of the Contract Documents so, if the deviations are deemed acceptable, suitable action may be taken for proper adjustment. Otherwise, the Contractor will not be relieved of the responsibility for executing the work in accordance with the Control Documents.
- H. Submittals shall clearly indicate the applicable details of information being proposed. Generalized product information not clearly defining specific equipment or materials to be provided will be rejected.
- I. Certificates of compliance shall be provided, as required or requested by the County's Program Manager, for any items utilized in the work.

##### 1.02 RELATED SECTIONS

- A. SECTION 01015 – CONTROL OF WORK

#### PART 2 – PRODUCTS

(Not Used)

## **PART 3 – EXECUTION**

### **3.01 SUBMITTAL REQUIREMENTS**

- A. Within 2 weeks of receiving the Notice-To-Proceed, the Contractor shall submit to the Owner, data relating to materials and equipment he or she proposes to furnish for the work. Such data shall be in sufficient detail to enable the Owner to identify the particular project and to form an opinion as to its conformity to the Specifications.
- B. Provide six (6) copies of submittals to the Program Manager.
- C. Submittals shall be digitally submitted in PDF format in color with all pages legible when reprinted on 8.5" x 11" paper.
- D. Each submission must be accompanied by a consecutively numbered letter of transmittal, listing the contents of the submission and identifying each item by reference to Specification Section or Drawing number. The Submittal shall contain a Submittal Identification Number.
- E. Submittals shall contain:
  - 1. The date of submission and the dates of any previous submissions.
  - 2. The Project title and the Owner's Project Number.
  - 3. Contract identification.
  - 4. Identification of the submittal/product, with the Specification Section number.
  - 5. Field dimensions, clearly identified as such.
  - 6. Relation to adjacent or critical features of the work or materials.
  - 7. Applicable standards, such as ASTM or Federal Specification numbers.
  - 8. Identification of deviations from Contract Documents.
  - 9. Identification of revisions on re-submittals.
  - 10. An 8 inch by 3 inch blank space for Contractor and Program Manager stamp.
  - 11. Contractor's stamp shall be initialed or signed, certifying approval of the submittal and to the coordination of the information within the submittal with the requirements of the work and of Contract Documents.
- F. Other special requirements may be listed in the Technical Specifications and/or given to the Contractor by the Program Manager.

### **3.02 CONTRACTOR'S REVIEW**

- A. Review all submittals before forwarding to the Program Manager and stamp to indicate conformance with requirements of the Contract Documents.
- B. Determine and verify field measurements and construction, materials, catalog numbers and similar data. Coordinate each submittal with requirements of work and Contract Documents.
- C. Where work is indicated "By Others", Contractor shall indicate subcontractor responsibility for providing and coordinating such work.



- D. Contractor agrees the submittals processed by the Program Manager are not Change Orders, the purpose of submittals by Contractor is to demonstrate the Contractor understands design concept, he demonstrates his understanding by indicating materials he intends to furnish and install, and by detailing fabrication and installation methods he intends to use.
- E. Contractor represents, by submitting any submittals he has complied with provisions specified above. Submissions made without Contractor's approval indicated thereon will be returned without being reviewed for compliance with this requirement.
- F. Date each submittal and indicate name of Project, Program Manager, Contractor and Subcontractor, as applicable, description or name of submission
- G. Accompany submittal with transmittal letter containing project name, Contractor's name, number of submittals, titles and other pertinent data. Transmittal shall outline deviations, if any, in submittals from requirements of Contract Documents.

### **3.03 PROGRAM MANAGER'S REVIEW**

- A. Program Manager will review submittals within 10 working days so as to cause no delay in work.
- B. Program Manager's review is only to determine conformance with design concept of project and with information in Contract Documents. Program Manager's determination regarding an individual item shall not extend to the entire assembly in which the item functions.
- C. Program Manager's review of submittals shall not relieve Contractor of responsibility for any deviation from requirements of Contract Documents unless Contractor has informed Program Manager in writing of such deviation at time of submission and Program Manager has given written acknowledgment of the specific deviation. Program Manager's review shall in no way relieve Contractor from responsibility for errors or omissions in submittals.
- D. Program Manager will return submittals to Contractor marked with appropriate comment as defined below:
  - 1. "Reviewed" indicates the drawings have been reviewed for conformance with design and no exceptions are taken. Proceed with the work.
  - 2. "Revise and Resubmit" indicates the annotations are to be confirmed in a resubmittal of the affected drawing. However, subject to prior arrangement with the Engineer, the Contractor may proceed with the work as annotated during the interim required for resubmittal.
  - 3. "Rejected" indicates drawing to be revised and resubmitted for further review prior to proceeding with the work.
  - 4. "Furnish as Corrected" indicates Contractor is to move forward with minor corrections as indicated. A resubmittal to the Program Manager is not required before purchasing and/or proceeding. A final submittal with corrections will be submitted to the Program Manager upon completion.
- E. Program Manager will return one (1) copy in PDF format for printing and distribution by Contractor.

### **3.04 RESUBMISSION**

- A. Make corrections and changes indicated for unacceptable submissions and resubmit in same manner as specified above. Resubmission for review shall be made by Contractor within 10 working days of documented receipt of returned submittals by Contractor.
- B. In resubmission transmittal direct specific attention to revisions other than corrections requested by Program Manager on previous submissions, if any.

### **3.05 DISTRIBUTION**

- A. Contractor is responsible for obtaining and distributing copies of submittals to his Subcontractors and material suppliers after as well as before final approval.

## **PART 4 – PRODUCTS**

(Not Used)

## **PART 5 – EXECUTION**

(Not Used)

**END OF SECTION**

## **SECTION 01320 PROGRESS REPORTS & VIDEOS**

### **PART 1 – GENERAL**

#### **1.01 SECTION INCLUDES**

This Section includes administrative and procedural requirements for documenting the progress of assessment during performance of the Work, including the following:

- A. Daily Reports
- B. Pre & Post Work Site Videos

#### **1.02 RELATED SECTIONS**

- A. Section 01300 - Submittals
- B. Section 01420 - Inspection of Work
- C. Section 01700 – Project Closeout

#### **1.03 SUBMITTALS**

##### **A. DAILY REPORTS**

1. The Contractor's Superintendent shall prepare and submit Daily Reports throughout the project, from Notice to Proceed to Final Acceptance. Daily Reports shall be kept in an orderly manner, available for inspection or review when requested by the Owner and Program Manager. Copies of Daily Reports shall be accumulated and submitted to the Program Manager on a weekly basis, on a regular day and time to be determined by the Program Manager. Failure to submit Daily Reports or to comply with the format requirements below is cause for the Owner to retain additional monies due the Contractor from the monthly Application(s) for Payment until such time as the reports have been brought up to date by the Contractor.
2. Each Report shall include the following information at a minimum:
  - a. Manpower by subcontractor, trade, and skill level
  - b. Weather and temperatures (summary of conditions)
  - c. List of visitors to the jobsite
  - d. Specific work performed with locations
  - e. Situations or circumstances which could delay the Work or give cause for a time extension or additional cost
  - f. Instructions requested (and of whom)
  - g. Materials received
  - h. Major equipment arrival/departure
  - i. Total days accrued under the terms of the Contract Documents
  - j. Accidents and incidents
  - k. Safety issues

- l. Meetings
  - m. A copy of a delivery receipt of all deliveries, to the project on that day, of equipment and/or materials
  - n. A copy of all field reports from testing activities that were performed
  - o. Other significant events at the jobsite
3. The Contractor shall take the necessary action required to specifically alert the Program Manager to potential items impacting the progress of the Work. Such items shall be clearly highlighted in the report.
  4. All Daily Reports shall be clearly handwritten or typed. Poor copies, reports in sloppy or illegible handwriting or on wrinkled paper will not be accepted.
  5. Contractor must adhere to reporting requirements in this Specification Section as well as any other reporting requirements listed in other Specification Sections, specifically those related to reporting associated with assessment activities.

**B. VIDEOS**

1. Accompanying each work order/assignment and prior to the beginning of any work, the Contractor shall take a pre-site work video of the site work area to record existing conditions. Video shall show all conditions which might later be subject to disagreement. These conditions shall be shown in sufficient detail to provide a basis for decisions. The video shall be submitted in external hard drive format, with a log of the items taped prior to assessment activities. No request for payments will be processed until the pre-site work video has been submitted and approved by the Program Manager. 2 copies each. Required for close-out.
2. Following completion of the work, another recording shall be made showing the same site work areas and features as in the pre-site work video. Post-site work video shall be made prior to final acceptance and before submitting a request for final payment. Video shall be submitted in external hard drive format, with a log of the items taped, with the final payment application. 2 copies each. Required for close-out.
3. At the conclusion of the Project, the Contractor shall have all videos generated for the project consolidated and copied onto an external hard drive and prepare a Table of Contents for the drive. A copy of the external hard drive and Table of Contents for the external hard drive shall be transmitted to the Program Manager with the request for final payment. 2 copies each. Required for close-out.

**END OF SECTION**

**SECTION 01420**  
**INSPECTION OF WORK**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. This section includes guidelines for the inspection of contract work.

**1.02 QUALIFICATIONS AND REQUIREMENTS**

- A. The Program Manager shall have the right of access to and inspection of the work at all times. Materials, equipment, and products shall be subject to the Program Manager's review as specified herein.
- B. The Program Manager is responsible for general surveillance of the work on behalf of the Owner. The Program Manager is not responsible for construction means, methods, sequences, or procedures or for safety precautions and programs in connection with the work. The Program Manager is not responsible for supervision of the work and shall not give instruction to the Contractor's personnel as to methods of executing the work. The Program Manager is not responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents.
- C. Any government representative or other individual identified by the Owner shall have access to the work wherever it is in preparation or progress. The Contractor shall provide proper facilities for such access and inspection.

**1.03 RESPONSIBILITY OF THE CONTRACTOR**

- A. The Contractor is responsible for all materials, equipment, methods, and procedures in execution of the work.
- B. The Contractor shall correct, to the satisfaction of the Program Manager, any work or material found to be defective or of deficient quality. Such corrections shall be made by the Contractor at no additional expense to the Owner.

**1.04 RIGHT OF ENTRY**

Representatives of DeKalb County, the Environmental Protection Division of the Georgia Department of Natural Resources, and the U.S. Environmental Protection Agency and others, as may be identified by the Owner, shall have access to the work wherever it is in preparation or progress. The Contractor shall provide proper facilities for such access and inspection.

**END OF SECTION**

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**SECTION 01510**  
**SANITARY SEWER MAIN TELEVISION AND**  
**Totally Integrated Sonar and Camera Inspection Technology**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. This section includes guidelines and requirements for closed circuit television (CCTV) and totally integrated sonar and camera inspection technique (TISCIT) inspection. CCTV/TISCIT inspection will lead to a condition assessment rating of the inspected Wastewater Collection and Transmission System (WCTS) sewers and supports subsequent sewer maintenance and rehabilitation activities. CCTV inspection identifies structural defects, maintenance concerns, and actual and potential sources of I/I in mainline sewers, service laterals, and manholes.

**1.02 REFERENCES**

- A. Codes, Specifications, and Standards
  - 1. NASSCO – National Association of Sewer Service Companies – Pipeline Assessment Certification Program (PACP) Reference Manual, Version 6.0.1, November 2010 or latest version.
- B. Manual for Uniform Traffic Control Devices (MUTCD) standards
- C. **Attachment A** – PACP Standard Exchange Database Anticipated Inspection Header Form Attribute Guidance Table (CCTV) (Reference NASSCO PACP Reference Manual, Version 6.0.1, Section 2 for related information)

**1.03 RELATED SECTIONS**

- A. Section 01056 – GPS Data Collection
- B. Section 01320 - Progress Reports & Videos
- C. Section 01520 – Sewer Flow Control
- D. Section 02607 - Manhole Height Adjustment
- E. Section 02956 – Sanitary Sewer Cleaning

**1.04 DEFINITIONS**

- A. **Television Inspection:** Operation necessary to complete a true-color audio-visual inspection for verification of existing internal pipe conditions including pipe materials, pipe grade, connections, cracks, leaking joints, seepage and roots. Contractor shall furnish all labor, materials, equipment (including easement machine), tools, and other incidental services for closed circuit television inspection (CCTV).

- B. **Sonar Inspection:** Operation necessary to complete an inspection for verification of existing internal pipe conditions including amount of debris in the bottom. Sonar inspection will supplement, not replace, CCTV. Contractor shall furnish all labor, materials, equipment, tools, and other incidental services for sonar inspection. Sonar inspection of a particular pipe will only be conducted when approved in writing by the Owner or Program Manager.
- C. **MPEG:** MPEG (pronounced M-peg), which stands for Moving Pictures Experts Group, is the nickname given to a family of International Standards used for coding audio-visual information in a digital compressed format. For the purposes of this specification, MPEG shall be defined as an ISO-MPEG Level 4 standard (MPEG- 4) digital audio-visual coding having a minimum resolution of 500 lines. All video files shall be named using .mpg or .wmv as the file extension.
- D. **External Hard Drive:** For the purposes of this specification, an external hard drive is a peripheral auxiliary device that connects to the computer via a high-speed interface cable. The interface cable allows the external hard drive to communicate with the computer so that data may be passed back and forth. The Contractor will deliver all inspection standard exchange databases, digital reports and media to the Owner/Program Manager on an external hard drive that is compatible with the Owner and Program Manager's equipment and software and will be of adequate storage to contain all deliverables as outlined in the Specifications.
- E. **Sonar/Totally Integrated Sonar and CCTV Inspection Technique (TISCIT):** Operation necessary to complete a simultaneous CCTV and sonar inspection for verification of existing internal conditions. Both the CCTV and sonar will be displayed together on the audio visual documentation. Contractor shall furnish all labor, materials, equipment, tools, and other incidental services for the sonar/TISCIT inspection.
- F. **Buried Manhole:** A manhole where the manhole cover (lid) is not visible at ground surface. Buried manholes usually require removing the material covering the manhole lid and raising the manhole frame and cover (lid). All buried manholes on the sanitary systems shall be reported for raising following their location discovery by the Contractor (Reference Specification Section 02607). Subsequently, the raised manholes shall be inspected.

## 1.05 SUBMITTALS

- A. Submittals are to be in color PDF format for printed documents as well as other required formats when applicable for digital transfers.
- B. Submit one example video on external hard drive of previous sewer inspection work that shows operational and structural defects in sewers, complete with audio commentary and inspection log(s).
  - 1. Videos and inspection logs will be reviewed by Program Manager to determine if quality of CCTV image is acceptable, if defects were properly identified, picture clarity, advancement speeds and lighting are acceptable and documented according to industry standards and the Program Manager's requirements.
  - 2. Modify equipment and/or inspection procedures to achieve report material of acceptable quality.
  - 3. Do not commence Work prior to approval of report material quality by the Program Manager. Upon acceptance, report material shall serve as standard for remaining Work.



- C. Records reports shall include a separate report for each pipe segment showing inspection setup data, each defect and locations of laterals, and other coded information. Also, each report shall include photographs of moderate and severe defects. Each report shall also note the labeling number of the corresponding video recording of that pipe segment. The video record of the pipe inspections shall be provided digitally on an approved mass storage device. These records shall include all video information and narrations. The video files shall have unique name that are referenced in the PACP inspection database. The file name shall include manhole ID numbers for upstream and then downstream manholes as the start of the file name. It is preferred that the direction of the inspection and inspection date be included as well.
- D. Camera specification sheet
- E. Sonar survey equipment specification sheet
- F. References: Contact names and telephone numbers
- G. List of staff and equipment to be used on this Project
- H. Supervisor and field crew leader's contact information including name and mobile telephone numbers
- I. Confined space entry certification that staff to be used on this project have been properly trained should confined space entry be required
- J. Contractor's Safety Plan
- K. Training and inspection plan a minimum of 7 days prior to the first inspection
- L. 14 day look ahead schedule weekly based on Program Manager's work priority schedule
- M. Public notification door hanger based on Program Manager's provided example
- N. Inspection (See Documentation Section for additional information);
  - 1. Initial first day's inspections within 24 hours after first day's work is completed.
- O. Include the following with each weekly submittal:
  - 1. Inspection media (videos and photographs)
  - 2. Quality controlled Inspection database (PACP Standard Exchange Access Database)
  - 3. Inspection reports (PDF – Digital format)
- P. Traffic control plan
- Q. Quality control plan
- R. The Contractor shall provide the Owner with written documentation (certification) that the supervisor, field crew leader and all crewmembers responsible for these assignments have the proper training and experience.

## **1.06 EXPERIENCE**

- A. No crew members shall enter confined spaces without the necessary certified training and permit.
- B. A PACP certified technician or supervisor shall control operation of television equipment and encoding of inspection. Should Contractor utilize any personnel to actually document the inspection results that is not PACP certified, those inspections shall be refused and re-survey shall be completely at the Contractor's sole expense.

## **1.07 RESPONSIBILITY FOR OVERFLOWS/SPILLS AND DAMAGE TO PROPERTY AND UTILITY**

- A. Reference Specification Section 01030 – Special Project Procedures.

## **PART 2 – PRODUCTS**

### **2.01 CCTV/SONAR PERFORMANCE**

- A. The Contractor shall furnish the following, but not limited to: the mobile television/sonar inspection studio, television camera, sonar, audio-visual digital encoding equipment / software, and other necessary equipment, materials, power, labor, and technicians as needed to perform the television inspection.
- B. The surveying/inspecting equipment will be capable of surveying/inspecting a length of sewer up to at least one-thousand five-hundred (1,500) feet when entry onto the sewer may be obtained at each end and up to one-hundred (100) feet by rodding or up to seven-hundred and fifty (750) feet where a self-propelled unit is used, where entry is possible at one (1) end only. This equipment will be maintained in full working order.
- C. Each survey/inspection unit will contain a means of transporting the CCTV camera and/or sonar equipment in a stable condition through the sewer under survey and/or inspection. Such equipment will ensure the maintained location of the CCTV camera or sonar equipment when used independently on or near to the central axis of a circular shaped sewer when required in the prime position.
- D. Where the CCTV camera and/or sonar head are towed by winch and bond through the sewer, all winches will be stable with either lockable or ratcheted drums. All bonds will be steel or of an equally non-elastic material to ensure the smooth and steady progress of the CCTV camera and/or sonar equipment. All winches will be inherently stable under loaded conditions. The bonds shall be oriented in such a manner as to enable unhindered extension or retraction through the line. All effort shall be made to prevent damage to the pipe during the television/sonar inspection. In the case where damage is caused by the Contractor, for any reason, such as would be caused by incorrect deployment of bonds or retrieval of lodged equipment, the cost of repair or remedy shall be borne solely by the Contractor and repaired immediately after notification to the Program Manager within 24 hours.
- E. Each unit will carry sufficient numbers of guides and rollers such that, when surveying or inspecting, all bonds are supported away from pipe and manhole structures and all CCTV/sonar cables and/or lines used to measure the CCTV camera's/sonar head location within the sewer are maintained in a taut manner and set at right angles where possible, to run through or over the measuring equipment.

- F. Each unit will carry a range of flow control plugs or diaphragms for use in controlling the flow during the survey/inspection. A minimum of one (1) item of each size of plug or diaphragm ranging from the required diameters will be carried. See Sewer Flow Control Specification 01520 for additional details and requirements.
- G. Each survey/inspection unit will have on-call equipment available to carry out the flushing, rodding, and jetting of sewers for "Light Cleaning" See the definition of "Light Cleaning" in Sanitary Sewer Cleaning Specification 02956 for details.
- H. Television/Sonar Inspection: The Contractor shall inspect pipelines with pan and tilt conventional television imagery and/or sonar as indicated in the contract documents so as to record all relevant features and defects of the pipeline under inspection. Inspection of pipelines shall be carried out utilizing the Owner approved formats only.
- I. **External Hard Drive (Videos):**
1. Audio portion of videos shall be sufficiently free from electrical interference and background noise to provide complete intelligibility of oral report.
  2. Store in upright position with temperature range of 45 to 80 degrees F (7 to 27 degrees C).
  3. Identify each hard drive with labels showing Owner's name, Contractor's name, the inspection period, and project area or sewer segments on the hard drive.
- J. **Hard Drive Titling:**
- Each segment shown on the external hard drive should have its own video titled with the beginning and end point of the pipe segment.
- K. **CCTV Camera/Sonar Head Prime Position:**
- The CCTV camera/sonar head will be positioned to reduce the risk of picture distortion. In circular sewers the CCTV camera lens and/or sonar head will be positioned centrally (i.e. in prime position) within the sewer. In non-circular sewers, picture orientation will be taken at mid-height, unless otherwise agreed, and centered horizontally. In all instances the camera lens/sonar head will be positioned looking along the axis of the sewer when in prime position. A positioning tolerance of  $\pm 10\%$  of the vertical sewer dimension will be allowed when the camera is in prime position.
- L. **CCTV Camera/Sonar Head Speed:**
- The speed of the CCTV camera in the sewer will be limited to six (6) inches per second or 30 ft./min for surveys. Similar or slightly higher speed may be used on a case-by-case basis. Stop for a minimum of five (5) seconds at every lateral, defect, or adversity. The speed of scanning sonar will be limited to four (4) inches per second.
- M. **CCTV Color Camera:**
- The television camera used for the pipe line inspection shall be one specifically designed for hazardous and corrosive environments and constructed for pipeline inspection. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera shall adhere to the following requirements:

1. Waterproof and shall be operative in 100% humidity conditions with lens fogging and any conditions that may be encountered in the inspection environment.
2. Self-leveling, color pan and tilt camera(s) to facilitate the survey and inspection of all laterals, including defects such as hydrogen sulfide corrosion in the soffit of sewers and benching or walls of manholes over and above the standard defects that require reporting.
3. A three-hundred sixty (360) degrees rotational scan indicating general condition must be implemented at every fifty (50) feet interval (min.) along sewers, and at manholes and any salient, specified, defect features.
4. The tilt arc must not be less than two-hundred seventy (270) degrees with adjustable supports designed for operation in connection with pipe inspection with a viewing angle of not less than 65 degrees.
5. The view seen by the television camera shall be transmitted to a monitor of not less than 11 inches in size.
6. The travel speed of the television inspection camera (through the pipe) shall be uniform and shall not exceed the maximum speed herein specified.
7. The camera, television monitor, and other components of the video system shall be capable of producing picture quality to the satisfaction of the Program Manager; and if unsatisfactory, equipment shall be removed and no payment will be made for an unsatisfactory inspection.
8. The adjustment of focus and iris will allow optimum picture quality to be achieved and will be remotely operated.
9. The adjustment of focus and iris will provide a minimum focal range from six (6) inches in front of the camera's lens to infinity.
10. The distance along the sewer in focus from the initial point of observation will be a minimum of twice the vertical height of the sewer.
11. The illumination must be mounted on and turned in the direction of the camera such as to allow an even distribution of the light around the sewer perimeter without the loss of contrast picture, flare out, or shadowing, light sensitivity to be greater than 1.5 lux minimum, minimize reflective glare, remote variable intensity control, provide a clear in-focus picture of entire inside periphery of pipe and the ability to achieve proper balance of tint and brightness.

N. Color CCTV/Sonar:

All CCTV and/or sonar work will use color CCTV/sonar reproduction.

O. CCTV Side Scanning Camera:

The Program Manager will consider high resolution digital CCTC side scanning cameras if proposed by the Contractor. The Program Manager may not accept the side scanning camera use for this project if the contractor cannot provide supporting documents showing previous successful application.

P. Sonar Survey Requirements:

1. Sonar assessment will provide for a continuous output on external hard drive format of all sewers surveyed, supported by complete defect code sheets. Additionally, silt levels will be assessed as a percentage depth of sewers at twenty-five (25) foot intervals for each pipeline surveyed.

2. Where combined CCTV and sonar imagery is used the output will display combined CCTV and sonar images of the sewer being surveyed. The sonar image will be superimposed on the real CCTV image as a combined operation.
- Q. The survey/inspection vehicle for general public streets or assessable locations will comprise two (2) distinct separate areas. One (1) of these, designated as the viewing area, will be insulated against noise and extremes in temperature, include the provision for air conditioning, and will be provided with means of controlling external and internal sources of light in a manner capable of ensuring that the monitor screen display is in accordance with the requirements of this specification. Seating/and or space accommodations will be available to enable additional workers to clearly view the on-site monitor, which will display the survey/inspection as it proceeds.
- R. The working area will be reserved for equipment, both operational and stored, and no equipment utilized within the sewer will be allowed to be stored in the viewing area.
- S. The vehicle will be suitable for carrying the survey team and laborers and the equipment necessary to safely perform the work.
- T. Off road inspection equipment/easement machine proposed by the Contractor shall be reviewed and approved by the Program Manager before the Contractor utilizes said equipment.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. The following guidelines concerning the use of CCTV and sonar will be followed:
1. Generally CCTV alone will be used for internal condition assessment where the depth of flow is less than twenty-five (25%) percent of overall sewer diameter at the start of the survey. A case-by-case determination will be made whether to use CCTV where the depth of flow is more than twenty-five (25%) percent level but no greater than forty (40%) percent of overall sewer diameter at any time throughout the length.
  2. Generally CCTV combined with sonar will be used for internal condition assessment where depth of flow of sewage varies from twenty-five (25%) percent to seventy-five (75%) percent of overall sewer diameter for sewers greater than or equal to eighteen (18) inches in diameter. Where the sewer is less than eighteen (18) inches in diameter and depth of flow of sewage exceeds twenty-five (25%) percent but is less than seventy-five (75%) percent of overall sewer diameter one of the following actions may be taken based on the Contractor and Program Manager's agreement: (a) continue using CCTV (where depth of flow is only marginally greater than twenty-five (25%) percent of overall diameter) or (b) use sonar (by damming or plugging the sewer so that the depth of flow exceeds seventy-five (75%) percent of overall diameter) or (c) use plugging and/or bypassing to reduce flow to 25% or less.
  3. Generally sonar alone will be used where depth of flow in the sewer exceeds seventy-five (75%) percent of overall diameter and the level of the flow will be artificially increased, without the risk of flooding, to ensure that the pipe is completely surcharged.
  4. Assignments designated by the Project Manager as "pre-CCTV" will follow the requirements of these CCTV specifications with the exception of cleaning (not required), coding (not required), and quality will be best obtainable due to site

conditions. The intent of the survey is to provide a best quality video of the pipe segment (and reverse survey where applicable) with no coding, panning, or other specific video requirements. Safety, traffic control, site security, etc., will be required as defined in this section.

- B. Confined Space Entry: Crews shall minimize the physical entry into manholes. Manhole entry shall be performed in accordance with Federal, State, Local and any other regulations for confined space entry. Only trained crews and staff may perform confined space entry after obtaining an entry permit. Staff must use safety required equipment, including harnesses, ventilation equipment, etc.
- C. The Contractor shall make map verifications and record and deliver GIS map corrections as necessary (Refer to Section 01056).
- D. Traffic Control: All traffic control measures shall comply with the requirements of MUTCD, Part 6 – Temporary Traffic Control, Latest Edition as published by USDOT/FHWA.
- E. Site Security: Wear all required safety equipment, such as safety vests, hardhats, safety glasses, and steel toe boots. Follow all applicable state and local traffic safety procedures. Alert the closest fire department/Emergency Medical Services (EMS) as to the location of the day’s work and to stand by for emergencies.
- F. Scheduling Time: Crews shall begin inspections after 8:00 am and terminate inspections no later than 5:00 pm each day unless otherwise directed by the Program Manager in order to address localized special requirements. Authorization should be obtained if work is to be performed outside of the designated hours. Work should be performed by the Contractor in time frames that will allow compliance with the County’s noise ordinance.
- G. Permits for Rights of Ways & Contract Utility Licensing:

The Contractor shall obtain work permits for all work to be performed in State and/or County Right of Ways. The Contractor shall also plan for all other insurances, traffic control measures, and other terms of the permit in advance. The Contractor shall also obtain all necessary and applicable licensing.
- H. Sequence of Work:
  - 1. Perform Work in the following sequence:
    - a. Clean sewer lines and manholes in accordance with “Light Cleaning” requirements of Section 02956, Sanitary Sewer Cleaning.
    - b. Contractor shall remove debris in accordance with guidance in Section 02956, Sanitary Sewer Cleaning.
    - c. After cleaning, the manhole sections shall be visually inspected by means of closed-circuit television. The inspection then will be done one linear section at a time and the flow in the section being inspected will be suitably controlled as specified (see Sanitary Sewer Flow Control Specification). All CCTV inspections shall be performed in accordance with PACP standards including the specific date and time of inspection.
- I. Inspection equipment shall utilize software capable of providing complete survey reports, inspection standard exchange database, and linked media files; equipped with modules necessary for NASSCO Pipeline Assessment and Certification Program inspection.

- J. If television/sonar inspection of an entire manhole to manhole sewer segment cannot be successfully performed from one manhole, a reverse setup shall be performed to obtain a complete inspection. A reverse setup shall be considered incidental to and included in the segment's unit price bid for CCTV inspection. If upstream (reverse) setup, is required, establish new inspection run separate from downstream (normal) setup so two inspection records exist in the software, one with the normal setup and one with the reverse setup.
- K. Televised pipe segment inspection is represented by one manhole-to-manhole pipe segment or other structural access-to-access point; not multiple manhole-to-manhole segments.
- L. Show continuous footage reading and other required information on inspections image. Place on screen where it is clearly visible (if black font, do not place on dark background, if white font, do not place on light background).
- M. Viewing shall be in direction of flow, except while camera is being used in a reverse setup. Inspection shall proceed from upstream to downstream, unless prohibited by obstruction.
- N. Keep camera lens clean and clear. If material or debris obscures image or causes reduced visibility, clean or replace lens prior to proceeding with recording operation.
- O. Camera lens shall remain above visible water level and may submerge only while passing through clearly identifiable line sags or vertical misalignments. If flow exceeds 25 percent of diameter, such that the camera lens becomes obscured, pause inspection until flow subsides. If necessary, reschedule CCTV operation. Surcharging and flooding of camera lens is not an excusable condition if it has been artificially created upstream, i.e., placement of flow plugs or freshwater flushing in pipe.
- P. Pan the camera to record the inside of each lateral or connecting pipe and the connection of lateral or connecting pipe to sewer pipeline.
- Q. Recordings shall clearly show all defects and observations, and their severity in addition to obvious features, i.e., laterals and joints.
- R. Immediately report to Program Manager any obstructions that restrict flow and cause inspection to be interrupted. Assure that the obstruction is documented in the inspection with the appropriate defect code. Document condition with still photographs, and begin a reverse inspection setup or inspections of other pipelines to the satisfaction of the Program Manager.
- S. Televisе pipe segments from manhole to manhole on same video in continuous run.
  - 1. Video shall clearly show camera starting and ending at manhole, unless defects do not allow it.
  - 2. Do not perform partial televising on one video and then complete run on another video.
  - 3. If line is partially televised, due to excusable condition, i.e., collapsed line, televised length shall be viewed by the Program Manager.
  - 4. If a portion of the Contractor's inspection is unacceptable to the Owner or Program Manager, the entire pipe segment shall be deemed unacceptable and the Contractor shall re-televisе the entire pipe segment at the Contractor's sole expense.

- T. The Program Manager may, on occasion, accept a physical inspection that does not adhere to minimum standards if adverse conditions are encountered and re-inspection is not advised.
- U. At the end of each day, update the status of what sewer segments were inspected using the web-based mobile device. Refer to Section 01030 – Special Project Procedures.

### 3.02 CCTV/SONAR INSPECTION

- A. **Data Transfer:** Upon completion of CCTV inspection, transfer inspection data to an external hard drive (HD) of sufficient capacity and compatibility with Owner’s and Program Manager’s equipment and available programs; include code required for proper playback of video file.
- B. Labeling:
  - 1. Provide printed label on outside of HD that indicates the following:
    - a. Name of owner
    - b. Project title
    - c. Date of submittal
    - d. Inspection company
    - e. Deliverable number
    - f. Project assignment area (provided by Program Manager)
- C. Media:
  - 1. Video:
    - a. Inspections completed, with a unique filename per manhole to manhole pipe segment inspection.
    - b. Continuous digital video recordings of the inspection view as it appears on the television monitor shall be taken. The recording shall also be used as a permanent record of defects.
    - c. The recording shall be MPEG-4. Separate MPEG-4 files shall be created for each pipe segment inspection. In case of a reverse setup, such inspection shall be stored in a separate inspection record and MPEG file. MPEG files shall be written to External Hard Drive media for delivery to the Program Manager.
    - d. MPEG files shall be named according to the following file specification:

TV\_[Upstream  
Manhole]\_[DownstreamManhole]\_[MMDDYYYY]\_[Incremental  
Number].mpg
    - e. The "IncrementalNumber" shall be used if multiple inspections are performed for the same line, such as a reverse inspection setup. IncrementalNumber is to ensure no two videos are the same. The number can be the video ID if the software doesn’t already have a random number generator.
    - f. The Owner, at its sole discretion, reserves the right to refuse any MPEG, on the basis of poor image quality, excessive bit rates, inconsistent frame rates or any other characteristics that may affect usability by the Owner.
    - g. The digital video encoding shall include video information that can be reproduced with a video image equal or very close to the quality of the



original picture on the television monitor. The replay of the recorded video information shall be free of electrical interference and shall produce a clear, stable image.

2. Audio:
  - a. Embedded in video file
  - b. Operator will include description of inspection setup, including related information from log form and unusual conditions.
  - c. Operation changes (for example, remove roots and restart inspection at footage prior to root removal)
  - d. Verbal description and location of each defect
  - e. Verbal description and location of each service connection

D. Still Photographs:

1. Provide color digital photographs showing inspection image whenever observation or defect has a moderate or major severity; looking into a lateral or connection pipe; or unless otherwise instructed by the Owner or Program Manager;
2. Each with a unique filename matching the asset ID with a random number;
3. Encoded in .JPEG format;
4. Minimum 1024 x 768 resolution; and
5. Provide label on front of photograph with structure identification number, footage (if not visible on photograph), and defect code (if applicable).

E. Database:

1. Include all inspections in a single consolidated PACP Version 6 or newer Access Standard Exchange database. Creating a database per inspection is not acceptable. Each submittal standard exchange database shall be cumulative containing all prior inspections as well as inspections conducted during interim period since previous submittal.
2. Provide PACP standard exchange database of collected data including anticipated inspection header field attribute information as shown in **Attachment A** to this Section.
3. File Type: MS Access, .MDB, .ACCDB
4. Database Format: PACP Version 6 or newer. NASSCO PACP data will be exported into Standard PACP Standard Exchange database.
5. List inspection media names in corresponding asset/inspection/defect information field within database.

F. Linear Measurement:

1. The CCTV/sonar monitor display will incorporate an automatically updated record in feet and tenths of a foot of the footage of the camera or center point of the transducer, whichever unit is being metered, from the cable calibration point, the pipe diameter (physical measurement by Contractor), and verified pipe material. The relative positions of the two (2) center points will also be noted.
2. The Contractor shall use a suitable metering device that enables the cable length to be accurately measured; this shall be accurate to 0.20 feet. The Contractor shall use the footage readings to identify location of defects to the nearest 0.10 feet. Measurement shall be zeroed after each segment inspected. The Contractor shall

calibrate the footage meter on a regular basis and demonstrate that the tolerance is being achieved by tape measurement between manholes on the surface. This taped measurement must be included on a quality control form which will be completed and submitted by the Contractor depicting the level of accuracy achieved.

G. Data Display, Recording and Start of Survey/Inspection:

1. At the start of each sewer length being surveyed or inspected and each reverse set-up, the length of pipeline from zero (0) footage, the entrance to the pipe, up to the cable calibration point will be recorded and reported in order to obtain a full record of the sewer length. Only one (1) survey will be indicated in the final report. All reverse set-ups, blind manholes, and buried manholes will be logged on a separate log. Video digits will be recorded so that every recorded feature has a correct tape elapsed time stamp. Each log will make reference to a start and finish manhole unless abandonment took place because of blockage.
2. The footage reading entered on to the data display at the cable calibration point must allow for the distance from the start of the survey/inspection to the cable calibration point such that the footage at the start of the survey is zero (0).
3. In the case of surveying through a manhole where a new header sheet and file must be created, the footage will be set at zero (0) with the camera focused on the outgoing pipe entrance.
4. At the start of each manhole length a data generator will digitally generate and clearly display on the viewing monitor and subsequently on the video recording a record of data in alpha-numeric form containing the following minimum information:
  - a. Automatic update of the camera's footage position in the sewer line from adjusted zero (0)
  - b. Sewer dimensions
  - c. Manhole/pipe asset ID number
  - d. Date of survey
  - e. Road name/location
  - f. Direction of survey
  - g. Time of start of survey
  - h. Sewer use (SS - Sanitary Sewer)
  - i. Material of construction of the pipe
  - j. The size and position of the data display will be such as not to interfere with the main subject of the picture.
5. Once the survey of the pipeline is under way, the following minimum information will be continually displayed:
  - a. Automatic update of the camera's footage position in the sewer line from adjusted zero (0).
  - b. Manhole or pipe asset ID number.
  - c. Defect/observation code(s) (temporarily display when encountered)
  - d. Date and Time
6. Before camera enters the pipe, inspection shall provide video of the manhole. Video recording shall begin by facing pipe segment to be televised and then pan/tilt/zoom as necessary to point camera up toward the manhole opening.

- H. **Coding:** Defect Coding, as well as material, shape, and lining coding, and conventions used will comply with PACP formats and will be compatible with the Owner's GIS.

### 3.03 MAN ENTRY SURVEY

- A. **Photographic Camera Position - General Illustration of Sewer Interior:**
  - 1. The hand-held photographic camera or CCTV camera will be positioned to reduce the risk of picture distortion. In circular sewers the camera lens will be positioned centrally looking along the axis of the sewer. In non-circular sewers picture orientation will be taken at mid-height, unless otherwise agreed, and centered horizontally.
  - 2. The hand held photographic camera or CCTV camera will be positioned so that the long side of the photograph or CD-ROM frame is horizontal.
- B. **Photographic Camera Position - Laterals/Specific Defect:** A means of accurately locating the photographic or camera's footage and any recorded lateral or defect, along the sewer will be provided, to an accuracy of  $\pm 1\%$  or six (6) inches whichever is greater.
- C. **Photographic Quality:** The in-sewer photographic camera or hand held CCTV system and suitable illumination will be capable of providing an accurate, uniform and clear record of the sewer's internal condition.

### 3.04 DELIVERABLES

- A. **Digital PACP Standard Exchange database** shall be submitted on external hard drive in duplicate to the Program Manager. The database must contain all the data required by this specification.
- B. **Final Television/Sonar Inspection Reports** shall be submitted to the Program Manager in PDF on the same external hard drive referenced above. Corresponding MPEG videos and photos shall also be submitted to the Program Manager as outlined by this specification.

### 3.05 PUBLIC NOTIFICATION – CCTV INSPECTION

- A. Public notification is critical and compliance with the public notification criteria is a prerequisite for CCTV inspection, especially when conducting inspections on sewers in easements which pass through private property. Notification must be provided to all property occupiers/owners likely to be affected including residential, commercial and institutional (schools, hospitals, nursing homes, etc.). At a minimum, the following steps shall be taken:
  - 1. The Contractor shall print and distribute pre-approved advance notice door hangers 72 hours before conducting CCTV inspection. The Contractor shall distribute the door hangers to the property owners (residential, commercial and institutional) in the affected area(s). The advance notice door hangers shall be customized by Public Outreach to suit this project and will be provided to the Contractor for printing prior to project commencement. If CCTV inspection is delayed, the Contractor must re-distribute door hangers.
    - a. The Contractor is responsible for distributing pre-approved "Right-of-Entry" (ROE) forms and securing signatures from affected property owners on the ROE forms prior to conducting CCTV inspection.

- B. The Contractor shall keep a daily log of the distribution of the door hangers. This shall be maintained and submitted to the Owner and/or Program Manager upon request.
- C. The Contractor shall alert the appropriate Owner and Program Manager personnel of their work locations on a daily basis.
- D. Contractor will provide and place “Right-of-Way” signs in prominent locations where CCTV is planned 24-hours in advance of commencing the inspection. Signs will be a minimum of 24 inches wide by 18 inches high with letters a minimum of 2 inches high. Signs will be supported a minimum of 12 inches above grade by integral metal frames. Wording on the signs shall be similar to the following:

**CCTV INSPECTION WILL BE CONDUCTED ON “date” and “time.” Contact “person” with “company” at “phone number” for additional information.**

### **3.06 QUALITY ASSURANCE/QUALITY CONTROL**

- A. Data Quality Control Procedure:
- B. Prior to assessment data submission, the Contractor shall run queries for quality control (QC) as required by the Program Manager. The queries are developed by the Program Manager and provided to help the Contractor quickly locate data gaps and errors prior to submitting the respective assessment access database. The QC queries play an integral role in confirming complete data submissions are provided to allow for error-free data upload and synchronization by the Program Manager. The Program Manager will determine the extent of which QC queries will be required for a particular assessment activity. Typical QC queries may include, but are not limited to, the following:
  - 1. Header Data
  - 2. Asset Identification Nomenclature
  - 3. Asset Attributes
  - 4. Defect Locations
  - 5. Etc.
- C. The Contractor shall perform a Quality Control (QC) check of the televised inspection documentation using the QC database provided by the Program Manager. The Program Manager will provide at minimum 2 hours of training on use of the QC database tool for the Contractor. The Contractor shall correct any data conflict, missing data, or other questionable entry identified by the QC reports prior to submitting the CCTV inspection data to the Program Manager.
- D. The Program Manager will periodically request the Contractor to review the QC results with the Program Manager.
- E. The data submissions shall undergo the same random review checks for Quality when submitted to the Owner/Program Manager. Should accuracy or qualitative levels fall below those deemed acceptable to the Program Manager, the data submittal will be refused and no payment will be released. Contractor will be required to correct or re-do inspections until the Program Manager is satisfied with the work.

### 3.07 DOCUMENTATION

- A. The Contractor shall complete work on each asset as described herein. Refer to the Measurement and Payment Section (Section 01025) on documentation requirements to be provided with each pay request.
- B. **Measurement Units:** All dimensions will be in feet and inches. Measurement of sewers will be to the nearest inch.
- C. CCTV and Man-Entry Photographs:
  - 1. Photographs will be taken of all laterals or connecting pipes and moderate or severe pipeline defects. Where a defect is continuous or repeated the photographs will be taken at the beginning of the defect and at not less than ten (10) foot intervals thereafter.
- D. The Contractor shall complete weekly and end of work television/inspection reports as described herein. These reports shall be per the format and defect codes of NASSCO's Pipeline Assessment and Certification Program (PACP). Prior to beginning work, the Contractor shall submit a digital sample of the television inspection report to the Program Manager for approval.

**END OF SECTION**

Attachment A - PACP Standard Exchange Database Anticipated Inspection Header Form  
Attribute Guidance Table (CCTV)

Number	Field	Type	Field required for CCTV PACP Database?	Field required for Zoom Camera PACP Database?	Description/Instructions
1	Surveyed_by	Varchar (Text)	Y	Y	Name of individual conducting survey - eg KTRAN
1a	Certificate_Number	Varchar (Text)	Y	Y	NASSCO PACP # of Surveyor - eg U-907-4396
2	Owner	Text	N	N	Owner of collection system surveyed - DeKalb DWM
3	Customer	Text	N	N	Entity commissioning the survey - DeKalb DWM
4	Drainage_Area	Text	Y	Y	Ranking Area Name - eg. TAZTEC3
5	Sheet_Number	Numeric	N	N	
6	PO_Number	Text	Y	Y	Contract number Contractor is working under
7	Pipe_Segment_Ref	Text	Y	Y	USMhtDSMH - Pipe Facility ID
8	Date	Numeric	Y	Y	Inspection Date - YYYYMMDD
9	Time	Text	Y	Y	Time Inspection Started - Military Time
10	Street	Text	Y	Y	Enter nearest street number and name of US Access point/If not known, enter nearest place name and general description
10a	City	Text	Y	Y	City name where sewer located - eg DECATUR

11	Location_Details	Text	Y	Y	Descriptive explanation of sewer location
12	US_MH_ID	Text	Y	Y	Client provided designation for upstream manhole
13	US_Rim_to_Invert	Numeric	Y	N	Distance (ft and tenths of ft) from rim to invert of upstream manhole
14	US_Grade_to_Invert	Numeric	Y	N	Distance (ft and tenths of ft) from average grade to invert of upstream manhole
15	US_Rim_to_Grade	Numeric	Y	N	Distance (ft and tenths of ft) from rim to average grade of upstream manhole
16	DS_MH_ID	Text	Y	Y	Client provided designation for downstream manhole
17	DS_Rim_to_Invert	Numeric	Y	N	Distance (ft and tenths of ft) from rim to invert of downstream manhole
18	DS_Grade_to_Invert	Numeric	Y	N	Distance (ft and tenths of ft) from average grade to invert of downstream manhole
19	DS_Rim_to_Grade	Numeric	Y	N	Distance (ft and tenths of ft) from rim to average grade of downstream manhole
20	Sewer_Use	Text	Y	Y	2 character code SS = Sanitary SW = Stormwater PR = Processes CB = Combined FM = Force main ZZ = Other (identify in field 39)

21	Direction_Survey	Text	Y	Y	1 character code U = Upstream D = Downstream
22	Flow_Control	Text	Y	Y	1 character code P = Plugged L = Lift Station B = Bypassed N = Not Controlled D = De-watered using Jetter
23	Height (Diameter)	Numeric	Y	Y	Diameter of sewer (or height if non-circular) to nearest inch
24	Width	Numeric	Y	Y	Width of non-circular sewer to nearest inch
25	Shape	Text	Y	Y	1 character code A = Arched B = Barrel C = Circular E = Egg shaped H = Horseshoe O = Oval R = Rectangular S = Square T = Trapezoidal U = U-shaped with flat top Z = Other (state in comments field 39)



26	Material	Text	Y	Y	AC = Asbestos cement BR = Brick CAS = Cast Iron CMP CP = concrete pipe CSB = Concrete segments (bolted) CSU = Concrete segments (unbolted) CT = Clay Tile DIP FRP = Fiberglass reinforced pipe GRC = Glass reinforced cement OB = Pitch fiber PCCP = Pre-stressed Concrete Cylinder Pipe PE = Polyethylene PP = Polypropylene PSC = Plastic / steel composite PVC RCP RPM = Reinforced Plastic Pipe SP = Steel pipe SB = Segmented Block TTE = Transite Pipe VCP = Vitrified clay pipe WD = Wood XXX = Not known ZZZ = Other (state in comments)
27	Lining_Method	Text	Y	Y	2 character code CP = Cured-in-place pipe FF = Fold and Form or Deform/Reform SW = Spiral wound SN = Segmented panel SP = Segmented pipe ZZ = Other
28	Pipe_Joint_Length	Numeric	Y	N	Length of pipe joint sections measured to one decimal place whether in feet or meter
29	Total_Length	Numeric	Y	N	Distance between the exit of the start manhole and the entrance of the finish measured to one decimal place whether it is feet or meter

30	Length_Surveyed	Numeric	Y	N	If the survey is abandoned, enter the actual length surveyed to one decimal place whether it is feet or meter
31	Year_Laid	Numeric	N	N	Year sewer surveyed was constructed, YYYY
32	Year_Renewed	Numeric	N	N	Year sewer surveyed was renewed, YYYY
33	Media_Label	Text	Y	Y	Unique identifier for tape/media
34	Purpose_Survey	Text	N	N	1 character code A = Maintenance related B = Infiltration and Inflow Investigation C = Post rehabilitation survey D = Pre-rehabilitation survey E = Pre-acceptance F = Routine Assessment G = Capital Improvement Program Assessment H = Resurvey for any reason V = Reversal Z = Not known
35	Sewer_Category	Text	N	N	1 character code A B C
36	Pre-cleaning	Text	Y	Y	1 character code J = Jetting H = Heavy cleaning N = No pre-cleaning Z = Not known
36a	Date_Cleaned	Numeric	Y	Y	Date when sewer was cleaned prior to survey, YYYYMMDD
37	Weather	Numeric	Y	Y	1 character code 1 = Dry 2 = Heavy rain 3 = Light rain 4 = Snow 5 = Saturated 6 = Damp 7 = Very Dry

					1 character code A = Main Highway - Urban B = Main Highway - Suburban C = Light highway - Local Roads D = Easement/ROW E = Woods F = Sidewalk G = Parking Lot H = Alley I = Ditch J = Building K = Creek L = Railway M = Airport Y = Yard Z = Other - give details in Field 39
38	Location_Code	Text	Y	Y	
39	Additional_Info	Text	Y	Y	Supplemental info regarding survey or segment
40	Work_Order	Text	Y	Y	Work Order number assigned by Owner
41	Project	Text	N	N	Project name assigned by Owner
42	Pressure_Value	Numeric	N	N	
43	Video Location	Text	Y	Y	For digital recordings, path of video file relative to corresponding data file
44	Easement_Accessibility_for_Inspection	Numeric	Y	Y	Score 1 to 4 1) Excellent: Paved road, can drive through with a truck 2) Good: Access clear, little vegetation, can walk in easily, low slope 3) Fair: Moderate vegetation 4) Inaccessible: Heavy vegetation, needs clearing, steep slope
45	Surcharge	Numeric	Y	Y	Measured from rim to level of surcharge or evidence of surcharge in feet to nearest 0.1 ft.
46	Easting	Numeric	Y	Y	GPS Coordinate Easting - NAD83 State Plane Georgia West
47	Northing	Numeric	Y	Y	GPS Coordinate Northing - NAD83 State Plane Georgia West

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**SECTION 01520**  
**SEWER FLOW CONTROL**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. The purpose of this section is to define the various methods of wastewater flow control including plugging/blocking and bypass/diversion pumping. Wastewater flow control shall maintain an efficient and uninterrupted level of service to the sewer system while performing investigative or construction operations.

**1.02 RELATED SECTIONS**

- A. Section 01510 – Sanitary Sewer Main Television and Sonar Inspection
- B. Section 02956 – Sanitary Sewer Cleaning

**1.03 REFERENCES**

- A. ASTM D1238 - Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
- B. ASTM D1248 - Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
- C. ASTM D1505 - Standard Test Method for Density of Plastics by the Density-Gradient Technique
- D. ASTM D1693 - Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics
- E. ASTM D2122 - Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- F. ASTM D2657 - Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings
- G. ASTM D2837 - Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products

**1.04 SUBMITTALS**

- A. Seven (7) calendar days prior to any bypass/diversion pumping activity the Contractor shall submit six (6) copies of the complete and detailed plan to the Program Manager for review. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction. The Contractor may submit a general bypass/diversion pumping plan to be used when bypassing sewer mains **smaller than or equal to 12-inch** diameters. Once the Contractor has received written approval from the Program Manager for the **smaller than or equal to 12-inch** sewer main plan, the Contractor may use the plan without re-submittal.
- B. Experience documentation shall be submitted. The Contractor shall provide the Program Manager with written documentation acknowledging the supervisor and field crew leaders responsible for this work have received the proper training, are certified, and have the requisite

experience. This documentation will include dates of hands-on experience, employer, description of duties/experience, contact name and phone number. Documentation on any person shall not be longer than one (1) page.

- C. The **bypass/diversion pumping plan** submittal shall have sufficient detail to show the following:
1. Lowest overflow point upstream of the bypass/diversion.
  2. Pump stations upstream of the bypass/diversion.
  3. Staging area for pumps.
  4. Sewer plugging method and types of plugs.
  5. Number, size, material, location and method of installation of suction piping.
  6. Number, size, material, location and method of installation of discharge piping.
  7. Bypass pump sizes, capacity, number of each size to be onsite and the power requirements.
  8. System curve design calculations detailing the static lift, friction losses, velocity losses and flow velocities.
  9. Pump curves with the system curves plotted showing the pump operation range and confirming the pump size, horsepower and impeller required.
  10. Standby power generator size and location, if utilized.
  11. Noise control and abatement measures.
  12. Downstream discharge plan including pipe routing plan and profile views.
  13. Sections showing suction and discharge pipe depth, embedment, joint restraints, thrust blocking and backfilling.
  14. Method of protecting discharge manholes or structures from erosion and damage.
  15. Location and position, in detail, where pipes cross roadways and driveways.
  16. Traffic Control Plan, if applicable.
- D. For bypass plans associated with sewer mains **larger than 12-inches** in diameter, a Georgia certified Professional Engineer must sign and seal the bypass/diversion plan.
- E. The Contractor will provide an emergency response plan for each bypass/diversion pumping. The plan will be followed in the event of failure of the bypass/diversion pumping system. The Contractor shall provide names and phone numbers for twenty-four (24) hour emergency contact.
- F. The Contractor must identify all pump stations and the lowest overflow point upstream of the plugging/block and/or bypass/diversion pumping. The Contractor may be required to station personnel at upstream pump stations and overflow points.
- G. The Contractor shall notify the Program Manager 48 hours prior to commencing any plugging/block and/or bypass/diversion pumping.
- H. The Contractor shall complete a daily written record (diary) detailing the work carried out and any small items of Work incidental to the Work. The Contractor shall include in his daily record and reference to the following:
1. **Delays:** Dense traffic, lack of information, sickness, labor or equipment shortage, etc.
  2. **Weather:** Conditions (e.g., rain, sunny, windy, etc.).

3. **Equipment:** On site (e.g., specialty cleaning, by-pass equipment, etc.).
4. **Submittals:** To the Owner's Program Manager.
5. **Personnel:** On site by name (e.g., all labor, specialty services, etc.).
6. **Accident:** Report (e.g., all injuries, vehicles, etc.).
7. **Incident:** Report (e.g., damage to property, property owner complaint, etc.).
8. **Major defects encountered:** including collapsed pipe, if any, cave-ins, sink holes, etc.
9. **Visitors:** On site.
10. **Disposals:** Type and quantity of debris (including liquids).

## **1.05 PERSONNEL**

- A. The Supervisor must visit the project site daily, checking on their personnel and subcontractors, meeting with the field crew leaders, as well as checking on the status and progress of the project.
- B. A field crew leader must be with their crew when their crew is working. Each field crew leader can only have one crew. Each crew must have its own field crew leader.

## **1.06 RESPONSIBILITY FOR SANITARY SEWER OVERFLOWS AND DAMAGE TO PROPERTY AND UTILITY**

- A. Reference Specification Section 01030 – Special Project Procedures.

## **1.07 SAFETY**

- A. All work shall be performed in accordance with OSHA standards and state and federal safety regulations.
- B. No person shall enter a confined space without the documented requisite training, certification, and entry permit.

## **PART 2 – PRODUCTS**

### **2.01 PIPE FOR FLOW DIVERSION**

- A. Ductile Iron Pipe: Ductile iron pipe, as specified in DeKalb County Design Standard for Ductile Iron Sanitary Sewer Pipe and Fittings, is acceptable for use for flow diversion during construction.
- B. Steel pipe is permitted for flow diversion.
- C. High Density Polyethylene Pipe (HDPE) is permitted for flow diversion. Polyethylene material shall comply with the requirements for Type III polyethylene, C-5 and P-34 as tabulated in ASTM D-1248 and has the Plastic Pipe Institute recommended designation PE3406. The material shall also have an average specific base resin density of between 0.94 g/cc and 0.955 g/cc (ASTM D-1505). Pipe made from these resins must have a long-term strength (50 years) rating of 1,250 psi or more per hydrostatic design basis categories of ASTM D-2837. The polyethylene resin shall contain antioxidants and be stabilized against ultraviolet degradation to provide protection during processing and subsequent weather exposure. The polyethylene resin shall have an environmental stress crack resistance condition C, as shown in ASTM D-1693, to be greater than 500 hours, 20% failure. All pipes shall be made from virgin quality material. No rework compound,

except when obtained from the manufacturer's own production of the same formulation shall be used. The polyethylene resin shall have an average melt flow index, condition E as shown in ASTM D-1238, not in excess of 0.25 g/10 mm. Pipe shall be homogeneous throughout, and free of visible cracks, holes, foreign material, blisters, or other deleterious faults. Diameters and wall thickness shall be measured in accordance with ASTM D-2122. Pipe joining will be done by thermal butt fusion method in accordance with ASTM D-2657.

- D. Polyvinylchloride (PVC) pipe is permitted for flow diversion. PVC pipe shall be rigid and securely coupled with a minimum number of connections. Glued PVC is not allowed.
- E. Lay flat hose is permitted for use with 2" and 3" gas powered portable pumps.
- F. Irrigation type piping is not allowed.
- G. No more than two (2) pump discharge hoses will be allowed at any given time. The length of these hoses shall be limited at the direction of the Program Manager.
- H. The Contractor, at a minimum, shall design all piping, joints and accessories to withstand twice the maximum operating pressure or 100 psi whichever is greater.
- I. If required the Contractor must provide air relief (air relief valves, etc.) on bypass/diversion pumping discharge piping to insure proper operation.
- J. All pumps used shall be fully automatic self-priming units and do not require the use of foot-valves or vacuum pumps in the priming system. The pumps may be electric, gas, or diesel powered, provided they meet all specified sound level requirements. If electric pumps are used, the combined generator/pump system shall meet the specified sound level requirements. All pumps used shall be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows.
- K. Maintain sufficient equipment and materials on site to ensure continuous and successful operation of bypass and dewatering systems.
  - 1. Keep standby pumps fueled and operational at all times.
  - 2. Maintain sufficient number of valves, tees, elbows, connections, tools, sewer plugs, piping, and other parts or system hardware on-site to ensure immediate repair or modification of any part of system as necessary.
- L. Unless specified otherwise in these Specifications or approved by the Program Manager, all pumps (and generators if used) shall be fully sound attenuated and shall produce a noise level of sixty-five (65) dB or less at a distance of twenty-three (23) feet.
- M. The Contractor shall provide the necessary stop/start controls for each pump.

## **PART 3 — EXECUTION**

### **3.01 GENERAL STANDARDS AND REQUIREMENTS**

- A. Prior to commencing each bypass/diversion pumping activity the Contractor must receive written approval from the Program Manager.
- B. Ensure all levels of sewage flow are continuously and effectively handled.



- C. The Contractor shall use ingenuity and skill to develop a bypass/diversion pumping plan.
- D. The back-up pump, appropriate piping, fuel, lubrication and spare parts shall be incorporated into the bypass/diversion pumping arrangement at the site, ready for use in case of a breakdown.
- E. At no cost to the Owner and Program Manager, the Contractor will carry out a “trial run” of the bypass/diversion arrangement on all sewers greater than 12-inches. This trial run must be conducted before the Program Manager will accept the arrangement. The “trial run” shall demonstrate the incorporation of all standby equipment to handle flows when the main pump set is switched off.
- F. All materials used for bypass/diversion pumping shall be pre-approved by the Program Manager prior to commencing pumping activities.
- G. When wastewater flows at the upstream manhole of the sewer main being televised are above the maximum allowable requirements for television inspection, or do not allow the proper sewer or manhole repair, the flows shall be reduced to the levels required by one of the following methods: plugging/blocking or bypass/diversion pumping of the flows, as approved by the Program Manager.
- H. In some applications, the wastewater flow may be plugged/blocked and contained within the capacity of the collection system. This shall only be done when it has been determined by the Contractor and approved by the Program Manager the system can accommodate the surcharging without any adverse impact.
- I. The plan must keep the wastewater flowing without discharge or spills into any adjacent creeks or on to the ground. No bypassing to ground surface, receiving waters, storm drains, or bypassing resulting in groundwater contamination or potential health hazards shall be permitted. The Contractor will seek and obtain inspection of each section of newly laid sewer before removing the flow diversion from service and placing the newly installed or rehabilitated section into service.
- J. All pipe materials utilized in wastewater flow control shall be in good condition, and free of defects, and leaks. The Contractor, at no cost to the Owner and Program Manager, shall replace any defective material. Upon completion of the job, wastewater flow control materials shall be removed from the site.
- K. Before any wastewater flow control equipment is installed, the Contractor shall de-silt the segment of sewer to be bypassed while it is still under flow. Subsequent jetting and final cleaning before inspection or repair shall be undertaken while the segment of sewer is bypassed.
- L. The Contractor is responsible for locating any existing utilities in the area the Contractor selects to locate the bypass pipelines. The Contractor shall locate his bypass pipelines to minimize any disturbances to existing utilities and shall obtain approval of the pipeline locations from the Program Manager. All costs associated with relocating utilities and obtaining all approvals shall be paid by the Contractor.
- M. During all wastewater flow control operations, the Contractor shall protect manholes and all local sewer lines from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to mainlines, manholes, and all local sewer lines caused by human or mechanical failure.

- N. The Contractor shall complete all wastewater flow control activities with the minimum sound level compatible with accepted industry standards for sound attenuated temporary pumping systems.

**3.02 DEPTH OF FLOW**

- A. In performing television inspection, joint testing, and/or sealing and other sewer rehabilitation work, the Contractor shall control the depth of flow in the sewer within the following guidelines:

<b>Maximum Pipe Flow Depth</b>			
<b>Television Inspection</b>		<b>Joint Testing and Sealing</b>	
<b>Pipe Size</b>	<b>% Pipe Dia.</b>	<b>Pipe Size</b>	<b>% Pipe Dia.</b>
6"-12"	15	6"-12"	20
15"-24"	25	15"-24"	25
27" or larger	25	27" or larger	30

- B. When sewer line flows, as measured in the first manhole upstream of the sewer segment being inspected or rehabilitated, exceed the maximum depth listed above or inspection of the complete pipe periphery is necessary for effective testing, sealing, or line work, the Contractor shall implement wastewater flow control methods. The implementation of the flow control method shall be reviewed and approved by the Program Manager.

**3.03 PLUGGING AND BLOCKING**

- A. The Contractor shall insert a sewer line plug into the line at a manhole upstream from the section being inspected or repaired. The plug shall be so designed so all or any portion of the flow can be released. Plugs should be secured to manhole to prevent movement downstream. Flows shall be shut off or reduced to within the maximum flow limits specified. Wastewater flow shall be restored to normal following completion of work.
- B. No Plumbers plugs will be allowed.

**3.04 BYPASS/DIVERSION PUMPING**

- A. When bypass/diversion pumping is required, a pump size shall be recommended by the Contractor and approved by the Program Manager. The Contractor shall supply the necessary pumps, conduits, and other equipment to divert the flow of wastewater around the sewer section where the work is to be performed. The bypass system shall have sufficient capacity to handle existing flows plus additional flow potentially occurring during periods of rainstorms as indicated from the flow monitoring program. The Contractor shall be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system. A "setup" consists of the necessary pumps, conduits, and other equipment required to divert the flow of wastewater from the start to finish of work performed.
- B. Wastewater shall be pumped directly into the nearest available downstream manhole, provided the existing sewer has the capacity to transport the flow. The Contractor shall request the Program Manager to determine the capacity of the downstream existing system. The Contractor shall request this determination fourteen (14) calendar days prior to the planned bypass/diversion pumping.

- C. The Contractor shall be responsible for keeping the pumps running continuously 24 hours a day, if required, until the bypass operation is no longer required. The Contractor shall have standby pumps at all times.
- D. Bypass pumping systems shall have sufficient capacity to pump peak flows in the pipes being bypassed (flows in the existing interceptor sewers can increase dramatically during periods of wet weather). The Contractor shall provide all pipeline plugs, pumps of adequate size to handle wet weather peak flows, and temporary discharge piping to ensure the total flow of the interceptor sewer is safely diverted around the section to be repaired. Wastewater flow control system will be required to be operated twenty-four (24) hours per day.
- E. Maintenance personnel capable of starting, stopping, refueling, and maintaining the pumps and equipment during the bypass/diversion pumping operation shall continuously monitor pumps and equipment. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum.

### 3.05 FLOW CONTROL PRECAUTIONS

- A. Where the wastewater flow is plugged/blocked, the Contractor shall be responsible for taking sufficient precautions to protect public health. The sewer lines shall also be protected from damage. The following shall apply:
  - 1. No wastewater shall be allowed to back up into any homes or buildings.
  - 2. No wastewater shall overflow any manholes, cleanouts, or any other outlet.
  - 3. Customers upstream of the flow control area shall be able to use all their water and sewer utilities without interruption.
  - 4. If any of the above occur or are expected to occur, the Contractor shall provide bypass/diversion pumping to alleviate one or all of the conditions. Additionally, the Contractor shall observe the conditions upstream of the plug and be prepared to immediately start bypass/diversion pumping, if needed.
- B. Any sump pumps, bypass pumps, trash pumps, or any other type of pump, pulling wastewater or any type of material out of the manhole or sewer, shall discharge the material into another manhole, or appropriate vehicle or container approved by the Program Manager. **Under no circumstances shall this material be discharged, stored, or deposited on the ground, swale, road, or open environment.**
- C. The Contractor shall take appropriate steps to ensure all pumps, piping, and hoses carrying raw wastewater are protected from traffic. Traffic control shall be performed in accordance with the requirements of the governing agency.
- D. Prior to any wastewater flow control operations the Contractor will identify the pump station/s and lowest overflow point upstream of the planned plugging/blocking or bypass/diversion. During operations the Contractor will monitor the pump stations and lowest points to ensure overflow does not occur.
- E. In the event, during any form of "Sewer Flow Control," raw wastewater is spilled, discharged, leaked, or otherwise deposited in the open environment, the Contractor shall immediately stop overflow and shall immediately report overflows to the Program Manager. The Contractor shall be responsible for any cleanup of solids and stabilization of the area affected. This work shall be performed at the Contractor's expense with no additional cost to the Owner or Program Manager.

The Contractor shall also be responsible for notifying the Program Manager and complying with any and all regulatory requirements for cleaning up the spill at no additional cost to the Owner. The Contractor shall be responsible for any fines assessed by regulatory agencies including the Georgia Environmental Protection Division (EPD).

- F. During wastewater flow control operations, the Contractor shall take proper precautions to prevent damage to existing sanitary sewer facilities, flooding, or damage to public or private property.
- G. The Contractor shall make repairs, replacements or rebuilds, as directed by the Program Manager, to any portion of the sewer system damaged during any plugging or bypass/diversion pumping operation. All such repairs, replacements, and rebuilding shall be paid for by the Contractor.
- H. The Contractor shall make such provisions, as are necessary, for handling all flows in existing sewers, connections, and manholes by pipes, flumes, or by other approved methods at all times, when his operations would, in anyway, interfere with normal functioning of those facilities.
- I. The Contractor shall be responsible for the removal of any debris and sedimentation in the existing sewers, laterals, and manholes, etc., attributable to his work under this Contract. The Contractor is responsible for the proper disposal of these items. The debris and liquids are to be disposed of properly in accordance with all applicable laws. The local municipality can furnish a letter to the landfill stating the contractor is authorized to dispose of the non-hazardous materials. Debris and liquids type and quantities are to be tracked in the daily Contractor diary. Hauling and disposal costs will be borne by the Contractor.

### **3.06 CLEAN UP**

- A. Keep premises free from accumulations of waste materials, rubbish, and other debris resulting from the Work.
- B. Restore to original condition portions of site not designated for alterations by Contract Documents.
- C. When by-pass pumping operations are complete, drain piping into sanitary sewer prior to disassembly.

**END OF SECTION**

**SECTION 01530**  
**MANHOLE CONDITIONS ASSESSMENT**

**PART 1 – GENERAL**

**1.01 WORK THIS SECTION**

- A. The purpose of manhole condition assessment (MCA) is to locate a manhole, document all incoming and outgoing pipes, and determine its physical dimensions, materials, structural condition, maintenance concerns, and sources of infiltration/inflow. NASSCO's MACP (latest edition) manhole condition assessment codes will be utilized. Manhole condition assessments will be conducted on every manhole in the assigned project area, unless otherwise directed by the Program Manager.

**1.02 REFERENCES**

- A. Codes, Specifications, and Standards
- B. NASSCO – National Association of Sewer Service Companies – Pipeline Assessment Certification Program (PACP) Reference Manual, Version 6.0.1, November 2010 or latest version
- C. Manual for Uniform Traffic Control Devices (MUTCD) standards
- D. Related Sections
- E. Section 01056 – GPS Data Collection
- F. Section 01320 – Progress Reports & Videos
- G. Section 02607 – Manhole Height Adjustment
- H. **Attachment A** – MACP Standard Exchange Database Anticipated Inspection Header Form Attribute Guidance Table (Manholes)
- I. **Section 01510 - Attachment A** - PACP Standard Exchange Database Anticipated Inspection Header Form Attribute Guidance Table (Zoom Camera)

**1.03 DEFINITIONS**

- A. **Buried Manhole:** A manhole where the manhole cover (lid) is not visible at ground surface. Buried manholes usually require removing the material covering the manhole lid and raising the manhole frame and cover (lid). All buried manholes on the sanitary systems shall be reported by the Contractor. The Program Manager will evaluate the condition and issue a Work Order/s for exposing and raising of the subject manholes as warranted to facilitate a complete inspection. (Reference Specification Section 02607).
- B. **Designated Manhole(s):** Manholes identified by Program Manager to be assessed. For the purpose of this contract, Designated Manholes shall be all manholes on the sanitary sewer systems including new manholes, raised manholes, buried manholes, and unmapped manholes discovered during the project.

- C. Manhole: A subsurface structure where one or more pipes meet, with person access from the ground surface.
- D. Manhole Structure: Reference to and all activities relevant to manhole structures throughout the text shall also be taken to include junction boxes, inspection chambers, drop shafts, sumps, and all other auxiliary structures appurtenant to the sanitary sewer system.
- E. Mapped Manhole: A manhole that appears on the Owner's sewer system maps.
- F. Raised Manhole: A manhole in which the frame and cover has been raised above their previous level.
- G. Unburied Manhole: A manhole on a pipe to be assessed that was formerly buried below ground surface.
- H. Unmapped Manhole: A manhole not included on the Owner's sewer system maps. An unmapped manhole is also known as an uncharted manhole.
- I. Elevated Manhole: A manhole in which the frame and cover are more than 12-inches above ground level on any side.
- J. Program Manager: the DeKalb County Department of Watershed Management (Owner) authorized representative.

#### **1.04 SUBMITTALS**

- A. Catalog and manufacturer's data sheets for photo camera and zoom camera equipment
- B. References: Contact names and telephone numbers
- C. List of staff and equipment to be used on this Project
- D. Supervisor, field crew leader qualifications including certification of required experience and MACP certification training identification number
- E. Supervisor and field crew leader's contact information including name and mobile telephone numbers
- F. Confined space entry certification that staff to be used on this project have been properly trained should confined space entry be required
- G. Contractor's Safety Plan
- H. Training and inspection plan a minimum of 7 days prior to the first inspection
- I. 14 day look ahead schedule weekly based on Program Manager's work priority schedule
- J. Public notification door hanger based on Program Manager's provided example
- K. Include the following with each weekly submittal:
- L. Inspection media (videos and photographs)

- M. Quality controlled Inspection database (MACP Standard Exchange Access Database)
- N. Inspection reports (PDF – Digital format)
- O. Traffic control plan
- P. Quality control plan
- Q. The Contractor shall provide the Owner and Program Manager with written documentation (certification) that the supervisor, field crew leader and all crew members responsible for these assignments have the proper training and the requisite experience.

**1.05 RESPONSIBILITY FOR OVERFLOWS/SPILLS AND DAMAGE TO PROPERTY AND UTILITY**

- A. Reference Specification Section 01030 – Special Project Procedures.

**PART 2 – PRODUCTS/EQUIPMENT**

**2.01 GENERAL**

- A. The Contractor shall CCTV the manhole interior from rim to bottom of the outflow invert utilizing a graduated rod to specify depths along the video. Any digital photographs taken shall be with a 3.0 mega pixel color camera, minimum.
- B. The Contractor will provide high-powered hand held spotlights and mirrors (to direct natural sunlight into the manhole) to properly illuminate the interior of the manhole when a Top Side Inspection is performed.
- C. The Contractor shall ensure that the camera used for associated main inspections is centered in the middle of circular pipe lines and manhole risers at all times during inspection and that the resulting product provides an unobstructed view of the pipe segment. Using a steel tape or graduated survey rod, manhole depth is to include extent from rim elevation directly above the outflow invert to bottom of outflow invert. Depths to all incoming and outgoing pipe inverts shall be measured.
- D. The camera utilized for CCTV inspection of the manhole interior shall be GoPro Hero+LCD HD Video (or equivalent quality) or zoom camera.

GoPro Video Mode:

GoPro Video Format: H.264 codec, .mp4 file

Video Resolution	Frames/Sec	Field of View	Screen Resolution
1080p	60,50,30,25	Ultra Wide	1920 x 1080
720p	60,50	Ultra Wide	1280 x 720
720p Suuperwide	60,50	Ultra Wide	1280 x720

GoPro Photo Mode-Resolution: Capture a single photo at 8MP, Wide FOV, 3264 X 2448 screen resolution (or better).

If a zoom camera is utilized, the zoom camera shall be equipped with an optic telephoto lens with sufficient magnification that the effects of pixelization do not degrade the farthest image. Criteria include:

1. Optical zoom range: 25X (minimum)
  2. Digital zoom range: 1X through 12X (minimum)
  3. Total effective zoom ratio: 300X (minimum)
  4. Designed with the ability to pan the camera head 360 degrees continuously, tilt mechanically 35 degrees up from horizontal, tilt mechanically 90 degrees down from horizontal and tilt optically 166 degrees.
  5. Auto focus and auto exposure features. In addition, it shall be capable of remote, real time, operator manual override and adjustment of focus and camera aperture operations.
- E. The camera light source will be adjustable to allow an even distribution of light around the sewer and manhole perimeter without loss of contrast, flare out of picture, or shadowing.
- F. The telescopic pole must be capable of lowering the camera to a depth of at least 30 feet inside the manhole.
- G. It is the responsibility of the Contractor to comply with OSHA regulations. The Contractor must provide all equipment required to comply with the regulations and guidelines.
- H. The Contractor shall provide all labor, material, supplies, equipment, transportation, traffic control, etc., necessary to complete the manhole condition assessments and associated zoom camera inspections. The Contractor shall make provisions to have ready access to spare or back-up zoom cameras and other sensitive equipment to maintain the inspection schedule.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. Manholes to be assessed (designated manholes):
1. The Contractor shall identify all designated manholes on the sewer systems to be assessed and confirm the manhole referencing system to be used throughout the survey and for all subsequent reporting. The Contractor shall inspect and record both mapped and unmapped manholes as well as buried and unburied manholes in addition to designated manholes (Reference Specification Section 01056).
  2. The visible portion of each of the Owner's sewers entering designated manholes shall also be inspected, when accessible, to assess overall structural and service condition and possible forms of infiltration using camera.
  3. For manholes without a pre-assigned Manhole ID number the contractor shall notify the Program Manager and assign a temporary unique identifier number to be coordinated with the Program Manager.
  4. When buried manholes are discovered, Contractor will alert the Program Manager, and submit report of all buried manholes, their location and surface cover. Contractor will coordinate Manhole Height Adjustment (Specification Section 02607) with Program Manager.



5. When a broken manhole cover and/or casting are identified, Contractor will advise the Owner and Program Manager in writing of the location of such broken cover and/or casting on the daily reports within 24 hours.
  6. Inspection data shall be submitted to the Program Manager in an approved MACP Standard Exchange Access database (Version 6 or newer). Digital data and high resolution digital video and photographs will be delivered to the County on external hard drives.
    - a. Only approved standard exchange database shall be submitted
    - b. Databases will be named by date, will include all inspections performed to date and will be accompanied with a description of the regions inspected to date.
    - c. Include all inspections. Creating a database per inspection is not acceptable.
    - d. Inspection media will be submitted in conjunction with database.
  7. Digital video and photographs shall be provided for each unique manhole assessment inspection, include the Manhole Facility ID and be named in the following format:
    - a. [ManholeID][Type Designation] [Video/PhotoIncrementalNumber].jpg
    - b. Video/PhotoIncrementalNumber is to ensure no two videos and/or photographs are the same. The number can be the photo ID if the software does not have a random number generator.
    - c. Type Designation (still photos) – A for Area Photo, I for Internal Photo, P for Pipe Photo and F for MH Defect Photo.
- B. If manhole(s) to be inspected requires significant cleaning to facilitate or execute inspection, Contractor shall notify Program Manager. Program Manager will coordinate cleaning to be performed by the Owner and notify Contractor when manhole is available for inspection.
- C. Confined Space Entry: Crews shall minimize the physical entry into manholes. Manhole entry shall be performed in accordance with Federal, State, Local and any other regulations for confined space entry. Only trained crews and staff may perform confined space entry after obtaining an entry permit. Staff must use safety required equipment, including harnesses, ventilation equipment, etc.
- D. The Contractor shall take videos/digital photos as described in this section, complete the assessment report, make map verifications, and record map corrections as necessary (Refer to Specification Section 01056).
- E. Traffic Control: All traffic control measures shall comply with the requirements of MUTCD, Part 6 – Temporary Traffic Control, Latest Edition as published by USDOT/FHWA.
- F. Site Security: Wear all required safety equipment, such as safety vests, hardhats, safety glasses, and steel toe boots. Follow all applicable state and local traffic safety procedures.
- G. Scheduling Time: Crews shall begin inspections after 8:00 am and terminate inspections no later than 5:00 pm each day unless otherwise directed by the Program Manager in order to address localized special requirements. Authorization should be obtained if work is to be performed outside of the designated hours. Work should be performed by the Contractor in time frames that will allow compliance with the County's noise ordinance.

- H. At the end of each day, update the status of what manholes were inspected using the web-based mobile device. Refer to Section 01030 – Special Project Procedures.
- I. Permits for Rights of Ways & Contract Utility Licensing:
  - 1. The Contractor shall obtain any applicable work permits for all work to be performed in State and/or County Right of Ways. The Contractor shall also plan for all other applicable insurances, traffic control measures, and other terms of the permit in advance. The Contractor shall also obtain all necessary and applicable licensing.

### 3.02 DOCUMENTATION

- A. Manholes:
  - 1. The data to satisfy all anticipated assessment form inspection header variables shown in **Attachment A** to this Section and associated defect codes will be recorded by the Contractor and submitted in the form of digital data in an MACP Standard Exchange Access database. The contractor will also submit digital reports, updated mapping information, digital videos and digital photos. Submitted data shall be included on an external hard drive. The MACP Standard Exchange database with each submittal shall be consolidated and cumulative, including all prior assessed manholes (data corrected as required) as well as new manholes assessed for that pay period. MACP database anticipated attribute fields shall be populated per guidance of Section 9 (MACP) of NASSCO Pipeline Assessment Certification Program Reference Manual, Version 6.0.1 – November 2010 and as shown in **Attachment A** to this Section.
- B. Pipes:
  - 1. Contractor shall use the appropriate data collection software to capture and record information also related to the pipeline(s) connected to each inspected manhole using video/zoom camera inspection. Anticipated attribute (**Attachment A to Section 01510**) data inspection header fields and formats for recorded defect code data should be in a PACP Standard Exchange Access database. Submitted data shall be included on same external hard drive as other digital deliverables. The PACP Standard Exchange database with each submittal shall be consolidated and cumulative, including all prior assessed pipes (with data corrections) as well as new pipes assessed for that pay period. Anticipated PACP database inspection header fields shall be populated per NASSCO Pipeline Assessment Certification Program Reference Manual, Version 6.0.1 – November 2010 and per the guidance of the zoom camera inspection column in **Attachment A to Section 01510**.
    - a. Photos of major observed defects will be captured in JPEG format.

### 3.03 PHOTOGRAPHIC DOCUMENTATION PROCEDURES

- A. A set of high-resolution digital color video/photographs shall be taken for each manhole assessed, showing:
  - 1. Above ground features and conditions in the vicinity of the manhole to be assessed – photo to be taken looking downstream with manhole in immediate foreground
  - 2. View from surface, of manhole invert – outgoing pipe at 6:00 o'clock.

3. Any structural defects, evidence of leakage, obstructions, roots, mortar loss, evidence of hydrogen sulfide attack, etc.
4. Each photograph filename shall be entered into the digital standard exchange database in the appropriate record that it is associated with.
5. Digital photographs of all in/out pipes in the manhole shall also be submitted digitally at each interim submittal.

### **3.04 DELIVERABLES**

- A. Digital MACP Standard Exchange Access database Version 6.0 or newer with inventory and condition data, along with specified reports, videos and photographs shall be submitted to the Program Manager. The digital database must contain all the data required by this specification.
- B. Digital PACP Standard Exchange Access database Version 6.0 or newer with inventory and condition data, along with specified reports and photographs of each shall be submitted to the Program Manager. The digital database must contain all the data required by this specification.
- C. Mapping corrections per guidance in Specification Section 01056.
- D. Data Collection Methods: Digital data must be delivered in the prescribed method for uploading to the Owner's Mapping System. However, the Contractor may use whatever method the Contractor chooses to collect the data.
- E. The Contractor shall complete work on each asset as described herein. Refer to the Measurement and Payment Section (Section 01025) on documentation requirements to be provided with each pay request.
- F. Mobile Mapping will be updated to indicate progress toward completion of the assigned work. Mobile Mapping instruction will be provided by the Owner.

### **3.05 PUBLIC NOTIFICATION – MANHOLE CONDITION AND CCTV/SONAR ASSESSMENT**

- A. Public notification is critical and compliance with the public notification criteria is a prerequisite for manhole condition and CCTV/Sonar assessments, especially when conducting assessments on lines and manholes in easements on private property. Notification must be provided to all property occupiers/owners likely to be affected including residential, commercial and institutional (schools, hospitals, nursing homes, etc.). At a minimum, the following steps shall be taken:
  1. The Contractor shall print and distribute pre-approved advance notice door hangers 72 hours before conducting manhole condition and CCTV/Sonar assessments. The Contractor shall distribute the door hangers to the property owners (residential, commercial and institutional) in the affected area(s). The advance notice door hangers shall be customized by Public Outreach to suit this project and will be provided to the Contractor for printing prior to project commencement. If assessments are delayed, the Contractor must re-distribute door hangers. The door hangers will state what assessment will be done (CCTV/Sonar and/or MH) and the time frame associated with the assessment.
- B. The Contractor is responsible for distributing pre-approved "Right-of-Entry" (ROE) forms and securing signatures from affected property owners on the ROE forms prior to conducting assessments on private property.

- C. The Contractor shall keep a daily log of the distribution of the door hangers. This shall be maintained and submitted to the Owner and/or Program Manager upon request.
- D. The Contractor shall alert the appropriate Owner and Program Manager personnel of their work locations on a daily basis.
- E. Contractor will provide and place “Right-of-Way” signs in prominent locations where manhole condition and/or CCTV/Sonar assessments are planned 24-hours in advance of commencing the assessment. Signs will be a minimum of 24 inches wide by 18 inches high with letters a minimum of 2 inches high. Signs will be supported a minimum of 12 inches above grade by integral metal frames. Wording on the signs shall be similar to the following:
  - 1. MANHOLE CONDITION ASSESSMENT WILL BE CONDUCTED ON “DATE” AND “TIME.” CONTACT “PERSON” WITH “COMPANY” AT “PHONE NUMBER” FOR ADDITIONAL INFORMATION.
  - 2. CCTV/Sonar ASSESSMENT WILL BE CONDUCTED ON “DATE” AND “TIME.” CONTACT “PERSON” WITH “COMPANY” AT “PHONE NUMBER” FOR ADDITIONAL INFORMATION.

### **3.06 QUALITY CONTROL PROCEDURES**

#### Data Quality Control Procedure:

- A. Prior to assessment data submission, the Contractor shall run queries for quality control (QC) as required by the Program Manager. The queries are developed by the Program Manager and provided to help the Contractor quickly locate data gaps and errors prior to submitting the respective assessment access database. The QC queries play an integral role in confirming complete data submissions are provided to allow for error-free data upload and synchronization by the Program Manager. The Program Manager will determine the extent of which QC queries will be required for a particular assessment activity. Typical QC queries may include, but are not limited to, the following:
  - 1. Header Data
  - 2. Asset Identification Nomenclature
  - 3. Asset Attributes
  - 4. Defect Locations
  - 5. Video/photo links, Etc.
- B. The Contractor shall perform a Quality Control (QC) check of the manhole/CCTV inspection documentation using the QC database provided by the Program Manager. The Program Manager will provide at minimum 2 hours of training on use of the QC database tool for the Contractor. The Contractor shall correct any data conflict, missing data, or other questionable entry identified by the QC reports prior to submitting the inspection data to the Program Manager. Errors found in the PACP/ MACP databases reviews will be corrected in the respective consolidated PACP/MACP databases by the Contractor.
- C. The Program Manager will periodically request the Contractor to review the QC results with the Program Manager.

- D. The data submissions shall undergo the same random review checks for Quality when submitted to the Owner/Program Manager. Should accuracy or qualitative levels fall below those deemed acceptable to the Program Manager, the data submittal will be refused and no payment will be released. Contractor will be required to correct or re-do inspections until the Program Manager is satisfied with the work.

### **3.07 COLLAPSING MANHOLES, COLLAPSING PIPES**

- A. Any manhole with severely compromised structural integrity and posing a hazard or threat of personal injury to the public must be reported to the Program Manager immediately for remedial action. Written confirmation of the report, including all details of the defect/hazard shall be made to the Program Manager within 24 hours of the discovery of the problem.
- B. The Contractor must protect any manhole with conditions that pose a threat of personal injury to the public until the Owner and/or Program Manager takes control of the structure or until a repair is authorized and completed by the Contractor.

### **3.08 BOLTED COVERS**

- A. For all bolt-down style manhole covers, upon completion of the assessment, all bolts that were removed must be put back in place using sealing gaskets as necessary.

**END OF SECTION**

Attachment A:

a. MACP Standard Exchange Database Anticipated Inspection Header Form Attribute Guidance Table

Number	Field	Type	Required	Sample/Instructions/Comments
1	Surveyed_By	Text	Y	Name of individual conducting survey - eg KTRAN
2	Certificate_Number	Text	Y	NASSCO PACP # of Surveyor - eg U-907-4396
3	Owner	Text	N	Owner of collection system surveyed - DeKalb DWM
4	Customer	Text	N	Entity commissioning the survey - DeKalb DWM
5	Drainage_Area	Text	Y	Ranking Area Name - eg. TAZTEC3
6	Sheet_Number	Numeric	N	
7	PO_Number	Text	Y	Contract number Contractor is working under
8	Date	Numeric	Y	Inspection Date - YYYYMMDD
9	Time	Text	Y	Time Inspection Started - Military Time
10	Street	Text	Y	Enter nearest street number and name of US Access point/If not known, enter nearest place name and general description
11	City	Text	Y	City name where sewer located - eg DECATUR
12	Location_Details	Text	Y	Descriptive explanation of sewer location
13	Manhole_Number	Text	Y	Client provided designation for manhole
14	Rim_to_Invert	Numeric	Y	Distance (ft and tenths of ft) from rim to invert of manhole
15	Grade_to_Invert	Numeric	Y	Distance (ft and tenths of ft) from average grade to invert of manhole
16	Rim_to_Grade	Numeric	Y	Distance (ft and tenths of ft) from rim to average grade of manhole
17	MH_Use	Text	Y	2 character code SS = Sanitary SW = Stormwater PR = Processes CB = Combined FM = Force Main ZZ = Other (list in field 27)
18	Year_Built	Text	N	YYYY; should either use date field or text as numeric can be problematic
19	Year_Renewed	Text	N	YYYY

20	Media_Label	Text	Y	
21	Purpose	Text	N	1 character code A = Maintenance related B = Infiltration & Inflow investigation C = Post rehabilitation survey D = Pre rehabilitation survey E = Pre acceptance F = Routine assessment G = Capital improvement program assessment H = Resurvey for any reason I = Sewer system evaluation survey (SSES) Z = Not known
22	Category	Text	N	1 character code; shows as alphanumeric, though
23	Pre_Cleaning	Text	Y	1 character code J = Jetting H = Heavy cleaning N = No pre-cleaning Z = Not known
24	Date_Cleaned	Numeric	N	YYYYMMDD
25	Weather	Numeric	Y	1 character PACP code 1 = Dry 2 = Heavy Rain 3 = Light Rain 4 = Snow 5 = Saturated 6 = Damp 7 = Very Dry
26	Location_Code	Text	Y	1 character PACP code A = Main Highway - Urban B = Main Highway - Suburban C = Light highway - Local Roads D = Easement/ROW E = Woods F = Sidewalk G = Parking Lot H = Alley I = Ditch J = Building K = Creek L = Railway M = Airport Y = Yard Z = Other - give details in Field 27
27	Additional_Info	Text	Y	
28	Surface_Type	Text	Y	1 character code A = Asphalt B = Concrete/Pavement C = Concrete Collar D = Grass/Dirt E = Gravel Z = Other - give details in field 27
29	Potential_for_Run off	Text	N	1 character code; estimate for significant rain events N = None S = Sheetting P = Ponding I = Inundated

30	Access_Type	Text	Y	4 character code AMH = Manhole AWA = Wastewater access AOC = Other special chamber AM = Meter AWW = Wet well AJB = Junction box ACOP = Clean out property ACOM = Clean out mainline ACOH = Clean out house ACB = Catch basin
31	Northing	Text	Y	GPS Coordinate Northing - NAD83 State Plane Georgia West
32	Easting	Text	Y	GPS Coordinate Easting - NAD83 State Plane Georgia West
33	Elevation	Text	N	
34	Coordinate_System	Text	Y	Required for Level 1/Level 2 inspections - NAD83 State Plane Georgia West
35	GPS_Accuracy	Text	Y	1 character code M = Sub-meter N = Nearest meter L = Survey level
36	Inspection_Status	Text	Y	2 character code SI = Surface Inspection DI = Descent Inspection RI = Remote Inspection NF = Not Found NO = Not Opened SD = Surcharged/ Debris NI = Traffic NA = No Access BM = Buried or Marked
37	Evidence_of_Surcharge	Text	Y	3 character code YES NO
38	Inspection_Level	Text	Y	7 character code Level 1 Level 2
39				
40	Cover_Shape	Text	Y	1 letter code C = Circular O = Oval or elliptical R = Rectangular S = Square Z = Other (state in comments - Field 103)
41	Cover_Size	Numeric	Y	Size is measured in inches to nearest tenth of an inch or in millimeters measured at the top side of the cover.
42	Cover_Size_Width	Numeric	Y	



43	Cover_Material	Text	Y	3 letter code CAS = Cast Iron CN = Concrete (non-reinforced) CR = Concrete (reinforced) DI = Ductile Iron FR = Fiberglass Reinforced PSC = Plastic / Steel Composite PE = Polyethylene PVC = PolyVinyl Chloride S = Steel XXX = Not Known ZZZ = Other (State in comments - Field 103)
44	Cover_Type	Text	Y	**More than one cover may be used Solid Vented (Slots) Gasketed Bolted Inner Cover Locking Hatch (Single) Hatch (Double) Lamphole
45	Hole_Diameter	Text	Y	1 letter code A - <= 0.5in B - >0.5<=1in C - >1in<=1.5in D - >1.5in<=2in E - >2in
46	Holes_Number	Numeric	Y	
47	Cover_Bearing_Surface_Dia	Numeric	Y	
48	Cover_Bearing_Surface_Dia_Width	Numeric	Y	
49	Cover_Frame_Fit	Text	Y	1 letter code O = Oversized G = Good U = Undersized R = Rocks/Wobbles
50	Cover_Condition	Text	Y	Sound Cracked Broken Missing Corroded (Pitted) Bolts Missing Restraint Missing Restraining Defective
51	Cover_Insert_Type	Text	Y	1 letter code** P = Plastic M = Metal Z = Other N = None **If None, Skip this field
52	Cover_Insert_Condition	Text	Y	Level 1/Level 2 Sound Poorly Fitting Cracked (Torn/Holes) Leaking Insert Fell Corroded (Pitted/Worn)
53	Adjustment_Ring_Type	Text	Y	1 letter code** S = Solid A = Adjustable N = None **If None, skip fields 54, 55, 56
54	Adjustment_Ring_Material	Text	Y	3 letter code CAS = Cast Iron CN = Concrete (non-reinforced) CR = Concrete (reinforced) DI = Ductile Iron FR = Fiberglass Reinforced PSC = Plastic/Steel Composite PE = Polyethylene PVC = Polyvinyl Chloride S = Steel XXX = Not Known ZZZ = Other (State comments in Field 103)

55	Ring_Condition	Text	Y	More than one code may be used where applicable Sound Cracked Broken Corroded (Pitted /Worn) Leaking Poor Installation
56	Adjustment_Ring_Height	Numeric	N	
57	Frame_Material	Text	Y	3 letter code CAS = Cast Iron CN = Concrete (non-reinforced) CR = Concrete (reinforced) DI = Ductile Iron FR = Fiberglass Reinforced PSC = Plastic/Steel Composite PE = Polyethylene PVC = Polyvinyl Chloride S = Steel XXX = Not Known ZZZ = Other (State comments in Field 103)
58	Frame_Bearing_Surface_Width	Numeric	Y	
59	Frame_Bearing_Surface_Depth	Numeric	Y	
60	Frame_Clear_Opening_Dia	Numeric	Y	
61	Frame_Condition	Text	Y	Valid MACP Code** Sound Cracked Broken Missing Corroded (Pitted/Worn) Coated **More than one may be used. If frame is missing, skip fields 57 to 65
62	Frame_Seal_Condition	Text	Y	Valid MACP Code** Sound Cracked Loose (Not Attached) Offset Missing **More than one may be used. If frame missing, skip fields 63, 64
63	Frame_Offset_Distance	Numeric	Y	Provide in inches to nearest tenth or in millimeters
64	Frame_Seal_Inflow	Text	Y	2 letter code N = None IW = Weeper ID = Dripper IR = Runner IG = Gusher IS = Stains
65	Frame_Depth	Numeric	N	Provide in inches to nearest tenth or in millimeters

66	Chimney_Material	Text	Y	3 letter code AC = Asbestos Cement BR = Brick CM = Corrugated Metal CN = Concrete (non-reinforced) CR = Concrete (reinforced) CT = Clay Tile FR = Fiberglass Reinforced PE = Polyethylene PP = Polypropylene PSC = Plastic/Steel Composite PVC = Polyvinyl Chloride VC = Vitrified Clay XXX = Not Known ZZZ = Other (state comments - Field 103)
67	Chimney_II	Text	Y	2 letter code N = None IW = Weeper ID = Dripper IR = Runner IG = Gusher IS = Stains
68	Chimney_Clear_O pening	Numeric	N	Nearest tenth of inch
69	Chimney_Depth	Numeric	Y	Nearest tenth of a foot
70	Chimney_Lining_I nterior	Text	Y	2 letter code NC = None no coating C = Cementitious E = Epoxy P = Polymer PL = Plastic R = Rubber CP = Cured in Place F = Fiberglass B = Bitumastic ZZ = Other
71	Chimney_Lining_E xterior	Text	Y	2 letter code NC = None no coating C = Cementitious E = Epoxy P = Polymer PL = Plastic R = Rubber CP = Cured in Place F = Fiberglass B = Bitumastic ZZ = Other
72	Cone_Type	Text	Y	2 letter code FT = Flattop CC = Conical Centered , Concentric CO = Conical Off Centered, Eccentric
73	Cone_Material	Text	Y	3 letter code AC = Asbestos Cement BR = Brick CM = Corrugated Metal CN = Concrete (non-reinforced) CR = Concrete (reinforced) CT = Clay Tile FR = Fiberglass Reinforced PE = Polyethylene PP = Polypropylene PSC = Plastic/Steel Composite PVC = Polyvinyl Chloride VC = Vitrified Clay XXX = Not Known ZZZ = Other (state comments - Field 103)

74	Cone_Depth	Numeric	Y	Nearest tenth of a foot
75	Cone_Lining_Interior	Text	Y	2 letter code NC = None no coating C = Cementitious E = Epoxy P = Polymer PL = Plastic R = Rubber CP = Cured in Place F = Fiberglass B = Bitumastic ZZ = Other
76	Cone_Lining_Exterior	Text	Y	2 letter code NC = None no coating C = Cementitious E = Epoxy P = Polymer PL = Plastic R = Rubber CP = Cured in Place F = Fiberglass B = Bitumastic ZZ = Other
77	Wall_Diameter	Numeric	Y	Nearest inch; usually 48"
77a	Wall_By_Size	Numeric	N	If wall noncircular, enter width
78	Wall_Material	Text	Y	3 letter code AC = Asbestos Cement BR = Brick CM = Corrugated Metal CN = Concrete (non-reinforced) CR = Concrete (reinforced) CT = Clay Tile FR = Fiberglass Reinforced PE = Polyethylene PP = Polypropylene PSC = Plastic/Steel Composite PVC = Polyvinyl Chloride VC = Vitrified Clay XXX = Not Known ZZZ = Other (state comments - Field 103)
79	Wall_Depth	Numeric	Y	Nearest tenth of foot
80	Wall_Lining_Interior	Text	Y	2 letter code NC = None no coating C = Cementitious E = Epoxy P = Polymer PL = Plastic R = Rubber CP = Cured in Place F = Fiberglass B = Bitumastic ZZ = Other
81	Wall_Lining_Exterior	Text	Y	2 letter code NC = None no coating C = Cementitious E = Epoxy P = Polymer PL = Plastic R = Rubber CP = Cured in Place F = Fiberglass B = Bitumastic ZZ = Other
82	Bench_Present	Text	Y	1 letter code Y = Yes P = Partial N = None **If None, skip 83, 84

83	Bench_Material	Text	Y	3 letter code AC = Asbestos Cement BR = Brick CM = Corrugated Metal CN = Concrete (non-reinforced) CR = Concrete (reinforced) CT = Clay Tile FR = Fiberglass Reinforced PE = Polyethylene PP = Polypropylene PSC = Plastic/Steel Composite PVC = Polyvinyl Chloride VC = Vitrified Clay XXX = Not Known ZZZ = Other (state comments - Field 103)
84	Bench_Lining	Text	Y	2 letter code NC = None no coating C = Cementitious E = Epoxy P = Polymer PL = Plastic R = Rubber CP = Cured in Place F = Fiberglass B = Bitumastic ZZ = Other
85	Channel_Installed	Text	Y	3 letter code YES/NO **If no, fields 86-88 based on bottom of MH
86	Channel_Material	Text	Y	3 letter code AC = Asbestos Cement BR = Brick CM = Corrugated Metal CN = Concrete (non-reinforced) CR = Concrete (reinforced) CT = Clay Tile FR = Fiberglass Reinforced PE = Polyethylene PP = Polypropylene PSC = Plastic/Steel Composite PVC = Polyvinyl Chloride VC = Vitrified Clay XXX = Not Known ZZZ = Other (state comments - Field 103)
87	Channel_Type	Text	Y	1 letter code P = Pipe F = Formed R = Precast I = Insert
88	Channel_Exposure	Text	Y	1 letter code F = Fully Open P = Partially Open C = Closed
89	Step_Number	Numeric	Y	If 0, skip 90
90	Step_Material	Text	Y	1 letter code M = Metal P = Plastic B = Brick Z = Other
91	Pipe_Number	Text	Y	Assign # to each, starting with outgoing (6 o'clock) and move clockwise
92	Clock_Position	Numeric	Y	
93	Rim_to_Invert	Numeric	Y	Nearest tenth of foot

94	Direction	Text	Y	3 letter code IN/OUT
95	Material	Text	Y	3 letter code AC = Asbestos Cement BR = Brick CAS = Cast Iron CMP = Corrugated Metal Pipe CP = Concrete (non-reinforced) CSB = Concrete Segments (Bolted) CT = Clay Tile DIP = Ductile Iron Pipe GRC = Glass Reinforced Cement OB = Pitch Fiber PE = Polyethylene PP = Polypropylene PSC = Plastic/Steel Composite PVC = Polyvinyl Chloride RCP = Reinforced Concrete Pipe SP = Steel Pipe SB = Segmented Block TTE = Transite Pipe VCP = Vitrified Clay Pipe WD = Wood XXX = Not Known ZZZ = Other (state comments - Field 103)
96	Shape	Text	Y	1 letter code A = Arched B = Barrel C = Circular E = Egg Shaped H = Horseshoe O = Oval or Elliptical R = Rectangular S = Square T = Triangular U = U-Shaped with Flat Top Z = Other (state in comments Field 103)
97	Diam1	Numeric	Y	Nearest inch; Height or diameter of pipe
98	Diam2	Numeric	Y	Nearest inch; pipe width
99	Pipe_Condition	Text	Y	1 letter code S = Sound D = Defective
100	Seal_Condition	Text	Y	1 letter code S = Sound D = Defective
101	Special_Condition	Text	Y	2 letter code OU = Outside Drop Upper OL = Outside Drop Lower IU = Inside Drop Upper IL = Inside Drop Lower GR = Gravity Relief Connection LB = Lateral to Building (Service Line)
102	Structure_ID	Text	Y	Segment ID of pipe, not MH
103	Additional_Compo nent_Information	Text	N	

104	Easement_Accessibility_for_Inspection	Numeric	Y	Score 1 to 4 1) Excellent: Paved road, can drive through with a truck 2) Good: Access clear, little vegetation, can walk in easily, low slope 3) Fair: Moderate vegetation 4) Inaccessible: Heavy vegetation, needs clearing, steep slope
105	Surcharge	Numeric	Y	Measured from rim to level of surcharge or evidence of surcharge in feet to nearest 0.1 ft.

Y - NASSCO required  
Y- DeKalb County  
Required

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**SECTION 01540**  
**SECURITY AND SAFETY**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. This section includes procedures and guidelines for ensuring the safety and security of Owner's job sites and Department of Watershed Management (DWM) facilities. The contractor shall obtain the latest Official copies of these requirements from the Owner/Program Manager.

**1.02 RELATED SECTIONS**

This Section applies to the work of every division and every section of these Specifications.

**1.03 REFERENCES**

- A. Occupational Safety and Health Standards issued by the Secretary of Labor pursuant to the Williams-Steiger Occupational Safety and Health Act of 1970 and as amended.
- B. American National Standards Institute (ANSI Z117.1-20030) for New Construction – Confined Space.
- C. Manual of Uniform Traffic Control Devices for Streets and Highways 2009 Edition and as amended.

**1.04 DEFINITIONS**

- A. Project Manager: the Owner's representative authorized to make decisions regarding the contract.
- B. Project Safety Coordinator: a representative on behalf of the Contractor who is responsible for the safety of the Contractor's and Program Manager's employees, the Owner's personnel and all other personnel at the site of the work caused by their operations.
- C. Competent Person: A person who is able to identify existing and predictable hazards in the workplace as unsanitary, hazardous, or dangerous to employees, and who has the authority to take prompt corrective measures to eliminate them.

**1.05 SUBMITTALS**

- A. The Contractor shall provide the Owner and Program Manager with a list of 24-hour emergency phone numbers, including the chain of command.
- B. The Contractor shall maintain a current Employee Log of employees performing work on-site, as well as a Visitor Log, with both available to the County upon request. This log shall be immediately available to the Owner and Program Manager upon request and submitted to the Owner/Program Manager as necessary throughout the course of the project. An example of the Employee Log and Visitor's Log can be found in **Attachment B** and **Attachment C** to this Section.

- C. Prior to the performance of any work, the Contractor will prepare and submit a Safety/Health and Security Plan which includes, but is not limited to, the following minimum requirements:
1. Basic pre-employment background checks for criminal convictions, veracity of previous employment and education statements, driving record and financial responsibility as applicable to the position.
  2. Security Education and Awareness training applicable to the job.
  3. Standard operating procedures (SOPs) for safeguarding County equipment, supplies and property.
  4. Certification requested under the SAFETY Act, Homeland Security Act of 2002, if applicable. Provide date and result as requested.
  5. Established process for identification of employees and emergency notification procedures.
  6. If applicable, procedures for entry permits and badges. Procedures for returning badges upon termination of employment.
  7. Anti-terrorism training provided to employees including the state of national alert with appropriate procedures.
  8. Emergency evacuation procedures including accounting for employees at a safe haven.
  9. Procedures for reporting post contract criminal convictions and traffic accidents to the Contract Officer or DWM project manager.
  10. SOPs for protecting employees when performing required duties off-site including training for reporting accidents, calling for immediate assistance, job reporting procedures and personal duress codes or alarms.
  11. Contact information for the person(s) responsible for implementation and enforcement of Safety/Health and Security rules and regulations for this contract.
  12. Provide a Job Safety Analysis (JSA) for the scope of work, Provide safe work procedures for the activities within the Contractor's scope of work.
  13. New employee orientation program which addresses job and site specific rules, regulations and hazards.
  14. The Contractor's Drug Free Work Place Policy including substance abuse prevention and testing program.
  15. Provisions to protect all of the Contractor's employees, other persons and organizations that may be affected by the work from injury, damage or loss.
  16. Demonstrated compliance with Safety Audit Evaluations, Safety Inspections, current Federal/OSHA Safety/Health and Security Plan, facility safety program (when applicable), and locally accepted safety codes, regulations and practices.
  17. A site-specific emergency and evacuation plan.
  18. Hazard Communication/Right to Know Program
  19. Security procedures for the Contractors work, tools, and equipment.
  20. Capability of providing the Program Manager with documentation to show compliance with their plan, plus accidents and investigation reports.
  21. Fire Prevention Measures
  22. Safety in Wastewater Works, to include training employees on the biological, chemical, and atmospheric hazards associated with working in sewer systems,

Common hazards include hydrogen sulfide, low oxygen, methane gas, and biologicals

23. Confined Space Sewer System Entry, including "Permit Required"
  24. Measures to comply with all State and County regulations relative to closing or restricting the use of public streets, roads, or highways. Traffic control procedures, devices and the use of flaggers shall meet all requirements of the applicable current rules and regulations (MUTCD) for traffic control.
  25. Any other contract specific requirements.
- D. The Contractor shall provide the Owner and Program Manager with all safety reports, training records, competent person list, and accident reports prepared in compliance with Fed/OSHA and the Project Safety/Health and Security Plan as requested.

## **1.06 DELIVERY, STORAGE AND HANDLING**

The Contractor is solely responsible for the security of any offices or any temporary staging areas utilized by the Contractor. The Contractor is also responsible for the security of his materials, tools, vehicles and equipment on-site at all of the various work locations throughout the county.

## **1.07 PERSONNEL**

- A. All personnel working on a DWM project site must attend County sponsored safety training and wear a County-issued ID badge authorizing the person to be on the project site. All personnel must obtain and display an identification badge, issued by DWM's Safety Representative before reporting to work on any CIP project site. **Attachment A** to this Section describes the badging procedures required to obtain badge.
- B. The Contractor shall have a Project Safety Coordinator who shall be identified on the employee log to be submitted.
- C. The Project Safety Coordinator shall ensure compliance with all applicable health and safety requirements of all governing legislation.
1. The Project Safety Coordinator should have OSHA 30 Hour training as a minimum.
  2. The Project Safety Coordinator should have the authority to resolve safety-related issues on the jobsite.
  3. The Project Safety Coordinator should make regular site inspections as commensurate with the size and scope of the Project.
- D. Contractor shall have a "Competent Person" on-site when performing trenching and excavation work, scaffolding, and confined space operations.
- E. Contractor shall have at least one currently certified person in First Aid and CPR on-site at all times.
- F. Contractor shall provide suitable first aid provisions and medical supplies necessary to administer emergency first aid treatment. The Contractor shall have standing arrangements for the removal and hospital treatment of an injured person. All first aid facilities and emergency ambulance service shall be made available by the Contractor to the Owner and the Program Manager's personnel

- G. Should the Contractor dismiss employees who have been given access to the DWM facilities while the contract is in force, the Contractor will advise the Owner and/or DWM Project Manager.
- H. The Owner may request the Contractor to immediately remove from the premises and/or dismiss any employee found unfit to perform duties due to one or more of the following reasons:
  - 1. Neglect of duty, absenteeism, security or safety problems and sleeping on the job.
  - 2. Disorderly conduct, use of abusive or offensive language, quarreling, intimidation by words, actions or fighting.
  - 3. Theft, vandalism, immoral conduct or any other criminal action.
  - 4. Selling, consuming, possessing, or being under the influence of intoxicants, alcohol or illegal substances, which produce similar effects while on duty.
  - 5. Involved in a vehicle accident while on the Owner's property or driving the Owner's equipment. No employee, Contractor, or Subcontractor will be extended privileges to drive the Owner's equipment on the Owner's property if driving privileges have been withdrawn by the person's State of residence.
- I. All employees will be required to sign in and out on a designated log sheet.
- J. All employees shall be required to wear at all times in an observable location, above the waist, on outer clothing, a DeKalb County issued Safety Training Contractor photo I.D. badge to be furnished by the Contractor and approved by the Owner.
- K. No one under age sixteen is permitted at work sites after normal working hours. Contractor's employees are allowed on work sites only during the specified hours and only when working on this contract. No Contractor employee will be allowed on sites when not specifically working on this Contract's predetermined times and dates.
- L. All employees and agents of the Contractor must read the Project Site Rules statement and sign a log acknowledging understanding of project site rules provided in **Attachment D** to this Section. A sample log is attached to this Section as **Attachment B (employees)** and **Attachment C (visitors)**.

## 1.08 RESPONSIBILITY

- A. Contractor must cooperate with Owner on all security matters and must promptly comply with any project security arrangements established by the Owner or Program Manager.
- B. It is the Contractor's obligations to comply with all applicable governmental requirements and regulations and to undertake reasonable actions to establish and maintain secure conditions at any jobsite.
- C. The Contractor and his subcontractors are wholly responsible for the security of their employees, work areas, and for all their material, equipment and tools at all times.
- D. The Contractor shall comply with the site security program at all times on Owner's facilities.
- E. The Contractor shall maintain the security program throughout the Contract duration.
- F. The Contractor shall restrict entry of unauthorized personnel and employees and vehicles onto the Project site.

- G. The Contractor shall only allow entry to authorized persons with proper Owner-approved identification. All Contractor and Subcontractor employees will be required to have personnel working at these facilities attend County provided Safety Training for an Owner-provided identification (ID) badge before they start work.
- H. The Contractor will be held responsible for all damage to the work and any negligence resulting in injuries due to his failure of erecting adequate barricades, signs, lights and safety provisions as required. Whenever evidence is found of such damage, the Contractor shall immediately remove the damaged portion and replace it at the Contractor's expense.
- I. The Contractor's responsibility for the maintenance of barricades, signs and lights, as applicable, shall not cease until the Owner has accepted, in writing, the Project.
- J. The Contractor shall not allow cameras on-site or photographs to be taken, except those required to perform the Work in accordance with the Contract Documents or otherwise approved by Owner.
- K. It is not the Owner's responsibility to verify the Contractor's safety plan for the adequacy and compliance of the plan.
- L. The Contractor shall be fully responsible for the safety and health of the employees, its subcontractors, and lower tier contractors during the performance of its work.
- M. The Contractor shall be responsible for the safety of the Contractor's and Program Manager's employees, the Owner's personnel, and all other personnel at the work site caused by their operations.
- N. It is the responsibility of the Contractor to ensure all articles of possible personal or monetary value found by the Contractor's employees are turned into the Owner or Program Manager.
- O. The Contractor shall be responsible for maintaining satisfactory standards of employees' competency, conduct, courtesy, appearance, honesty and integrity, and shall be responsible for taking such disciplinary action with respect to any employee, as may be necessary.
- P. The Contractor is solely responsible for the security of any offices or any temporary staging areas utilized by the Contractor. The Contractor is also responsible for the security of his materials, tools, vehicles and equipment on-site at all of the various work locations throughout the county.

## **1.09 SAFETY**

- A. The Owner has the right to refuse access to the site or request a person or vehicle be removed from the site if found violating any of the safety, security, or conduct rules as outlined.

## **PART 2 – PRODUCTS**

(Not Used)

## **PART 3 – EXECUTION**

### **3.01 PREPARATION**

- A. All Contractors/Subcontractors will be required to have personnel working at these facilities attend County provided safety training, and properly badged for identification (ID) purposes before they start work.
- B. The Contractor shall require all employees performing activities on site to sign the “Employee Acknowledgment of Project Site Rules Log” included at the end of this Section in **Attachment D**. All employees, subcontractor employees and lower tier contractor employees will attend a new employee orientation session. Signature of the Employee Log by the employee certifies the orientation training has been received.
- C. Review of the Contractor’s Safety Plan by the Owner shall not impose any duty or responsibility upon the Owner for the Contractor’s performance of the work in a safe manner.

### **3.02 INSTALLATION**

- A. The Contractor shall furnish and erect such barricades, fences, lights, danger signals and other precautionary measures for the protection of persons or property and of the work as necessary.

**END OF SECTION**

## Attachment A – Badging

### DeKalb County Badging Procedures

Every person working on a DeKalb County Watershed Management, CIP construction site must wear a County issued ID badge. This standard applies to all contractors and subcontractors. All workers must obtain and display an identification badge issued by the County's Safety Representative **before** reporting to work on any CIP project. The ID badge will play a key role in Watershed Management's safety and security efforts on project sites. Therefore, individuals should wear the assigned badge at all times.

### Prior to Badging:

- All contractor and subcontractor employees are required to attend safety training before receiving a badge
- Safety Training duration is 2 hours max
- The **contractor is responsible** for conducting the training
- The training should cover general construction safety and **specific** hazards employees will encounter on the County project site.
- Employees should have adequate knowledge of all company safety rules and applicable OSHA standards
- **Contractor's training should include the specific safety concerns and hazards employees may encounter at the Watershed Management project site**
- Personal instruction, safety videos, and on-line training are permissible
- Upon completion, employees should have a basic knowledge of safety, know the company's views about safety, know safety concerns specific to Watershed Management's construction projects, and know what PPE to use on the jobsite.
- Suggested safety topics are included on page 3
- Before training commences, contractor must provide the County the safety training outline. If training is to be received on-line, please include training web site.

### Badging:

- Once employees have completed the two hour training, provide documentation to the County's Safety representative.
- Sign-in sheets must show a printed name, signed name, and date of training.
- E-mail to [alfranco@dekalbcountyga.gov](mailto:alfranco@dekalbcountyga.gov)
- After receipt of the sign-in sheet, the Safety representative will register the employee in the badging system, then, the employee is eligible to receive the badge.
- Field verification will be done randomly to ensure employees were trained.
- Only those employees registered in the badging system are eligible to receive a badge.
- Badging will take place at the Watershed Management, CIP Division, 1641 Roadhaven Drive, Stone Mtn., 30083
- Badging will be conducted on prescribed days and/or by appointment

Badges are valid until the expiration date shown on the badge. If a worker changes companies or projects, the badge must be surrendered and a new badge will be issued if needed. If applicable, the new employer will provide the employee certification that the safety training is completed. After verification by the Safety representative, the badging database will be updated and a new badge issued. All workers shall display the badge on the outer layer garment of clothing between the belt and shoulder. All persons working on a CIP project must wear badges in a manner which is easily displayed. If a badge is lost or stolen, workers will be required to pay a \$20 replacement fee. **CASH ONLY- No change will be provided.**



## **Safety Topics Suggestions:**

Company Safety Policy/Rules

Basic Safety

Personal Protective Equipment

Fall Protection

Trenching & Excavation

Traffic Control/Traffic Safety

Aerial Lifts

Ladder Safety

Relevant OSHA Standards

Housekeeping

Confined Space

Hazardous Materials

Globally Harmonized Hazard Communication Standard (GHS)

Hand & Power tools

Scaffolding

## Attachment B– Employee Log

By signing this log I acknowledge I have read, understand and agree to abide by the project rules outlined above and all local, state, federal and/or any other applicable contract obligations. I further acknowledge I have been informed by a representative of the company as to the site specific hazards, any hazardous substances I may be exposed to while on the site and the site/company emergency action procedures.

EMPLOYEES (PRINT)	SIGNATURE	Company Name	Date
Signature of Company Representative		Date Signed	

### Attachment C –Visitors Log

By the signing of this log I acknowledge I have read, understand and agree to abide by the project rules outlined above. This is not for a vehicle access permit.

<b>VISITOR'S NAME (PRINT)</b>	<b>SIGNATURE</b>	<b>Company Name</b>	<b>Date</b>	<b>IN</b>	<b>OUT</b>

## Attachment D – Project Site Rules

By Signing this Employee Log, I acknowledge I understand and agree to abide by the project rules outlined below. I further acknowledge I have been briefed on specific hazards, hazardous substances that are onsite and the site emergency action procedure.

### **PROHIBITED ACTIVITIES:**

1. Unauthorized removal or theft of Owner property.
2. Violation of safety or security rules or procedures.
3. Possession of firearms or lethal weapons on jobsite
4. Acts of sabotage
5. Destruction or defacing OWNER property
6. Improper use of sanitary facilities
7. Failure to report accidents or job related injuries
8. Being under the apparent influence of drugs, alcohol or other intoxicants or in possession of drugs, alcohol or other intoxicants on the property
9. Wearing shorts or tennis shoes on jobsite
10. Failure to wear a hardhat/safety glasses as required by law.
11. Gambling at any time on project
12. Fighting, threatening behavior, or engaging in horseplay on the project
13. Smoking in unauthorized areas on the project
14. Open fire cooking or making unauthorized fires on project property
15. Selling items or raffles without authorization
16. Use of unauthorized cameras on the project
17. Use of radio or television in the construction area
18. Failure to park personal vehicle in authorized parking area
19. Failure to wear designated identification (Site Specific)
20. Failure to use designated gates
21. Use or storage of unauthorized chemicals or substances on site.

**I have read, understand and agree to abide by the PROJECT SITE RULES. Furthermore, I understand failure to abide by these rules is grounds for being denied access to the project site. I have received a personal copy for my use and reference.**

---

**Signature**

---

**Date**

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**SECTION 01700  
PROJECT CLOSEOUT**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. Comply with requirements for administrative procedures stated in this Section and as required of the Contract Documents in closing out the Work. Closeout procedures are summarized in this Section.

**1.02 RELATED SECTIONS**

- A. Conditions of the Contract. Fiscal provisions, legal submittals and additional administrative requirements.

**1.03 QUALIFICATIONS AND REQUIREMENTS**

- A. Contract requirements shall be met when assessment assignments and related activities have successfully produced, in order, completion of these three closeout stages:
  - 1. Substantial Completion
  - 2. Final Completion
  - 3. Final Payment
- B. The Contractor shall provide all written notices and supporting documentation as described below when requesting Substantial Completion and Final Completion, respectively. Partial submittals of the required documents shall not represent a valid request, and the Program Manager shall not be liable for any delays in the Substantial and Final Completion dates arising there from.

**1.04 SUBMITTALS**

The Contractor shall provide to the Program Manager the following documents, in PDF and hard copy, in the quantity of one original and two copies unless otherwise noted. Note, with the exception of Subparagraphs G, H, and I below, the submittal for approval shall have already been made prior to Substantial Completion. Submittal under this Paragraph would be for a final submittal should revisions or additional copies be required of previously submitted documentation.

- A. Evidence of Compliance with all requirements of governing authorities:
  - 1. Certificates of Inspection.
- B. Assessment record documents (reports, final data, etc.), as required of the Contract Documents.
- C. **Subcontractor List:** A complete listing of all subcontractors and their suppliers, indicating business addresses, telephone numbers, contact names, and items supplied by each.
- D. **Manufacturer List:** A listing of manufacturers of major materials, equipment and systems installed in the Work, and local contact addresses and phone numbers.

- E. **Warranties:** All warranties transferred to the County.
- F. **Payment of Debts and Claims and Consent of Surety:** The Contractor shall submit adequate evidence the Contractor has paid all obligations to date arising out of the Contract. Contractor shall also submit written consent of its Surety to final payment.
- G. **Release of Claims and Liens:** The Contractor and each subcontractor shall also submit a certified Release of Claims and Liens, indicating the releases for waivers submitted are complete to the best of its knowledge and information upon receipt of final payment. Example form attached.
- H. Certificate of Insurance for Products and Complete Operations.
- I. No partial submittals of the above items are to be made to the Program Manager. All items of each category are to be collected by the Contractor and delivered at one time to the Owner, together with a letter of transmittal listing all items. Where items are to be delivered to the Program Manager or Owner's Representative, the Contractor shall include a copy of the transmittal letter listing all enclosures, signed by the respective representative acknowledging receipt.

### **1.05 REINSPECTION FEES**

- A. When the Program Manager performs re-inspections due to failure of the work to comply with the claims of status of completion made by the Contractor:
  - 1. Owner will compensate Program Manager for such additional services.
  - 2. Owner will deduct the amount of such compensation from the Final Payment to the Contractor.

### **1.06 FINAL ADJUSTMENT OF ACCOUNTS**

- A. Submit a final statement of accounting to the Program Manager.
- B. Statement shall reflect all adjustments to the Contract Price:
  - 1. The original Contract Price.
  - 2. Additions and deductions resulting from:
    - a. Previous Change Orders.
    - b. Allowances.
    - c. Unit Prices.
    - d. Deductions for uncorrected work.
    - e. Penalties and Bonuses.
    - f. Deductions for liquidated damages.
    - g. Deductions for re-inspection payments.
    - h. Other adjustments.
  - 3. Total Contract Price as adjusted.
  - 4. Previous payments.
  - 5. Sum remaining due.
- C. Program Manager will prepare a final Change Order reflecting approved adjustments to the Contract Price not previously made by Change Orders.

## **1.07 APPLICATION FOR PAYMENT**

- A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

## **PART 2 – PRODUCTS**

(Not Used)

## **PART 3 – EXECUTION**

### **3.01 SUBSTANTIAL COMPLETION**

- A. Reference the Definitions, regarding Substantial Completion.
- B. When the Work is substantially complete, the Contractor shall submit to the Program Manager:
  - 1. A written notice the Work, or designated portion thereof, is substantially complete.
  - 2. An original Certificate of Occupancy for the Project (as applicable).
  - 3. A list of items to be completed or corrected (hereinafter referred to as a "Punch List").
  - 4. All executed work orders/assignments signed and accepted by the Program Manager.
  - 5. Project closeout documents, warranties, and certificates for review and approval.
- C. Within 5 business days of such notice, the Contractor and Program Manager will make an inspection to determine the status of completion.
- D. The Punch List submitted by the Contractor will be reviewed in detail, with items added or deleted to indicate Work to be corrected or completed.
  - 1. The Program Manager reserves the right to issue a revised Punch List based on Contract Documents.
  - 2. The Program Manager will reproduce and distribute all necessary copies of any revised Punch List to the Contractor and insure the items requiring correction or completion are given prompt attention by the Contractor.
  - 3. The Program Manager may withhold the issuance of the Certificate of Substantial Completion until corrections required by said Punch List are made or all parties are satisfied they will be made.
- E. Should the Program Manager determine the Work is not substantially complete:
  - 1. The Program Manager will promptly notify the Contractor in writing, giving the reasons therefore.
  - 2. The Contractor shall remedy the deficiencies in the Work, and then send a second written notice of Substantial Completion to the Program Manager.
- F. When the Program Manager concurs the Work is substantially complete, the Program Manager will:



1. Prepare a Certificate of Substantial Completion accompanied by the Contractor's Punch List of items to be completed or corrected, as verified and amended by the Program Manager. (Note: Contract responsibilities are not altered by inclusion or omission of required Work for the Punch List.)
2. Sign the Certificate of Substantial Completion and submit it to the Owner and the Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

### **3.02 FINAL COMPLETION**

- A. Reference the Definitions, regarding Final Completion.
- B. To attain Final Completion, the Contractor shall complete the activities pertaining to the Certificate of Substantial Completion and complete work on all Punch List items. Only then shall a written request to the Program Manager for final inspection be submitted.
- C. When the Work is complete, the Contractor shall submit to the Owner written certification, signed jointly by the Program Manager, that:
  1. The Contract Documents have been complied with in their entirety.
  2. The Work has been inspected for compliance with Contract Documents.
  3. The Work has been completed in accordance with Contract Documents.
  4. The Work is completed and ready for final inspection.
- D. The Contractor and Program Manager will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- E. Should the Program Manager determine the Work is incomplete or defective:
  1. The Program Manager will promptly notify the Contractor in writing, listing the incomplete or defective Work.
  2. The Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the Owner stating the Work is complete.
- F. When the Program Manager finds the Work is acceptable under the Contract Documents, the Contractor will be requested to make a final closeout submittal.

**END OF SECTION**

**UNCONDITIONAL WAIVER AND RELEASE  
UPON FINAL PAYMENT**

**STATE OF GEORGIA**

**DEKALB COUNTY**

The undersigned mechanic and/or materialman has been employed by \_\_\_\_\_ (name of contractor) to furnish \_\_\_\_\_ (describe materials and/or labor) for the construction of improvements known as \_\_\_\_\_ (title of the project or building) which is located in the City of \_\_\_\_\_, City of \_\_\_\_\_, and is owned by \_\_\_\_\_ (name of owner) and more particularly described as follows:

**(DESCRIBE THE PROPERTY UPON WHICH THE IMPROVEMENTS WERE MADE BY USING EITHER A METES AND BOUNDS DESCRIPTION, THE LAND LOT DISTRICT, BLOCK AND LOT NUMBER, OR STREET ADDRESS OF THE PROJECT.)**

Upon the receipt of the sum of \$ \_\_\_\_\_, the mechanic and/or materialman waives and releases any and all liens or claims of liens or any right against any labor and/or material bond it has upon the foregoing described property.

Given under hand and seal this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_(Seal)

\_\_\_\_\_

\_\_\_\_\_  
(Witness)

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**SECTION 01710**  
**CLEAN-UP**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. This section includes policies and procedures preventing the accumulation of waste materials on the site and the clean-up of waste materials thereof, throughout the duration and upon the completion of work.
- B. This section includes miscellaneous work related to quality control including, but not limited to, protecting active utilities, procedures for utility crossings, and relocating existing gas lines.
- C. This section includes operations not specified in detail as separate items, but can be sufficiently described as to the kind and extent of work involved. Furnish all labor, materials, equipment and incidentals to complete the work under this Section.

**1.02 RELATED SECTIONS**

- A. Section 02110: Easement Access and Clearing
- B. Section 02276: Site Restoration and Erosion Control

**1.03 QUALIFICATIONS AND REQUIREMENTS**

- A. Contractor shall keep the project site free from accumulated waste materials and rubbish at all times during the assessment period. At completion of the work, the Contractor shall remove all waste materials and rubbish from and about the Project, as well as his tools, equipment, machinery, and surplus materials, except those specifically required by the Contract Documents to be left for the Owner's maintenance.
- B. If Contractor fails to keep project clean or to clean up prior to Date of Substantial Completion, the Owner may do so, and the cost thereof will be charged to the Contractor.
- C. Attention is directed to the State Soil Erosion and Sediment Control laws, ordinances and requirements.

**1.04 SAFETY**

- A. Store volatile waste in covered metal containers or as required by State and Federal requirements, and remove from project site daily to an approved facility.
  - 1. Allow no volatile wastes to accumulate on project site.
  - 2. Provide adequate ventilation during use of volatile substances.
- B. Do not burn or bury waste materials and/or rubbish on project site.
- C. Do not dispose any volatile wastes such as, but not limited to, mineral spirits, oil, or paint thinner in storm or sanitary drains, on pavements, in gutters, or on project site.

- D. Do not dispose any waste or cleaning materials containing materials harmful to plant growth on project site. Clean up materials accidentally spilled as quickly as possible.

## **PART 2 – PRODUCTS**

### **2.01 MATERIALS**

Materials required for this section shall be of the same quality as materials to be restored. Where possible, reuse existing materials previously removed.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Clean-up during construction
  1. Execute cleaning procedures to insure the building, project site and adjacent properties are maintained free from debris, dust, and rubbish.
  2. Wet down materials subject to blowing. Do not throw waste materials from heights.
  3. Provide covered, on-site containers for waste collection. Place all waste materials and rubbish in containers in an expeditious manner to prevent accumulation. Remove waste from project site when containers become full.
  4. Legally dispose all waste materials, rubbish, volatile materials and cleaning materials off project site.
  5. When finishing work begins, maintain project in a "broom-clean" state until Date of Substantial Completion. Protect newly finished and clean surfaces from contamination during cleaning operations.
  6. Do not allow debris contributing to the survival or spread of rodents, roaches or other pests to accumulate.
    - a. Remove debris containing food scraps on a daily basis.
    - b. Should pests inhabit project, Contractor shall be responsible for securing services of a pest exterminator at no additional cost to the Owner.
- B. Protection and clean-up of roads
  1. Spillovers on roads from trucks entering or leaving the site shall be cleaned up on a continuing basis so pavements and adjacent sidewalks will not be littered with earth, stones, or any other debris resulting from assessment operations.
  2. Large accumulations of earth and mud shall be removed from vehicle wheels and loose accumulations of earth, sand or gravel shall be removed from vehicle underbodies and ledges as much as feasible before entry upon public roads.
- C. **Stripping**

In areas so designated, topsoil shall be stockpiled. The topsoil shall be protected until it is placed as specified. Any topsoil remaining after all work is in place shall be used on-site in designated areas.
- D. **Bench marks**

Carefully maintain all benchmarks, monuments, and other reference points. If disturbed, replace as directed by the Program Manager.

**E. Incidental work**

Do all incidental work not otherwise specified, but obviously necessary, for the proper completion of the contract as specified.

**3.02 ACTIVE UTILITIES**

A. Active utilities traversing the site shall be preserved in operating condition. Repair damage to all such utilities due to work under this Contract, to the satisfaction of the authority having jurisdiction over the utility.

B. Disconnect or arrange the disconnection of utility service in accordance with regulations of the governing utility concerned and interfering with the work.

**C. Crossing Utilities:**

This item shall include any extra work required in crossing culverts, water courses, or drains, including all sheeting and bracing, extra excavation and backfill, or any other work required for the crossing, whether or not shown on the drawings.

**D. Relocating Existing Gas Lines:**

Notify the proper utility authority involved when relocating gas lines is required. Coordinate all work and required permits by the utility so assessment progress will not be hampered.

**3.03 FINAL CLEAN-UP**

A. All general and specific cleaning shall be performed prior to Contractor's request the project or portion thereof be inspected for Substantial Completion.

B. Clean disturbed areas of project site of debris.

1. Broom clean paved surfaces. Remove oil and similar deleterious substances.

**END OF SECTION**

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**SECTION 02110**  
**ACCESS ROUTE & EASEMENT ACCESS CLEARING**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. This section includes, but is not limited to, removing and disposing of trees, stumps, roots, brush, structures, abandoned utilities, trash, debris, and all other materials found on or near the surface of the ground in the construction area and, understood by generally accepted engineering practice, not to be suitable for construction of the type contemplated from the work site. Precautionary measures to prevent damage to existing features to remain are considered part of the work.
- B. The Program Manager will designate all trees, shrubs, plants, and other things to remain. Paint required for cut or scarred surface of trees or shrubs selected for retention shall be an asphaltum base paint prepared especially for tree surgery and approved by the Program Manager.
- C. Sewer Easement Clearing Operations shall be coordinated with temporary and permanent erosion and sedimentation control procedures.

**1.02 RELATED SECTIONS**

- A. Section 02276 – Site Restoration and Erosion Control
- B. Section 02486 – Seeding
- C. Section 02542 – Silt Fence

**1.03 DEFINITIONS**

- A. **Light Clearing:** This area requires "bush hog" equipment for tree and shrub removal.
- B. **Medium Clearing:** This area requires "bush hog" and "chipper" equipment for tree and shrub removal.
- C. **Heavy Clearing:** This area requires "timbering" equipment for tree and shrub material.

**1.04 QUALIFICATIONS AND REQUIREMENTS**

- A. The Contractor shall comply with all applicable codes, ordinances, rules, regulations, and laws of local, municipal, State or Federal authorities having jurisdiction over the work. All required permits shall be obtained for construction operations by the Contractor and submitted to Program Manager for verification.
- B. All persons involved in land disturbance work shall be trained and certified in accordance with the requirements of the Georgia Erosion and Sedimentation Act.
- C. Open burning will not be permitted.



## 1.05 SUBMITTALS

- A. Prior to beginning easement clearing, the Contractor shall submit to the Program Manager a map showing the location of all easements to be cleared. The Contractor shall label each easement as requiring light clearing, medium clearing or heavy clearing.
- B. The Contractor shall submit to the Program Manager a schedule for clearing the easements.
- C. The easement clearing map and schedule must be submitted to the Program Manager fourteen (14) calendar days prior to beginning easement clearing.
- D. The easement clearing map and schedule must be approved by the Program Manager before the Contractor can begin work.
- E. Copies of all permits required for clearing operations shall be provided to the Program Manager prior to beginning work.
- F. Equipment list and specification for all pieces planned for use on site.
- G. Maintenance log of equipment to be used to show that all equipment has been properly maintained.
- H. Plan for approved fuel storage areas if applicable.

## PART 2 – PRODUCTS

### 2.01 EQUIPMENT

- A. The Contractor shall furnish equipment with operators of the type normally used in clearing and grubbing operations including, but not limited to tractors, trucks, loaders, stump grinders, and root rakes.

## PART 3 – EXECUTION

### 3.01 INSTALLATION AND EXECUTION

- A. Clearing and grubbing activities will be conducted at the minimum level necessary to provide access to an assessment or construction activity location and to the level necessary to perform the assigned work.
- B. Clear and grub (where required by other specifications and/or the Project Manager) the permanent easement, but not to exceed limits of easements on each side of the pipeline or authorized access area, before initiating other items of work. The removal of trees, growth, debris, stumps and other objectionable matter, will be to the extent necessary to obtain access and perform the assigned work except as directed otherwise by the Project Manager.
- C. Materials to be cleared, grubbed and removed from the construction area include, but are not limited to the following: trees, stumps, roots, brush, trash, organic matter, paving, miscellaneous structures, debris, and abandoned utilities.
- D. Grubbing shall consist of completely removing roots, stumps, trash, and other debris from all graded areas so the topsoil is free of roots and debris. Topsoil is to be left sufficiently clean so

further picking and raking will not be required. Grubbing shall only be performed at the specific direction of the Project Manager.

- E. Where directed, all stumps, roots, foundations and planking embedded in the ground shall be removed and disposed of in a proper manner. Piling and butts of utility poles shall be removed to a minimum depth of two feet below the limits of excavation for structures, trenches and roadways or two feet below finished grade, whichever is lower.
- F. Prior to clearing landscaping features, but not necessarily limited to, specimen trees, fences, cultivated trees, cultivated shrubbery, property corners, man-made improvements, subdivision and other signs, shall be noted on the easement clearing maps and shall be reviewed with the Project Manager. The Project Manager will determine which landscape features are to remain undisturbed. The Contractor shall take extreme care in moving landscape features and shall re-establish these features as directed by the Project Manager.
- G. Where directed, surface rocks and boulders shall be grubbed from the soil and removed from the site, if not suitable as rip rap.
- H. Where tree limbs interfere with utility wires, or where the trees to be felled are in close proximity to utility wires, the tree shall be taken down in sections to eliminate the possibility of damage to the utility.
- I. Any work pertaining to utility poles shall comply with the requirements of the appropriate utility.
- J. Fences adjoining any excavation or embankment in conflict with the assigned work and/or subject to being damaged or buried, shall be carefully removed, stored and reset or replaced. Any fencing, in the Project Manager's opinion, significantly damaged by the work shall be replaced with new fence material of equal or better quality at the Contractor's expense.
- K. Where required, stumps and roots shall be grubbed and removed to a depth not less than 2 feet below grade. All holes or cavities extended below the subgrade elevation of the proposed work shall be filled with crushed rock or other suitable material, compacted to the same density as surrounding material.
- L. The Contractor shall exercise special precautions for the protection and preservation of trees, cultivated shrubs, sod, fences, etc. situated within limits of the construction area, but not directly within excavation and/or fill limits. The Contractor shall be held liable for any damage his operations have inflicted on such property.
- M. The Contractor shall be responsible for all damages to existing improvements outside the permanent easement resulting from Contractor's operations.
- N. Burying of residual materials will not be allowed.

### **3.02 CONSTRUCTION ACCESS ROUTE ON EASEMENT**

- A. When directed by the Project Manager, a construction access route shall be built on the sewer easement for the purpose of accessing the assigned work.
- B. Construction roads, when required, shall be cut twelve (12) feet wide and as long as required, and six (6) inches deep below existing grade. Filter fabric shall be placed at the bottom of the cut, and stone shall be placed on top of the fabric, filling the six inch depth along the road.

- C. Provide and install the filter fabric and stone as indicated in the Manual for Erosion and Sediment Control in Georgia.
- D. The Contractor is required to maintain the exit/entrance and roadway to include periodic top dressing of gravel to maintain a 6 inch depth. Remove all spilled materials and debris from graveled surfaces.

### **3.03 CLEAN-UP**

- A. The debris resulting from the clearing and grubbing operation shall be hauled to a disposal site secured by the Contractor and approved by the Project Manager. The debris shall be disposed of in accordance with all requirements of Federal, State, County and municipal regulations. No debris of any kind shall be deposited in any stream or body of water, or in any street or alley. No debris shall be deposited upon any private property, except with written consent of the property owner. In no case shall any material or debris be left on the worksite, shoved onto abutting private properties, or buried on the worksite.
- B. Open burning will not be permitted.

**END OF SECTION**

## SECTION 02273

### RIPRAP

#### PART 1 — GENERAL

##### 1.01 SECTION INCLUDES

The section includes general requirements for providing stone riprap slope protection, including associated earthwork and geotextile filter material, complete and in place, in accordance with the Contract Documents.

##### 1.02 RELATED SECTIONS

- A. Section 01300: Submittals
- B. Section 02276: Site Restoration and Erosion Control

##### 1.03 REFERENCED SPECIFICATIONS, CODES, AND STANDARDS

- A. This Section references the following Commercial Standards:
  - Georgia Department of Transportation (GA DOT), Standard Specifications  
Construction of Roads and Bridges, 1993 Edition
  - ASTM C 88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
  - ASTM C 535 Standard Test Method for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - AASHTO T 85 Standard Method of Test for Specific Gravity and Absorption of Coarse Aggregate
  - AASHTO T 210 Method of Test for Aggregate Durability Index. AASHTO T 134 Optimum Moisture Content

##### 1.04 SUBMITTALS

- A. Shop Drawings: Description and location of proposed sources of riprap bedding and riprap.
- B. The Contractor shall submit samples of all materials proposed to be used in the work. Sample size shall be as determined by the testing laboratory.
- C. Testing certificates from a qualified testing agency shall be submitted prior to acceptance of the rock source to verify the gradation, abrasion resistance, and bulk density. Contractor shall, if requested, coordinate inspection of the rock source by the Project Manager.
- D. Trip tickets showing source, type, and weight of each load of material delivered to the Site.

## PART 2 – PRODUCTS

### 2.01 STONES FOR RIPRAP

- A. All Stone for riprap shall be sound, durable pieces of quarried stone weighing 156-pounds per cubic foot or more. The stone shall be angular and random in shape; rounded boulders or cobbles shall not be used. Flat, slabby, or shaley pieces will not be acceptable. Stones shall be resistant to weathering and to water action and free from overburden, spoil, and organic material and shall meet the gradation requirements below.
- B. Riprap shall be of the type indicated on the Drawings and shall conform to the size types as follows:

**Type 2** – equivalent to GA DOT specification for "Plain Riprap":

Percent by Weight	Volume (cu.ft.)	Weight (lb.)	Diameter (in)
65 – 100%	0.75-2.0	125- 320	15-24
10-65%	0.04-0.75	7-125	5 – 15
0-10%	0.0-0.04	0-7	0-15

**Type 3** – equivalent to GA DOT specification for "Dumped Riprap-Type 3":

Percent by Weight	Volume (cu.ft.)	Weight (lb.)	Diameter (in.)
65-100%	0.10-1.0	7-65	6-18
10-65%	0.01-0.1	2-17	2-6
0-10%	0.0-0.01	0-2	0-2

- C. The durability index and percent absorption shall be determined by AASHTO T 210 and AASHTO T 85, respectively. The minimum apparent specific gravity of the stones shall be 2.5 as determined by AASHTO T 85.
- D. Stones shall have less than 10 percent loss of weight after five cycles, when tested per ASTM C 88.
- E. Stones shall have a wear not greater than 40 percent, when tested per ASTM C 535.
- F. Control of gradation shall be by visual inspection. At the direction of the Project Manager, the Contractor shall furnish a sample of the proposed gradation of at least 5 tons or 10 percent of the total riprap weight, whichever is less. If approved, the sample may be incorporated into the finished riprap at a location where it can be used as a frequent reference for judging the gradation of the remainder of riprap. Any difference of opinion between the Project Manager and the Contractor shall be resolved by checking the gradation of two random truckloads of stones. Arranging for and the costs of mechanical equipment, a sorting site, and labor needed in checking gradation shall be the Contractor's responsibility.

- 
- G. The acceptability of the stones will be determined by the Project Manager prior to final placement.

## 2.02 GEOTEXTILE FABRIC FILTER

- A. Geotextile fabric shall meet the requirements of GA DOT Section 881.06 for woven fabrics, having physical properties as follows:

Tensile Strength- any direction (ASTM D 4634)	200 lbs.
Bursting Strength (ASTM D 3786)	500 psi
Elongation Before Breaking (ASTM D 4634)	10-35%
Percent Open Area (GOT: 88)	4.0-6.0%

- B. Fabric shall be Mirafi Filterweave 403 or approved equal.

## PART 3 — EXECUTION

### 3.01 SURFACE PREPARATION

- A. Surfaces to receive filter materials and riprap, including the toe trench and slope, shall be brought to the line and grade indicated and shall be smooth and firm, free of brush, trees, stumps, and other objectionable material. Where filling of depressions is required or a filled bank is constructed, the new material shall be compacted with hand or mechanical tampers to a minimum of 85-percent of maximum density.
- B. The Contractor shall remove and exclude all stormwater, groundwater and creek or stream water from the excavation. Sump pumps and sand bags or portable dams, diversions, or other approved means, shall be used to remove and exclude water and continuously maintain water level below the bottom of the excavation. Water shall be removed and excluded until both geotextile filter material and riprap have been placed. Any water removed from the excavation shall not be discharged into any surface stream or other water body unless such discharge meets water quality standards. Removed water may be disposed on-site by land application using sprinklers in an area designated by the Engineer or by discharge into an approved treatment system.
- C. Cleared and excavated materials shall be hauled off site to an appropriate disposal location arranged by the Contractor and approved by the Project Manager at the Contractor's sole expense unless otherwise indicated or specified.
- D. Riprap installed at the toe of a stream bank below the elevation of the water in a stream to prevent scour from undermining the riprap shall be backfilled and covered with native soil to the original grade. The backfilled native soil shall be compacted with hand or mechanical tampers to a minimum of 80 percent of maximum density.

### 3.02 PLACEMENT OF GEOTEXTILE FABRIC

- A. The fabric shall be placed with the long dimension running up the slope, with the upstream strip overlapping the downstream strip. Use a minimum of 2-foot overlap for each overlap. Use a wider overlap if recommended by the geotextile manufacturer.

- B. The fabric shall be placed loosely with sufficient folded or gathered material to prevent stretching and tearing during riprap placement.
- C. The fabric shall be anchored into place using securing pins with type and spacing as recommended by the manufacturer. In addition, the fabric shall be secured at the toe and crest of the slope using anchor trenches at least 2-feet deep. If a stream bank extends sufficiently above a stream such that riprap would not be installed to the top of the bank, then the fabric shall be anchored in a 2-foot deep trench up-slope from the top of the minimum free-board of 0.5 feet above the flow resulting from a 50-year, 24-hour storm runoff event.

### **3.03 STONE RIPRAP**

- A. Placement of riprap shall begin at the toe and proceed up the slope. The stones shall be placed, or dumped from a height of not more than three feet and placed with equipment or by hand. Sufficient hand work shall be performed to produce a neat and uniform surface.
- B. Dumped riprap shall be used only where there is an existing road access to the top and/or bottom of the stream bank. Riprap shall be dumped into place, beginning at the toe and proceeding up the slope, and may be spread using suitable equipment. Care must be taken to prevent damage to the underlying filter material. Sufficient hand work shall be performed to produce a neat and uniform surface.

**END OF SECTION**

**SECTION 02276**  
**SITE RESTORATION AND EROSION CONTROL**

**PART 1 – GENERAL REQUIREMENTS**

**1.01 SECTION INCLUDES**

- A. The work specified in this Section consists of providing, maintaining and removing temporary erosion and sedimentation controls as necessary.
- B. Temporary erosion controls include, but are not limited to, Best Management Practices (BMP's) such as: grassing, mulching, netting, and watering, and reseeding on-site surfaces and spoil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations ensuring the erosion during construction will be either eliminated or maintained within acceptable limits as established by the Program Manager, Local Issuing Authority and State.
- C. Temporary sedimentation controls include, but are not limited to, Best Management Practices (BMP's) such as: silt fencing, silt dams, temporary sediment traps, check dams, temporary inlet sediment traps, barriers, rock filter dams, temporary creek crossings, diversion ditches, tree protection fencing, and appurtenances at the foot of sloped surfaces ensuring the sedimentation pollution will be either eliminated or maintained.

**1.02 RELATED SECTIONS**

- A. Section 02273: Riprap
- B. Section 02485: Sodding
- C. Section 02486: Seeding
- D. Section 02542: Silt Fence

**1.03 REFERENCES**

- A. Clean Water Act
- B. Georgia Building Code
- C. Any Soil Erosion and Sediment Control Ordinances in force by the local Government.
- D. State of Georgia, Department of Transportation, Standard Specifications.
- E. Manual for Erosion and Sediment Control in Georgia, latest edition.
- F. Georgia Erosion and Sedimentation Control Act
- G. Georgia Water Quality Control Act



## 1.04 QUALIFICATIONS AND REQUIREMENTS

- A. Provide effective temporary erosion and sediment control measures during construction in accordance with the Georgia Soil and Water Conservation Commission (GSWCC) Manual for Erosion and Sediment Control in Georgia, latest edition until final controls become effective.
- B. Erosion, Sedimentation and Pollution Control shall be performed in accordance with Georgia's NPDES Permit No. GAR 100001, 100002, or 100003, as applicable, and as detailed in the drawings.

## PART 2 – PRODUCTS

### 2.01 EROSION CONTROL

- A. Mulch
- B. Temporary grass seed
- C. Permanent grass seed
- D. Sod
- E. Dust control
- F. Slope stabilization blankets
- G. Flocculants and coagulants
- H. Tackifiers
- I. Stream bank stabilization products
- J. Slope stabilization products:
  - 1. Rolled Erosion Control Products (RECPs): A natural fiber blanket with single or double photodegradable or biodegradable nets.
    - a. Blankets shall be non-toxic to vegetation, seed, or wildlife. At a minimum, the plastic or biodegradable netting shall be stitched to the fibrous matrix to maximize strength and provide for ease of handling.
    - b. Products shall be determined to be non-toxic in accordance with EPA-821-R-02-012.
  - 2. Hydraulic Erosion Control Products (HECPs): shall utilize straw, cotton, wood or other natural based fibers held together by a soil binding agent working to stabilize soil particles. Paper mulch should not be used for erosion control.
    - a. HECPs shall be prepackaged from the manufacturer. Field mixing of performance enhancing additives will not be allowed. Fibrous components should be all natural or biodegradable.
    - b. Products shall be determined to be non-toxic in accordance with EPA-821-R-02-012.

## 2.02 SEDIMENTATION CONTROL

- A. Bales - clean, seed free cereal hay type.
- B. Netting - fabricated of material acceptable to the Owner.
- C. Filter stone - No. 57 - crushed stone.
- D. Filter media sock, silt fencing (Type NS or Type S).
- E. Tree save fencing.

## PART 3 – EXECUTION

### 3.01 GENERAL

- A. All erosion control measures are to be installed per the requirement listed in the construction documents as well as defined with GSWCC Manual for Erosion and Sediment Control in Georgia, latest edition.

### 3.02 VEGETATIVE MEASURES

- A. Erosion control should be addressed in the planning stages of all proposed land-disturbing activities. While erosion is difficult to control completely, methods to reduce it are practical, affordable, and cost effective. Erosion control techniques shall be used on all areas exposed for a prolonged period of time, including areas that will be paved or built upon in the future. Various types of vegetative practices are used for erosion control. The time-line for the implementation of various vegetative practices is as follows:
- B. **Mulch, temporary vegetation, or permanent (perennial) vegetation shall be completed on all exposed areas within 14 days after disturbance.**
- C. **Ds1 - Disturbed Area Stabilization (With Mulching Only)** Mulching can be used as a singular erosion control method on areas at rough grade. Mulch can be an option for up to six months provided the mulch is applied at the appropriate depth (depending on type of mulch used), anchored, and has a continuous 90% cover or greater of the soil surface. Maintenance shall be required to maintain appropriate depth, anchorage, and 90% cover. If an area will remain undisturbed for greater than six months, permanent (perennial) vegetation shall be used.
- D. **Ds2 - Disturbed Area Stabilization (With Temporary Seeding)** Temporary vegetation may be employed instead of mulch if the area will remain undisturbed for less than six months.
- E. **Ds3 - Disturbed Area Stabilization (With Permanent Vegetation)** Permanent (perennial) vegetation or sod shall be used immediately on areas at final grade. Permanent (perennial) vegetation shall be used on rough graded areas to be undisturbed for more than six months.
- F. **Ds4 - Disturbed Area Stabilization (With Sodding)** may be used in place of Ds3.
- G. **“Stabilization”** of an area is accomplished when 70% of the surface area is covered in a uniform, vegetative cover (permanent or temporary) or anchored mulch of the appropriate thickness with 90% coverage. **“Final stabilization”** means all soil disturbing activities at the site have been completed, and for unpaved areas and areas not covered by permanent structures and areas

located outside the waste disposal limits of a landfill cell certified by EPD for waste disposal, 100% of the soil surface is uniformly covered in permanent vegetation with a density of 70% or greater, or landscaped according to the Plan (uniformly covered with landscaping materials in planned landscaped areas), or equivalent permanent stabilization measures.

H. **Permanent (perennial) vegetation** shall consist of: planted trees, shrubs, perennial vines; a crop of perennial vegetation appropriate for the time of year and region; or a crop of annual vegetation and a seeding of target crop perennials appropriate for the region, such that within the growing season a 70% coverage by perennial vegetation shall be achieved.

1. For linear construction projects on land used for agricultural or silvicultural purposes, final stabilization may be accomplished by stabilizing the disturbed land for its agricultural or silvicultural use.
2. For the purposes of this specification, permanent vegetation is used synonymously with perennial vegetation. Perennial vegetation is plant material that lives continuously from year to year although it may have a dormant season when the leaves and possibly the stems “die back” to the ground. No vegetative planting can technically be considered permanent. Annual vegetation is plant material lives for only one growing season. This type of vegetation is typically used for temporary establishment due to its quick germination. Some perennial vegetation can be used for temporary stabilization.

I. **Slope Stabilization**

1. It is the intention of this specification to allow interchangeable use of RECPs and HECPs for erosion protection on slopes. The project engineer should select the type of erosion control product best fitting the need of the particular site.
  - a. Installation and stapling of RECPs and application rates for the HECPs shall conform to manufacturer’s guidelines for application.
  - b. Products shall have a maximum C-factor (ASTM D6459) for the following slope grade:

Slope (H:V)	C-Factor (max.)
3:1 or greater	0.080

2. RECPs will be categorized as follows:
  - a. Short term (functional longevity 12 mos.)
    - i. Photodegradable: Straw blankets with a top and bottom side photo degradable net. The maximum size of the mesh shall be openings of ½” X ½”. The blanket should be sewn together on 1.5” centers with degradable thread. Minimum thickness should be 0.35” and minimum density should be 0.5 lbs. per square yard.
    - ii. Biodegradable: Straw blanket with a top and bottom side biodegradable jute net. The top side net shall consist of machine direction strands that are twisted together and then interwoven with cross direction strands (leno weave). The bottom net may be leno weave or otherwise to meet requirements. The approximate size of the mesh shall be openings of 0.5” X 1.0”. The blanket should be sewn together on 1.5” centers with degradable thread. Minimum thickness

should be 0.25" and minimum density should be 0.5 lbs. per square yard.

- b. Extended term (functional longevity 24 mos.)
  - i. Photodegradable: Blankets that consist of 70% straw and 30% coconut with a top and bottom side photodegradable net. The top net should have ultraviolet additives to delay breakdown. The maximum size of the mesh shall be openings of 0.65" X 0.65". The blanket should be sewn together on 1.5" centers with degradable thread. Minimum thickness should be 0.35" and minimum density should be 0.6 lbs. per square yard.
  - ii. Biodegradable: Blankets that consist of 70% straw and 30% coconut with a top and bottom side biodegradable jute net. The top side net shall consist of machine direction strands that are twisted together and then interwoven with cross direction strands (leno weave). The bottom net may be leno weave or otherwise to meet requirements. The approximate size of the mesh shall be openings of 0.5" X 1.0". The blanket should be sewn together on 1.5" centers with degradable thread. Minimum thickness should be 0.25" and minimum density should be 0.65 lbs. per square yard.
- c. Long-term (functional longevity 36 mos.)
  - i. Photodegradable: Blankets that consist of 100% coconut with a top and bottom side photodegradable net. Each net should have ultraviolet additives to delay breakdown. The maximum size of the mesh shall be openings of 0.65" X 0.65". The blanket should be sewn together on 1.5" centers with degradable thread. Minimum thickness should be 0.3" and minimum density should be 0.5 lbs. per square yard.
  - ii. Biodegradable: Blankets that consist of 100% coconut with a top and bottom side biodegradable jute net. The top side net shall consist of machine direction strands that are twisted together and then interwoven with cross direction strands (leno weave). The bottom net may be leno weave or otherwise to meet requirements. The approximate size of the mesh shall be openings of 0.5" X 1.0". The blanket should be sewn together on 1.5" centers with degradable thread. Minimum thickness should be 0.25" and minimum density should be 0.5 lbs. per square yard.
- d. **Site Preparation:** After the site has been shaped and graded to the approved design, prepare a friable seedbed relatively free from clods and rocks more than one inch in diameter, and any foreign material preventing contact of the soil stabilization mat with the soil surface. Surface must be smooth to ensure proper contact of blankets or matting to the soil surface. If necessary, redirect any runoff from the ditch or slope during installation.
  - i. **Maintenance:** All erosion control blankets and matting should be inspected periodically following installation, particularly after rainstorms to check for erosion and undermining. Any dislocation or failure should be repaired immediately. If washouts or breakage occurs, reinstall the material after

repairing damage to the slope or ditch. Continue to monitor these areas until they become permanently stabilized.

### **3.03 SEDIMENTATION CONTROL**

- A. Install and maintain silt fencing, silt dams, traps, barriers and all other appurtenances as shown on the approved descriptions and working drawings. Hay bales, silt fencing, filter socks, and other BMP's which deteriorate and filter stone which is dislodged shall be replaced when needed.
- B. Install and maintain temporary stream crossings as indicated in the GSWCC Manual for Erosion and Sediment Control in Georgia, and as modified in these specifications.
- C. Install and maintain riprap for all erosion and sediment control methodologies as indicated in the GSWCC Manual for Erosion and Sediment Control in Georgia and as specified or modified in the Contract Documents. Refer to Specification Section 02273 – Riprap for general riprap requirements.

### **3.04 ACCEPTANCE**

- A. Should any of the temporary erosion and sediment control measures employed fail to produce results complying with the requirements of the State, immediately take whatever steps are necessary to correct the deficiency within the limits defined in the NPDES permit and the GSWCC Manual for Erosion and Sediment Control in Georgia, latest edition.
- B. For a product or practice to be approved as slope stabilization, that product or practice must have a documented C-factor of 0.080.

### **3.05 DOCUMENTATION**

Contractor shall monitor, report and retain records as required by the GA NPDES Permit No. GAR 100001, 100002, or 100003, as applicable. Attached to the end of this section are the minimal, but not limited to, reports which should be performed and maintained. The following are the attached reports:

- A. Daily Inspection Report
- B. Daily Rainfall Monitoring Report
- C. Weekly Inspection Report
- D. Stormwater Monitoring Data
- E. Monthly Inspection Report
- F. Inspection Summary Report for violations and corrective actions.
- G. Erosion and Sedimentation Control Inspection Report

**END OF SECTION**

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# Daily Inspection Report

*Inspection performed by certified personnel each day construction activity occurs on-site*

Project Information	
Date:	Project Name:
Project Location:	
Inspection Observations	
Rainfall within past 24 hours (inches):	Is rainfall greater than 0.5"? Inspection Required <input type="checkbox"/>
Inspection Observations	
Petroleum Product Storage Areas: Are all of the temporary and permanent controls contained in Plan in place? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, describe the location(s) of deficiencies and corrective actions that must be taken.	
Vehicle Entrances and Exits: Is there tracking of sediment from locations where vehicles enter and leave the project? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe the location(s) and the corrective actions that must be taken.	
Other Observations	
Is an Erosion, Sedimentation and Pollution Control Plan revision required? <input type="checkbox"/> Yes <input type="checkbox"/> No      Date of revision:	
Corrective Actions and Date:	

\_\_\_\_\_  
Signature of Certified Personnel

\_\_\_\_\_  
Printed Name of Certified Personnel





# Weekly Inspection Report

Inspection performed by certified personnel at least once every seven calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater

## Project Information

Date:	Project Name:
Project Location:	
Name of Inspector:	

## Inspection Event

Regular weekly inspection: <input type="checkbox"/>	Inspection within 24 hours of 0.5" storm event <input type="checkbox"/>
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## Inspection Observations

**Disturbed areas that have not undergone final stabilization:**  
Are all of the temporary and permanent controls contained in Plan in place and properly maintained?  Yes  No  
If no, describe the location(s) of deficiencies and corrective actions that must be taken.

Corrective Action Taken and Date:

**Material storage areas exposed to precipitation:**  
Are all of the temporary and permanent controls contained in Plan in place and properly maintained?  Yes  No  
If no, describe the location(s) of deficiencies and corrective actions that must be taken.

Corrective Action Taken and Date:

**Discharge locations or points.**  
Are erosion control measures preventing impacts to receiving waters?  Yes  No  
If no, describe observations:



Month: \_\_\_\_\_ Year: \_\_\_\_\_  
Submit to EPD by 15<sup>th</sup> of Following Month

Project Location: \_\_\_\_\_ Project Location: \_\_\_\_\_

**Storm Water Monitoring Data**

To be used within 24-hours of a qualifying rainfall event of 0.5-inches or more.

Date Sampled	Rainfall Amount (Inches)	Exact Location of Sample	Time Sampled	Sampling Technique (Manual or Automatic Grab)	Sampled by	Date of Analysis	Time Analyzed	Analyzed By	Analytical Technique or Method Used (Meter #)	Results (NTU)

I certify that all sampling and analysis was conducted as per the Plan. \_\_\_\_\_  
(Signature of Certified Personnel)

# Monthly Inspection Report

*Inspection performed by certified personnel at least once per month*

Project Information	
Date:	Project Name:
Project Location:	
Inspection Observations	
Rainfall within past 24 hours (inches):	Is rainfall greater than 0.5"? Inspection Required <input type="checkbox"/>
Inspection Observations	
Areas that have undergone final stabilization: Are all permanent stabilization controls contained in Plan in place? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, describe the location(s) of deficiencies and corrective actions that must be taken.	
Other observations: Are pollutants entering the drainage system or receiving waters? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe the location(s) and the corrective actions that must be taken.  Are all erosion and sediment control measures operating properly? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, describe the location(s) and the corrective actions that must be taken.	
Other Observations	
Is an Erosion, Sedimentation and Pollution Control Plan revision required? <input type="checkbox"/> Yes <input type="checkbox"/> No      Date of revision:	
Corrective Actions and Date:	

\_\_\_\_\_  
Signature of Certified Personnel

\_\_\_\_\_  
Printed Name of Certified Personnel



# Site Inspection Report

## Erosion and Sedimentation Inspection Report

Maintain Reports on-site

<b>Site:</b>	<b>Date:</b>	<b>Time:</b>
<b>Inspector:</b>	<b>Accompanied By:</b>	
<b>Stage of Construction:</b>		
<b>Site:</b>		
<b>Observation:</b>		
<b>Recommendations:</b>		
<b>Contractor's Corrective Action (and Date):</b>		
<b>Site:</b>		
<b>Observation:</b>		
<b>Recommendations:</b>		
<b>Contractor's Corrective Action (and Date):</b>		

## SECTION 02485

### SODDING

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. This section includes the Contractor's responsibility to furnish all labor, materials, equipment, and incidentals necessary to place sod and maintain all sodded areas disturbed by the Contractor's operations.
- B. Work includes all soil preparation, soil additives, and the storage, transportation, placing, and maintenance of sod at all locations as required or as directed by the Program Manager.
- C. Ds3 and Ds4 Requirements for Regulatory Compliance

##### 1.02 RELATED SECTIONS

- A. Section 02276: Site Restoration and Erosion Control

##### 1.03 SUBMITTALS

- A. Product labels/data sheets.
- B. Certification of sod; include source and harvest date of sod, and sod seed mix.

##### 1.04 DELIVERY, STORAGE, AND PROTECTION

- A. Sod:
  - 1. Do not harvest if sod is excessively dry or wet to the extent survival may be adversely affected.
  - 2. Harvest and deliver sod only after laying bed is prepared for sodding.
  - 3. Roll or stack to prevent yellowing.
  - 4. Deliver and lay within 64 hours of harvesting.
  - 5. Keep moist and covered to protect from drying from time of harvesting until laid.

##### 1.05 WEATHER RESTRICTIONS

- A. Perform Work under favorable weather and soil moisture conditions as determined by accepted local practice.

##### 1.06 GUARANTEE

- A. Establish an acceptable growth of the specified sod on all areas as directed by the Program Manager.
- B. An area is considered acceptable if the majority of each piece of sod is alive and healthy and generally free from weeds, insects, and disease.

- C. The Contractor is responsible for watering, weeding, and mowing, the sod during the maintenance period.

### **1.07 MAINTENANCE SERVICE**

- A. Begin maintenance immediately after each area is planted and continue for a period of 60 days after all planting under this section is completed.
- B. Perform maintenance operations during maintenance period to include:
  - 1. Watering: First 2 weeks water daily, thereafter keep surface moist.
  - 2. Washouts: Repair by filling with topsoil, liming, fertilizing, and resodding.
  - 3. Mowing: Mow to 2 inches after grass height reaches 3 inches, and mow to maintain grass height from exceeding 3-1/2 inches.
  - 4. Resod unsatisfactory areas, or portions thereof, immediately at the end of the maintenance period if a satisfactory stand has not been produced.

## **PART 2 – PRODUCTS**

### **2.01 SOD**

- A. New sod consisting of live, dense, well rooted growth; well suited for the intended purpose and soil conditions; completely free of noxious weeds and grasses (crab grass, quack grass, Johnson grass, Canada thistle); and containing less than 5 plants of objectionable weeds per 100 square feet.
- B. Obtain all sod from an approved nursery with a Georgia Live Plant license.
- C. Replacement sod will match existing lawn grass type.

### **2.02 FERTILIZER**

- A. Commercially manufactured, Grade 10-10-10; furnished in standard containers clearly marked with the name, weight, and guaranteed analysis of the contents and ensuring proper protection in transportation and handling; and in compliance with all local, state, and federal fertilizer laws.

### **2.03 AGRICULTURAL LIMESTONE**

- A. Containing a minimum of 85 percent calcium carbonate and magnesium carbonate combined, 85 percent of which passes a No. 10 mesh sieve.

## **PART 3 – EXECUTION**

### **3.01 PREPARATION**

- A. Place sod as soon as practical after its removal from point of origin. Keep it moist while displaced.
- B. Scarify each area to be sodded a minimum of 2 inches and remove stones larger than 3/4 inch in any dimension.



- C. Before beginning sodding operations in any area, complete placing the topsoil and final grading, and have the area approved by the Program Manager.

### **3.02 APPLICATION**

- A. Set sod between April 1 and October 31 and when the soil is in a workable condition. If weather is acceptable to the Program Manager, the dates may be extended beyond those stated.
- B. Do not set sod out of season unless soil conditions are favorable and written permission is obtained from the Program Manager.
- C. During times when sodding cannot be conducted, erosion control and silt fences shall be placed and maintained. If property owner and the Project Manager agree, seeding may be substituted for sodding.
- D. Apply fertilizer and agricultural limestone uniformly over the sod bed at the rates shown below. Immediately prior to placing sod, water the sod bed until it is saturated to a depth of 1 inch, and keep it moist until the sod is placed.
  - 1. Fertilizer: 15 pounds per 1,000 square feet of 10-10-10.
  - 2. Agricultural Limestone: 40 pounds per 1,000 square feet.
- E. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips; to not overlap. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to subgrade or sod. Tamp or roll lightly to ensure contact with subgrade. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering of adjacent grass. Lay sod on slopes with short dimension running up and down.
- F. Saturate sod with fine water spray within 2 hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.
- G. E. Two weeks after the sod is installed, top dress and thoroughly water it. Top dressing shall consist of the following:
  - 1. 1/2 to 1 Pound: 38 percent urea formaldehyde per 1,000 square feet.
  - 2. 20 Pounds: 6-12-12 per 1,000 square feet.

### **3.03 MAINTENANCE**

- A. Begin maintenance immediately after sodding and continue until final acceptance of the Contract.
- B. Maintain lawns for not less than three mowings or 60 days, whichever is longer.
- C. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations, such as rolling, re-grading and replanting, as required to establish an acceptable lawn, smooth and free of stones, weeds, and eroded or bare areas.
- D. The standard of acceptability for bare areas is no larger than 3 inches in any dimension, nor greater than 5 percent of the lawn.

### **3.04 INSPECTION**

- A. The Program Manager shall inspect the sod within 30 days after installation and determine if it is acceptable.
- B. The Program Manager will again review the sod for acceptance 30 and 60 days after installation. This acceptance by the Owner is for the purposes of payment only.

### **3.05 PROTECTION**

- A. No equipment, material storage, construction traffic, etc., will be permitted on newly sodded areas.

### **3.06 CLEANING**

- A. Dispose of all surplus material in compliance with all applicable laws and regulations and in accordance with contract requirements.

**END OF SECTION**

## SECTION 02486

### SEEDING

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. This section includes the Contractor's responsibility to furnish all labor, materials, equipment and incidentals necessary and place seed and maintain all seeded areas as specified herein including all areas disturbed by the Contractor's operations.
- B. Ds3 and Ds4 Requirements for Regulatory Compliance

##### 1.02 RELATED SECTIONS

- A. Section 02276: Site Restoration and Erosion Control

##### 1.03 SUBMITTALS

- A. Product labels/data sheets
- B. Seed: Certification of seed analysis, germination rate, and inoculation:
  - 1. Certify each lot of seed has been tested by a testing laboratory certified in seed testing, within 6 months of date of delivery, Include with certification:
    - a. Name and address of laboratory
    - b. Date of test
    - c. Lot number for each seed specified
    - d. Test Results: (i) name, (ii) percentages of purity and of germination, and (iii) weed content for each kind of seed furnished
  - 2. Mixtures: Proportions of each kind of seed
- C. Seed Inoculant Certification: Bacteria prepared specifically for legume species to be inoculated

##### 1.04 DELIVERY, STORAGE, AND PROTECTION

- A. Furnish in standard containers with seed name, lot number, net weight, percentages of purity, germination, and hard seed and maximum weed seed content, clearly marked for each container of seed.
- B. Keep dry during storage.

##### 1.05 WEATHER RESTRICTIONS

- A. Perform work under favorable weather and soil moisture conditions as determined by accepted local practice.

##### 1.06 GUARANTEE

- A. Secure an acceptable growth of grass in all areas designated for seeding

- B. An area is considered acceptable if it is represented by a minimum of 100 seedlings per square foot of the permanent species of grass representative of the seed mixture. If an acceptable growth is not obtained on the first planting, reseeding and remulching will be required
- C. If the planting is less than 50 percent successful, rework the ground, refertilize, reseed, and remulch the entire area.

## **1.07 MAINTENANCE**

- A. Begin maintenance immediately after each area is planted and continue until final acceptance of the Contract.
- B. Maintenance is necessary to help establish a good healthy uniform growth over the entire seeded area. Maintenance to be performed includes the following:
  - 1. Watering: First 2 weeks every day, thereafter keep surface moist.
  - 2. Washouts: Re-grade and re-seed at the Contractor's expense until good sod is established.
  - 3. Mulch: Replace wherever and whenever washed or blown away
  - 4. Mowing:
    - a. Mow to 2 inches after grass height reaches 3 inches, and mow to maintain grass height form exceeding 3-1/2 inches.
    - b. Mowing should not be performed during the quail nesting season (May to September)
  - 5. Rake clippings and leaves, and appurtenances until the project is completed.

## **PART 2 – PRODUCTS**

### **2.01 MATERIALS**

- A. Products and applications to match Contract application period and meet manufacturers' recommendations.
- B. Fertilizer shall be a complete commercial fertilizer. It shall be delivered to the site in the original unopened containers each showing the manufacturer's guaranteed analysis of the contents and that ensure proper protection in transportation and handling, and in compliance with all local, state, and federal fertilizer laws. Store fertilizer, so when used, it shall be dry and free flowing.
- C. Lime shall be ground limestone containing not less than 85 percent calcium and magnesium carbonates.
- D. Seed shall be from the same or previous year's crop; each variety of seed shall have a percentage of germination not less than 90, a percentage purity of not less than 85, and shall have not more than one percent weed content.
- E. The mixture for lawn areas shall consist of seed proportioned by weight as indicated on the drawings.
- F. Seed Quality:

1. The term “pure live seed” is used to express the quality of seed and is not shown on the label. Pure live seed, PLS, is expressed as a percentage of the seeds that are pure and will germinate. Information on percent germination and purity can be found on seed tags. PLS is determined by multiplying the percent of pure seed with the percent of germination; i.e.,

$$(PLS = \% \text{ germination} \times \% \text{ purity})$$

EXAMPLE:

Common Bermuda seed  
70% germination, 80% purity

$$PLS = 70\% \text{ germination} \times 80\% \text{ purity}$$
$$PLS = 56\%$$

2. The percent of PLS helps you determine the amount of seed you need. If the seeding rate is 10 pounds PLS and the bulk seed is 56 % PLS, the bulk seeding rate is:

$$10 \text{ lbs. PLS/acre} = 17.9 \text{ lbs. /acre}$$
$$56\% \text{ PLS}$$

3. You would need to plant 17.9 lbs. /acre to provide 10 lbs. /acre of pure live seed.

## **PART 3 – EXECUTION**

### **3.01 PREPARATION**

- A. Soil samples to be obtained to determine lime requirements.
- B. Lime shall be applied at the rate as shown on the drawings or as determined through sampling.
- C. Agricultural lime is required at the rate of one to two tons per acre unless soil tests indicate otherwise. Graded areas require lime application. If lime is applied within six months of planting permanent perennial vegetation, additional lime is not required. Agricultural lime shall be within the specifications of the Georgia Department of Agriculture.
  1. Lime spread by conventional equipment shall be “ground limestone.” Ground limestone is calcitic or dolomitic limestone ground so 90 percent of the material will pass through a 10-mesh sieve, not less than 50 percent will pass through a 50-mesh sieve, and not less than 25 percent will pass through a 100-mesh sieve.
  2. Fast-acting lime spread by hydraulic seeding equipment should be “finely ground limestone” spanning from the 180 micron size to the 5 micron size. Finely ground limestone is calcitic or dolomitic limestone ground so 95 percent of the material will pass through a 100-mesh sieve.
  3. It is desirable to use dolomitic limestone in the Sand Hills, Southern Coastal Plain and Atlantic Coast Flatwoods MLRAs.
  4. Agricultural lime is generally not required where only trees are planted.
  5. Initial fertilization, nitrogen, topdressing, and maintenance fertilizer requirements for each species or combination of species shall be followed.
- D. Fertilizer shall be applied at the rate as shown per the drawings or at minimum follow the guidelines within the Georgia Manual for Erosion and Sediment Control latest edition.

### 3.02 INSTALLATION

- A. With the exception of temporary grassing, grading and shaping shall be at final grade prior to seeding (hydraulic or otherwise). Vertical banks shall be sloped to enable plant establishment.
1. When conventional seeding and fertilizing are to be done, grade and shape where feasible and practical, so equipment can be used safely and efficiently during seedbed preparation, seeding, mulching and maintenance of the vegetation.
  2. In residential or commercial mowed and/or landscaped areas, grading will include raking and grubbing to remove unwanted materials.
  3. Concentrations of water will cause excessive soil erosion and shall be diverted to a safe outlet. Diversions and other treatment practices shall conform to the appropriate standards and specifications.
- B. The subgrade of all areas to be seeded shall be raked and all rubbish, sticks, roots and stones larger than 2 inches shall be removed.
- C. When a hydraulic seeder is used, seedbed preparation is not required. When using conventional or hand-seeding, seedbed preparation is not required if the soil material is loose and not sealed by rainfall.
1. When soil has been sealed by rainfall or consists of smooth cut slopes, the soil shall be pitted, trenched or otherwise scarified to provide a place for seed to lodge and germinate.
- D. Lime shall be spread evenly over surface and thoroughly incorporated with loam by heavy raking to at least 2 inches deep at a rate determined by soil samples to match Contract.
- E. When hydraulic seeding equipment is used, the initial fertilizer shall be mixed with seed, inoculant (if needed), and wood cellulose or wood pulp fiber mulch and applied in a slurry. The inoculant, if needed, shall be mixed with the seed prior to being placed into the hydraulic seeder. The slurry mixture will be agitated during application to keep the ingredients thoroughly mixed. The mixture will be spread uniformly over the area within one hour after being placed in the GSWCC (Amended - 2013) 6-89 hydro seeder.
1. Finely ground limestone can be applied in the mulch slurry or in combination with the top dressing.
  2. When conventional planting is to be done, lime and fertilizer shall be applied uniformly in one of the following ways:
    - a. Apply before land preparation so it will be mixed with the soil during seedbed preparation.
    - b. Mix with the soil used to fill the holes, distribute in furrows.
    - c. Broadcast after steep surfaces are scarified, pitted or trenched.
    - d. A fertilizer pellet shall be placed at root depth in the closing hole beside each pine tree seedling.
- F. Fertilizer shall be uniformly spread and immediately mixed with the upper 2 inches of the soil.
- G. Seeding
1. Hydraulic Seeding

Mix the seed (inoculated if needed), fertilizer, and wood cellulose or wood pulp fiber mulch with water and apply in a slurry uniformly over the area to be treated. Apply within one hour after the mixture is made.

2. Conventional Seeding

Seeding will be done on a freshly prepared and firmed seedbed. For broadcast planting, use a culti-packer-seeder, drill, rotary seeder, other mechanical seeder, or hand seeding to distribute the seed uniformly over the area to be treated. Cover the seed lightly with 1/8 to 1/4 inch of soil for small seed and 1/2 to 1 inch for large seed when using a cultipacker or other suitable equipment.

3. No-Till Seeding

No-till seeding is permissible into annual cover crops when planting is done following maturity of the cover crop or if the temporary cover stand is sparse enough to allow adequate growth of the permanent (perennial) species. No-till seeding shall be done with appropriate no-till seeding equipment. The seed must be uniformly distributed and planted at the proper depth.

H. Mulching

Mulching is required for all permanent vegetation applications. Mulch applied to seeded areas shall achieve 75% to 100% soil cover. When selecting mulch, design professionals should consider the mulch's functional longevity, vegetation establishment enhancement, and erosion control effectiveness. Select the mulching material from the following and apply as indicated:

1. Dry straw or dry hay of good quality and free of weed seeds can be used. Dry straw shall be applied at the rate of 2 tons per acre. Dry hay shall be applied at a rate of 2 1/2 tons per acre.
2. Wood cellulose mulch or wood pulp fiber shall be used with hydraulic seeding. It shall be applied at the rate of 500 pounds per acre. Dry straw or dry hay shall be applied (at the rate indicated above) after hydraulic seeding.
3. One thousand pounds of wood cellulose or wood pulp fiber, which includes a tackifier, shall be used with hydraulic seeding on slopes 3/4:1 or steeper.
  - a. Sericea Lespedeza hay containing mature seed shall be applied at a rate of three tons per acre.
  - b. Pine straw or pine bark shall be applied at a thickness of 3 inches for bedding purposes. Other suitable materials in sufficient quantity may be used where ornamentals or other ground covers are planted. This is not appropriate for seeded areas.
  - c. When using temporary erosion control blankets or block sod, mulch is not required.
  - d. Bituminous treated roving may be applied on planted areas, slopes, in ditches or dry waterways to prevent erosion. Bituminous treated roving shall be applied within 24 hours after an area has been planted. Application rates and materials must meet Georgia Department of Transportation specifications.

Wood cellulose and wood pulp fibers shall not contain germination or growth inhibiting factors. They shall be evenly dispersed when agitated in water. The fibers shall contain a dye to allow visual metering and aid in uniform application during seeding.

- I. Immediately following this presentation the seed shall be uniformly applied and lightly raked into the surface. Lightly roll the surface and water with a fine spray. Seed shall be sown in a favorable season, as approved by the Program Manager.
- J. Wildlife plantings should be included in critical area plantings.

**END OF SECTION**



**SECTION 02542**  
**SILT FENCE**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

The work covered by this Section consists of furnishing all materials, equipment, and labor and performing all operations in connection with the construction of the Silt Fence System in accordance with the Contract Documents.

**1.02 RELATED SECTIONS**

- A. Section 01300: Submittals
- B. Section 02276: Site Restoration and Erosion Control

**1.03 QUALIFICATIONS**

- A. Contractor and Applicator shall have all state erosion control certifications and be active at the time of installation.
- B. Installation shall be by an experienced applicator approved by the manufacturer of the material supplied.
- C. Applicator shall have a minimum of one year experience.
- D. Submit written proof of qualifications to the Program Manager.
- E. The woven fiber filter and appurtenances specified under this Section shall be furnished by a manufacturer who is fully experienced, reputable, and qualified in the manufacture of the fabric furnished. The woven fiber filter and all related appurtenances shall be designed, constructed and installed with the best practices and methods.

**1.04 SUBMITTALS**

- A. Furnish sample 36 by 36 inches for each fabric, as specified in Section 01300.
- B. Furnish composite filter media sock sample 36 inches in length.
- C. Final acceptance of fabric and socks shall be contingent upon approval of samples.
- D. Furnish an affidavit that all materials comply with these Specification requirements.

**1.05 DELIVERY, STORAGE AND HANDLING**

- A. Prevent damage during delivery and handling.
- B. Store all fabric in undamaged condition as packaged by the manufacturer, with manufacturer's seals and labels intact.

- C. Store all materials in a clean, dry storage area.
- D. Do not store fabric in an upright position.
- E. Storage area temperature shall be maintained above 40 degrees F. with normal humidity.

**PART 2 – PRODUCTS**

**2.01 POST SIZE**

Type	Min Length	Type of Post	Size of Post
NS	4'	Soft wood	3"dia or 2x4
		Oak	1.5" x1.5"
		Steel	1.3lb./ft. min
S	4"	Steel	1.3lb./ft. min
		Oak	2"x2"

**2.02 FABRIC – Sd1**

- A. The filter fabric shall be designed to control water seepage of the fine particle and or soil without clogging under varying water flow conditions, thereby serving as a soil stabilizer.
- B. The filter fabric shall be chemically resistant to prolonged exposure to fresh water, and either alkaline or acidic soil conditions.
- C. Physical Properties: TEST METHOD

1.	Color	Black
2.	Weight, oz./sq. ft.	0.8 ASTM D-1910
3.	Equivalent opening size	70-100 CE-1310
4.	% open area	4-10 CE-1310
5.	Tensile Strength, #	400 x 280 ASTM D-1682
6.	Elongation, %	34 x 32 ASTM D-1682
7.	Trapezoidal tear strength, #	92x 40 ASTM D-2263
8.	Mullen burst, psi	510 ASTM D-751
9.	Puncture Strength, #	150 ASTM D-751-MS
10.	Abrasion resistance	ASTM D-01175-71
	Abraded strength, #	80 ASTM D-1682

11. Weather-Ometer strength retention, %	90 ASTM E-42-69
12. Water permeability, water flow rates*, milliliters/min.	
6" head	460-520 Canvas Products
8" head	620-760 Assn.Intern'l
36" head	2510-2790 Test Method (for canvas)

\*Water flow perpendicular to fabric

- D. The upper level of the fabric form work edges shall be structured so as to accommodate the type of anchorage to be utilized at that point.
- E. Individual mill-width panels shall be cut to suitable lengths, and the two layers of fabric separately jointed, edge-to-edge, by means of heavy, double-stitched nylon thread. The tensile strength of stitched joints shall not be less than 100 lbs. /inch.

### 2.03 FASTENERS

Table 6-27.3 Fasteners for Wood Posts				
	Gauge	Crown	Legs	Staples / Post
Wire Staples	17 min.	3/4" wide	1/2" long	5 min.
	Gauge	Length	Button Heads	Nail/ Post
Nails	14 min.	1"	3/4"	4 min.
Note: Filter Fabric may also be attached to the post by wire, anchors, and pockets or any other method provided minimum P-factor, as required by GSWCC, is met.				

### 2.04 COMPOST FILTER MEDIA SOCK

- A. Compost used for compost filter sock filler material (filter media) shall be weed free and derived from a well-decomposed source of organic matter. The compost shall be produced using an aerobic composting process meeting CFR 503 regulations including time and temperature data. The compost shall be free of any refuse, contaminants or other materials toxic to plant growth. Non-composted products will not be accepted. Test methods for the items below should follow US Composting Council Test Methods for the Examinations of Composting and Compost guidelines for laboratory procedures:
  1. PH – 5.0-8.0 in accordance with TMECC 04.11-A, “Electrometric pH Determinations of Compost”
  2. Particle size – 99% passing in a 2 in (50mm) sieve and a maximum of 40% passing a 3/8 in (9.5mm) sieve, in accordance with TMECC 02.02-B, “ample Sieving for

Aggregate Size Classification.” (Note- In the field, product commonly is between ½ in [12.5mm] and 2 in [50mm] particle size.)

3. Moisture content of less than 60% in accordance with standardized test methods for moisture determination.
4. Material shall be relatively free (<1% by dry weight) of inert or foreign man made materials.
5. A sample shall be submitted to the Program Manager for approval prior to being used and must comply with all local, state and federal regulations.

<b>Table 2.</b>		
<b>Material Type</b>	<b>Multi-Filament Polypropylene</b>	<b>Multi-Filament Polypropylene</b>
Material Characteristic	Photodegradable	Photodegradable
Mesh Opening	3/8 in (10mm)	1/8 in (3mm)
Tensile Strength (ASTM 5035-95)	44 psi (3.09 kg/cm <sup>2</sup> )	202 psi (14.2 kg/cm <sup>2</sup> )
% Original Strength from Ultraviolet Exposure (ASTM G-155)	100% at 1000 hr.	100% at 1000 hr.

<b>Table 3.</b>	
	<b>12 in (300mm) Diameter</b>
Effective Circumference	38 in (960 mm)
Density (when filled)	32 lbs./ft. (50kg/m)
Air Space	20%
Hydraulic Flow Through Rate	11.3 gpm/ft. (141 L/min/m)
P Factor (RUSLE)	0.1-0.32

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Installation instructions shall be supplied by the manufacturer. The fabric shall be applied in accordance with the manufacturer's recommendations.
- B. The surfaces to be protected shall be prepared and graded to the extent they are normally stable in the absence of erosion forces. All stones, roots, and other waste material exposed on the slopes which could disturb the finished mat profile shall be removed. The fabric shall be positioned over these surfaces.
- C. Construction Specifications

1. The compost filter sock shall be installed according to this specification, as shown on the plans or as directed by the Program Manager. For installation of the compost filter sock see the construction documents.
  - a. Compost filter socks should be installed parallel to the base of the slope or other disturbed area. In extreme conditions (i.e., 2:1 slopes), a second compost filter sock shall be constructed at the top of the slope.
  - b. Stakes shall be installed through the middle of the compost filter sock on 10 ft. (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft. (1m) wooden stakes. In the event staking is not possible, i.e., when compost filter socks are used on pavement, heavy concrete blocks shall be used behind the compost filter socks to help stabilize during rainfall/runoff events.
  - c. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
  - d. Loose compost may be backfilled along the upslope side of the compost filter sock, filling the seam between the soil surface and the device, improving filtration and sediment retention.
  - e. If the compost filter sock is to be left as a permanent filter or part of the natural landscape, it may be seeded at time of installation for establishment of permanent vegetation. The engineer will specify seed requirements.
  - f. Compost filter socks are not to be used in perennial, ephemeral, or intermittent streams.
2. **Maintenance:** Sediment shall be removed once it has accumulated to one-half the original height of the barrier. Compost filter socks shall be replaced whenever it has deteriorated to such an extent the effectiveness of the compost filter sock is reduced. Compost filter socks shall remain in place until disturbed areas have been permanently stabilized. All sediment accumulation at the compost filter sock shall be removed and properly disposed of before the compost filter sock is removed.

D. Silt Fence

1. **Non-sensitive areas**

Sediment barriers being used as Type NS shall have a support spacing of no greater than 6 feet on center, with each driven into the ground a minimum of 18 inches. Type NS sediment barriers shall have a P-factor no greater than 0.045.

2. **Sensitive areas**

Sediment barriers being used as Type S shall have a support spacing of no greater than 4 feet on center, with each driven into the ground 18 inches. Type S sediment barriers shall have a P-factor no greater than 0.030.

3. **Installation**

- a. Sediment barriers should be installed along the contour.
- b. Temporary sediment barriers shall be installed according to the following specifications as shown on the plans or as directed by the design professional.
- c. Post installation shall start at the center of a low point (if applicable) with the remaining posts spaced no greater than 6 feet apart for Type NS sediment barriers and no greater than 4 feet apart for Type S sediment barriers. For

post size requirements, see Table 6-27.2. Fasteners for wood posts are listed in Table 6-27.3.

4. **Static Slicing Method**

The static slicing machine pulls a narrow blade through the ground to create a slit 12" deep, and simultaneously inserts the silt fence fabric into this slit behind the blade. The blade is designed to slightly disrupt soil upward next to the slit and to minimize horizontal compaction, thereby creating an optimum condition for compacting the soil vertically on both sides of the fabric. Compaction is achieved by rolling a tractor wheel along both sides of the slit in the ground 2 to 4 times to achieve nearly the same or greater compaction as the original undisturbed soil. This vertical compaction reduces the air spaces between soil particles, which minimizes infiltration. Without this compaction infiltration can saturate the soil, and water may find a pathway under the fence. When a silt fence is holding back several tons of accumulated water and sediment, it needs to be supported by posts that are driven 18 inches into the soil. Driving in the posts and attaching the fabric to them completes the installation.

5. **Trenching Method**

- a. Trenching machines have been used for over twenty-five years to dig a trench for burying part of the filter fabric underground. Usually the trench is about 2"-6" wide with a 6" excavation. Post setting and fabric installation often precede compaction, which make effective compaction more difficult to achieve. EPA supported an independent technology evaluation (ASCE 2001), comparing three progressively better variations of the trenching method with static slicing method. The static slicing method performed better than two lower performance levels of the trenching method, and was as good as or better than the trenching method's highest performance level. The best trenching method typically required nearly triple the time and effort to achieve results comparable to the static slicing method.
- b. **Along all state waters and other sensitive areas, two rows of Type S sediment barriers shall be used. The two rows Type S should be placed a minimum of 36 inches apart.**

**3.02 MAINTENANCE**

- A. **Sediment shall be removed once it has accumulated to one-half the original height of the barrier.** This is extremely important when selecting BMPs with a lower profile.
- B. Sediment barriers shall be replaced whenever they have deteriorated to such an extent that the effectiveness of the product is reduced (approximately six months) or the height of the product is not maintaining 80% of its properly installed height.
- C. Temporary sediment barriers shall remain in place until disturbed areas have been permanently stabilized. All sediment accumulated at the barrier shall be removed and properly disposed of before the barrier is removed.

**END OF SECTION**

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**SECTION 02607**  
**MANHOLE HEIGHT ADJUSTMENT**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. This specification section provides the requirements for the adjustment of height of manholes whose tops are below grade. These manhole height adjustments can facilitate sanitary sewer operation, maintenance and assessment activities.

**1.02 RELATED SECTIONS**

- A. Section 01056: GPS Data Collection
- B. Section 01300: Submittals
- C. Section 01520: Sewer Flow Control
- D. Section 01700: Project Closeout
- E. Section 02276: Site Restoration and Erosion Control

**1.03 REFERENCES**

- A. ASTM C32 - Standard Specification for Sewer and Manhole Brick (Made From Clay or Shale).
- B. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
- C. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
- D. ASTM A536 - Standard Specification for Ductile Iron Castings
- E. AASHTO M306
- F. ASTM C270 - 12a Standard Specification for Mortar for Unit Masonry
- G. Manual for Uniform Traffic Control Devices (MUTCD) standards
- H. *"Potable Water Main, Gravity Sanitary Sewer, and Sanitary Sewer and Force Main Design Standards"*, 2009 Edition, Version 1.0, DeKalb County Department of Watershed Management.

**1.04 SUBMITTALS**

- A. The Contractor shall submit shop drawings and product data in accordance with the requirements of the Submittals section of these Specifications and those requirements outlined in Specifications Section 01300.



- B. The Contractor shall complete a daily written record detailing the work carried out and any items of Work incidental to the Work. The Contractor shall include in his daily record and reference to the following:
1. **Delays:** Dense traffic, lack of information, sickness, labor or equipment shortage, etc.
  2. **Weather:** Conditions [e.g., rain (quantity, time, duration), sunny, windy, etc.].
  3. **Equipment:** On site (e.g., specialty cleaning, by-pass equipment, etc.).
  4. **Submittals:** To the Owner's Program Manager or as directed in the submittals portion of these specifications.
  5. **Personnel:** On site by name (e.g., all labor, specialty services, etc.).
  6. **Accident:** Report (e.g., all injuries, vehicles, etc.).
  7. **Incident:** Report (e.g., damage to property, property owner complaint, etc.).
  8. **Major defects encountered:** including, but not limited to, collapsed pipe, if any, cave-ins, sink holes, etc.
  9. **Visitors:** On site, time in and out.
  10. **Disposals:** Type and quantity of debris (including liquids).
- C. Ring Product submittal and manufacturer's specifications.
- D. Frame and Cover and/or Cone Product submittal and manufacturer's specifications
- E. Traffic safety plan and procedures for Right-of-Way work.
- F. DOT Documents for permit.

### 1.05 RESPONSIBILITY FOR SANITARY SEWER OVERFLOWS AND DAMAGE TO PROPERTY AND UTILITY

- A. Reference Specification Section 01030 – Special Project Procedures.

### 1.06 SAFETY

- A. All work shall be performed in accordance with OSHA, Local and State DOT standards local, state and federal safety regulations.
- B. Confined Space Entry: Crews shall minimize the physical entry into manholes. Manhole entry shall be performed in accordance with Federal, State, Local and any other regulations for confined space entry. Only trained crews and staff may perform confined space entry after obtaining an entry permit. Staff must use safety required equipment, including harnesses, ventilation equipment, etc.
- C. Traffic Control: All traffic control measures shall comply with the requirements of MUTCD, Part 6 – Temporary Traffic Control, Latest Edition as published by USDOT/FHWA.

## PART 2 – PRODUCTS

### 2.01 BRICK

- A. Brick shall conform to the requirements of ASTM C32 for grade SM. Bricks shall conform to the following dimensions, unless otherwise approved by the Owner's Program Manager:

	Depth (inches)	Width (inches)	Length (inches)
Standard Size	2 <sup>1</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>4</sub>	8
Allowable Variation	± <sup>1</sup> / <sub>4</sub>	± <sup>1</sup> / <sub>4</sub>	± <sup>1</sup> / <sub>2</sub>

- B. All brick shall be new and whole, of uniform standard size, and with substantially straight and parallel edges and square corners. Bricks shall be of compact textures, burned hard entirely through, tough and strong, free from injurious cracks and flaws, and shall have a clear ring when struck together. No soft or salmon brick shall be used. Brick shall be culled after delivery, if required, and no culls shall be used except at such places, to such extent, and under such conditions as may be approved by the Owner's Program Manager.

### 2.02 PRECAST BARREL JOINTS & CONES

- A. Barrel joints shall be tongue and groove and shall meet the latest revision of ASTM C443 for O-ring gaskets; see Standard Detail S-003 in Appendix I of *"Potable Water Main, Gravity Sanitary Sewer, and Sanitary Sewer and Force Main Design Standards"*, 2009 Edition, Version 1.0, DeKalb County Department of Watershed Management. All barrel joints shall be installed to allow no infiltration into the manhole. Care should be exercised during the handling of the precast units to avoid disturbing or damaging the gasket and to attain proper alignment of the joints. Pre-formed flexible joint sealants shall not be used on sanitary sewer manholes. Joints and lift holes shall be grouted smooth with cement grout on inside and outside. In precast manhole construction, combination of joint lengths shall be selected to minimize the number of individual segments required to provide the total depth specified. Long joints shall be used in the bottom with shorter segments utilized for the top adjustments.
- B. Manhole cones shall be precast concrete. The top elevation of manhole frames shall be adjusted to grade in areas such as streets, alleys, and parking lots or where indicated by the Program Manager. A maximum adjustment of eight (8) inches will be allowed for precast concrete adjusting rings. Adjustments greater than twelve (12) inches must be made by changing precast riser sections. The top of the wall of all manholes shall be leveled off with mortar so as to form a flat surface upon which the manhole frame is to rest.

### 2.03 MORTAR

- A. The Contractor shall use mortar meeting the requirements of ASTM C270 Type S unless directed and approved otherwise by the Program Manager.
- B. The Contractor shall prepare mortar only in quantities needed for immediate use. Mortar mixed for more than thirty (30) minutes or greater than the manufacturers limits, whichever is more restrictive, which has set, or which has been retempered shall not be used.

## 2.04 METAL RISER RING

- A. Riser Rings will not be permitted for MH Height Adjustment.

## 2.05 FRAMES & COVERS

- A. Manhole frames and covers shall conform to the requirements outlined in pages 73-74 of *"Potable Water Main, Gravity Sanitary Sewer, and Sanitary Sewer and Force Main Design Standards"*, 2009 Edition, Version 1.0, DeKalb County Department of Watershed Management. Where replacement is required, MH Frames & Covers will be provided by the owner.

## PART 3 – EXECUTION

### 3.01 GENERAL

- A. The Contractor shall take all necessary measures to prevent debris from entering the manhole under reconstruction. A temporary (waterproof) cover shall be required during the reconstruction period.
- B. The Contractor shall take all necessary measures to prevent damage to the existing manhole frame and cover during the adjustment work.
- C. In the event the existing manhole is being located into a paved area, the Contractor is required to replace existing manhole frame and cover with a traffic manhole frame and cover. The Contractor is also required to provide a traffic safety plan to the Program Manager if the paved area is within the municipal or state Right-of-Way.
- D. **Riser Rings:** Riser Rings will not be permitted for MH Height Adjustment
- E. **Manhole Frame and Cover:** Existing frames and covers removed to facilitate manhole rehabilitation, and/or casting alignment or grade adjustments shall be salvaged, cleaned and given two coats of an approved bituminous coating by the Contractor for replacement unless determined to be defective by the Program Manager. If manhole frame and/or cover are determined to be defective, Contractor shall replace with new frame and/or cover. Replacement frames and covers shall be furnished by the Owner and installed as approved by the Owner and Project Manager in accordance with this specification section. Frames shall be set in full mortar bed atop brick and mortar adjustment. The mortar shall be struck smooth with the interior surface of the manhole and floated with a sponge float to a surface profile of 8-10 mils.

### 3.02 PROCEDURES FOR MANHOLE HEIGHT ADJUSTMENT

- A. The Contractor shall utilize maps, surveys, sounding instruments, or information from local residents to determine approximate locations of buried manholes. Manholes shall be exposed utilizing hand techniques or by carefully probing with mechanical equipment. Manhole exposure in paved areas shall be accomplished by making a square cut in the surface with sufficient width to allow for the excavation of the material around the manhole to expose it to a depth necessary for adequate adjustment.
- B. Raising Manholes:

1. The Contractor shall adjust the top elevation of the manhole frame to grade as directed by the Project Manager conforming to the requirements of this section. A maximum adjustment of twelve (12) inches will be allowed using brick and mortar. Mortar shall be applied to create a smooth finish on the interior and exterior prior to backfill.
  2. Manhole adjustments greater than twelve (12) inches shall be made by removing the cone section and adding the appropriate precast riser section. The number of riser rings shall be limited to the minimum number that is required to achieve grade.
    - a. Joint sealant shall be applied on existing manhole frame and each joint of the riser ring(s) required to achieve grade. If the outdoor temperature is below 70 degrees Fahrenheit, the Contractor must heat the joint sealant before application.
    - b. The Contractor shall place concrete (Class B) collar in accordance with the applicable Standard Drawing.
  3. When a manhole height adjustment is performed in a paved area and the manhole is not to be rehabilitated by any other method, then the Contractor shall install a manhole frame seal in accordance with the requirements of these Specifications.
- C. Lowering or raising manholes in paved and green areas require the removal of the manhole cone:
1. If the vertical height adjustment of the existing manhole is greater than 12 inches or the existing manhole must be lowered, the Contractor shall remove the manhole cone section to the straight barrel section of the existing manhole.
  2. The manhole frame and cover shall be removed from the existing manhole.
  3. The Contractor shall remove the manhole cone by either the saw cut or other acceptable method.
  4. The Contractor shall prepare the existing manhole barrel for the re-construction of the manhole as shown on the standard details.
  5. The Contractor shall re-construct the manhole as shown on the standard details.
  6. In green (grass) areas, for reinstallation of the Manhole Frame and Cover, the Contractor shall apply a 1½ inch bed of concrete (Class B) for the re-install of the manhole frame on the manhole. The Contractor shall also place concrete (Class B) collar (8 inch at the bottom of the frame to 2 inch at the top of the frame) on exterior of the manhole frame. The concrete collar on exterior of the manhole frame shall receive a broom finish.

### **3.03 CLEANUP**

- A. After the work is completed and all testing acceptable, the Contractor shall clean up the work area in accordance with these specifications.
- B. All excess material and debris not incorporated into the permanent installation shall be disposed of by the Contractor. The debris and liquids are to be disposed of properly in accordance with all applicable laws. The County can furnish a letter to the landfill stating the Contractor is authorized to dispose of the non-hazardous materials. Debris and liquids type and quantities are to be tracked in the daily Contractor diary. Hauling and disposal costs will be borne by the Contractor.
- C. The work area shall be left in a condition equal to or better than prior condition. Disturbed grassed areas shall be seeded or sod placed as directed by the Owner's Program Manager. The work site restoration work shall be completed in accordance with the requirements of these Specifications.

### **3.04 RECORD DRAWINGS**

- A. Unless noted otherwise, Record Drawings shall provide dimensions, distances and material type.
- B. Unless noted otherwise, Record Drawings shall provide elevations to the nearest 0.01 ft. for all pertinent items constructed by Contractor.
- C. At contract closeout, deliver Record Documents to the Program Manager for the Owner.
- D. Accompany Submittal with transmittal letter, in duplicate, containing:
  - 1. Date
  - 2. Project title and number
  - 3. Contractor's name and address
  - 4. Title and number of each record document
  - 5. Signature of Contractor or Contractor's authorized representative
- E. Record Drawings Plan Submittal: Record Drawings will not be required as part of the work.
- F. Reference Section 01056 for Contractor responsibilities related to GIS updates to update manhole locations within the mapping inventory. This applies to newly discovered assets or assets with significant locational discrepancies.

### **3.05 WARRANTY**

- A. The Contractor shall guarantee the work for a warranty period of one (1) year from the date of final written acceptance of the Owner. If, at any time during the warranty period, any defect is identified the Contractor shall make repairs acceptable and at no additional cost to the Owner. In this case, the Contractor shall warrant the work for one (1) year in addition to the warranty required by the Contract from the date of repairs' final written acceptance.
- B. If the frequency of similar defects requiring repair increases, then the entire project will be re-evaluated for warranty extensions.

**END OF SECTION**

**SECTION 02700**  
**PAVEMENT REPAIRS**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. Pavement Replacement.
- B. Surface Preparation.
- C. Equipment.
- D. Asphaltic Concrete Placement.
- E. Asphaltic Concrete Compaction.
- F. Cleaning and Protection.
- G. Standard Granite Curb, Grade B.
- H. Specialty Brick Paver Replacement.
- I. Special Brick Sidewalk Replacement.

**1.02 RELATED SECTIONS**

- A. Section 02710 – Concrete Curbs, Gutters, & Sidewalks

**1.03 REFERENCES**

- A. ASTM C94 - Standard Specification for Ready Mix Concrete.
- B. ASTM C33 - Standard Specification for Concrete Aggregates.
- C. ASTM C150 - Standard Specification for Portland Cement.
- D. ACI 301 - Specifications for Structural Concrete.
- E. ACI 304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
- F. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- G. ASTM A497 - Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
- H. ASTM C494 - Chemical Admixtures for Concrete.
- I. ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.

- J. ASTM D3371 - Standard Specification for Viscosity-Graded Asphalt Cement for use in Pavement Construction.
- K. ASTM D946 - Standard Specification for Penetration Graded Asphalt Cement for use in Pavement Construction.
- L. AI (Asphalt Institute) - MS-2- Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.
- M. AI (Asphalt Institute) - MS-3- Asphalt Plant Manual.
- N. AI (Asphalt Institute) - MS-8- Asphalt Paving Manual.
- O. AI (Asphalt Institute) - MS-19 - Basic Asphalt Emulsion Manual.
- P. AASHTO M147-65 - Materials for Aggregate and Soil Aggregates.
- Q. ASTM C-136 - Sieve Analysis of Fine and Coarse Aggregates.
- R. Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.

#### **1.04 SUBMITTALS**

- A. The Contractor shall submit asphalt mix design to the Program Manager for approval.
- B. Certificates:
  - 1. The Contractor shall submit certification of quality control and compliance with the requirements of this section. Certificates must be signed by asphalt and concrete producers and the Contractor.

#### **1.05 PERFORMANCE REQUIREMENTS**

- A. The Contractor shall comply with the performance standards and requirements established by the Georgia Department of Transportation.
- B. Paving: Pavement shall be designed for movement of trucks up to 60,000 lbs.
- C. General: In addition to other specified conditions, the Contractor shall comply with the following minimum requirements:
  - 1. Finished asphaltic concrete courses shall be compacted to the following densities:
    - a. Asphaltic Concrete Hot Mix Surface Course; Not less than ninety-two (92) percent of theoretical density.
    - b. Asphaltic Concrete Hot Mix Binder Course: Not less than ninety (90) percent of theoretical density.
  - 2. On the day following placement of asphaltic materials, samples for the determination of in-place density shall be taken from the finished pavement. The Contractor shall core the samples at locations and in the manner directed by the

Program Manager. The cuts made in taking such samples shall be repaired by the Contractor at no expense to the Owner other than for materials.

## **1.06 QUALITY ASSURANCE**

- A. The Contractor shall perform Work in accordance with the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.
- B. The Contractor shall obtain materials from the same source throughout the duration of the paving Work.
- C. The Contractor shall use only materials which are furnished by a bulk asphalt concrete producer regularly engaged in production of hot-mix, hot-laid asphalt concrete.

## **1.07 REGULATORY REQUIREMENTS**

The Contractor shall conform to applicable code for paving work on public and private properties.

## **1.08 JOB CONDITIONS**

- A. Weather Limitations:
  - 1. The Contractor shall apply bituminous prime and tack coats only when the ambient temperature in the shade has been at least forty (40) degrees F.
  - 2. The Contractor shall not conduct paving operations when the surface is wet, frozen, or contains excess moisture which would prevent uniform distribution and required penetration.
  - 3. The Contractor shall construct asphaltic courses only when atmospheric temperature in the shade is above thirty-five (35) degrees F, when the underlying base is dry and when weather is not rainy.
  - 4. The Contractor shall place base course when air temperature is above thirty-five (35) degrees F and rising. The Contractor shall not place base course on a frozen or muddy subgrade.
- B. The Contractor shall establish and maintain the required lines and grades, including crown and cross-slope, for each course during construction operations.
- C. Traffic Control: All traffic control measures shall comply with the requirements of MUTCD, Part 6 – Temporary Traffic Control, Latest Edition as published by USDOT/FHWA.

## **PART 2 – PRODUCTS**

### **2.01 FLEXIBLE PAVEMENT**

- A. Aggregates for asphaltic concrete shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.



- B. Asphaltic cement for asphaltic concrete shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.
- C. Bituminous prime coat shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.
- D. Bituminous tack coat shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.
- E. Hot Mix asphaltic concrete construction shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.

## **2.02 RIGID PAVEMENT**

- A. Concrete and reinforcing bars (where required) for rigid pavement shall conform to GDOT requirements. Concrete for pavement shall be Class A.

## **2.03 CURB AND GUTTER**

- A. Concrete for curb, curb and gutter, or valley gutter shall be Class A. Concrete shall conform to the requirements of Section 02710 – Concrete Curbs, Gutters and Sidewalks or Georgia DOT Specifications where applicable

## **2.04 SIDEWALKS**

- A. Concrete for sidewalks shall be Class A conforming to the requirements of Section 02710 – Concrete Curbs, Gutters and Sidewalks.

## **2.05 DRIVEWAYS**

- A. Concrete for driveways shall be Class A conforming to the requirements of Section 02710 – Concrete Curbs, Gutters and Sidewalks. or Georgia DOT Specifications where applicable

## **2.06 STANDARD GRANITE CURB, GRADE B**

- A. Curbs shall be furnished in standard lengths of eight (8) feet in so far as possible employing shorter lengths where required such that the minimum length employed shall not be less than four (4) feet long. Curb sections shall have a split face and split top. On wheel chair ramps and driveways, the granite curb shall continue through depressed sections of these elements. On curve section of roadway, the granite curb shall be split or cut on the curve. Salvage and reuse of existing granite curb is acceptable where the curb sections meet the approval of the Project Manager.

## **2.07 SPECIALTY BRICK PAVER REPLACEMENT**

- A. The Contractor shall verify the size, type, color, and pattern of the existing specialty brick or stamped concrete pavement surface prior to removal. The Contractor shall submit to the Program Manager for review the proposed replacement paver material and installation information. Materials shall conform to the existing installation for pattern, color, and size.

## **2.08 SPECIAL BRICK SIDEWALK REPLACEMENT**

- A. All brick shall be solid pavers conforming to the requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, Latest Edition. The Contractor shall submit to the Program Manager for review the brick to be used to replace brick sidewalks within the Project area. Materials shall conform to the existing installation for pattern, color, and size.

## **PART 3 – EXECUTION**

### **3.01 PAVEMENT REPLACEMENT**

- A. The Contractor shall obtain prior approval from the Owner for any paving subcontracts.
- B. The Contractor shall replace all pavements following the guidelines established by the Georgia Department of Transportation.
- C. Where paved streets, sidewalks, driveways, and gutters are removed within the construction limits as specified, such replacement shall be paid for at the respective unit prices in the Bid Form. Such pavements removed or damaged by the Contractor beyond the specified construction limits shall be replaced in accordance with these specifications at the Contractor's expense.
- D. Where chert, gravel, slag, or other unpaved street or driveway surfaces are removed or damaged, they shall be replaced with the same type of materials that were removed as an incidental part of the Work and no specific payment therefore shall be allowed. Unpaved drives shall be topped with gravel at no additional cost to the Owner.
- E. In replacing pavements and unpaved surfaces, the materials used and the construction methods shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.
- F. Service lines and small diameter pipes, eight (8) inches in diameter or less located across paved surfaces shall be installed by boring or other approved methods that will not require cutting or removing the pavement where feasible or as directed by the Project Manager.
- G. All concrete pavement replaced shall not be less than four (4) inches thick or equal to the original if greater than four (4) inches. Residential valley gutters and

driveways shall be a minimum of 6" thick. Commercial valley gutters and driveways shall be a minimum of 8" thick.

- H. Pavements replaced shall be of the same type of construction as was removed, except that no asphalt surface replaced shall be less than three (3) inches thick consisting of a binder and seal coat. Patches will be in accordance with applicable standard drawings.

### **3.02 SURFACE PREPARATION**

#### **3.03** Surface Preparation shall be in accordance with the GA DOT Standard Specifications Construction of Transportation Systems, latest Editions

- A. Subgrade: Base and pavement will be applied over a prepared subgrade in accordance with Section 209 Subgrade Construction of the GA DOT Standard Specifications Construction of Transportation Systems, latest edition.
- B. Graded Aggregate Base Course:
  - 1. The Contractor shall check subgrade for conformity with elevations and section immediately before placing aggregate base material.
  - 2. The Contractor shall place aggregate base material in compacted layers not more than six (6) inches thick, unless continuing tests indicate that the required results are best obtained with lesser or greater thicknesses.
  - 3. In no case shall more than eight (8) inches of compacted base be placed in one lift.
  - 4. The Contractor shall spread, shape, and compact all aggregate base material deposited on the subgrade during the same day.
  - 5. The compacted base shall have sufficient stability to support construction traffic without pumping.
  - 6. If compacted base becomes unstable as a result of too much moisture, the base material and underlying subgrade, if necessary, shall be dried and reworked to a moisture content that can be recompacted.
- C. Loose and Foreign Material:
  - 1. The Contractor shall remove loose and foreign material from the surface immediately before application of paving.
  - 2. The Contractor shall use power brooms or blowers, and hand brooming as required.
  - 3. The Contractor shall not displace surface material.
- D. Prime Coat:
  - 1. The Contractor shall uniformly apply at a rate of 0.20 to 0.50 gallon per square yard over compacted and cleaned subbase surface.
  - 2. The Contractor shall apply enough material to penetrate and seal, but not flood the surface.
  - 3. The Contractor shall allow material to cure and dry as long as required to attain penetration and evaporation of volatile, and in no case less than twenty-four (24) hours unless otherwise acceptable to the Program Manager.

4. The Contractor shall blot excess asphalt with just enough sand to prevent pick-up under traffic.
5. The Contractor shall remove loose sand before paving.
  - E. Tack Coat:
    1. The Contractor shall dilute material with equal parts of water and apply to contact surfaces of previously constructed asphalt concrete or Portland cement concrete and similar surfaces.
    2. The Contractor shall apply at a rate of 0.05 to 0.15 gallons per square yard of surface.
    3. The Contractor shall apply tack coat by brush to contact surfaces of curbs, gutters, manholes, and other structures projecting into or abutting asphalt concrete pavement.
    4. The Contractor shall allow surfaces to dry until material is at a condition of tackiness to receive pavement.

### **3.04 EQUIPMENT**

- A. The Contractor shall provide size and quantity of equipment to complete the work specified in this section within the Project Schedule.
- B. Bituminous pavers shall be self-propelled that spread hot asphalt concrete mixtures without tearing, shoving, or gouging surfaces, and control pavement edges to true lines without use of stationary forms.
- C. Rolling equipment shall be self-propelled, steel-wheeled, and pneumatic-tired rollers that can reverse direction without backlash.
- D. The Contractor shall provide rakes, lutes, shovels, tampers, smoothing irons, pavement cutters, portable heaters, and other miscellaneous small tools to complete the work specified in this section.

### **3.05 ASPHALTIC CONCRETE PLACEMENT**

- A. The Contractor shall place asphalt concrete mix on prepared surfaces, spread, and strike-off using paving machine.
- B. The Contractor shall spread the asphaltic concrete mixture at a minimum temperature of two-hundred and twenty-five (225) degrees F.
- C. Inaccessible and small areas may be placed by hand.
- D. The Contractor shall place each course at a thickness such that when compacted it will conform to the indicated grade, cross-section, finish thickness, and density acceptable to the Program Manager.
- E. Pavement Placing:
  1. Unless otherwise directed by the Program Manager, the Contractor shall begin placing asphaltic concrete along the centerline of areas to be paved on crowned

section, and at high side of sections on one-way slope, and in direction of traffic flow.

2. After first strip has been placed and rolled, the Contractor shall place succeeding strips and extend rolling to overlap previous strips.
3. The Contractor shall complete base courses for a section before placing surface courses.
4. The Contractor shall place the asphaltic concrete mixture in as continuous an operation as practical.

F. Hand Placing:

1. The Contractor shall spread, tamp, and finish the asphaltic concrete mixture using hand tools in areas where machine spreading is not possible, as acceptable to Program Manager.
2. The Contractor shall place the asphaltic concrete mixture at a rate that will ensure handling and compaction before mixture becomes cooler than acceptable working temperature.

G. Joints:

1. The Contractor shall carefully make joints between old and new pavements, or between successive days work, to ensure a continuous bond between adjoining work.
2. The Contractor shall construct joints to have the same texture, density, and smoothness as adjacent sections of asphalt concrete course.
3. The Contractor shall clean contact surfaces free of sand, dirt, or other objectionable material and apply tack coat.
4. The Contractor shall offset transverse joints in succeeding courses not less than twenty-four (24) inches.
5. The Contractor shall cut back edge of previously placed course to expose an even, vertical surface for full course thickness.
6. The Contractor shall offset longitudinal joints in succeeding courses not less than six (6) inches.
7. When the edges of longitudinal joints are irregular, honeycombed, or inadequately compacted, the Contractor shall cut back unsatisfactory sections to expose an even, vertical surface for full course thickness.

### **3.06 ASPHALTIC CONCRETE COMPACTION**

- A. The Contractor shall provide sufficient rollers to obtain the required pavement density.
- B. The Contractor shall begin rolling operations as soon after placing as the mixture will bear weight of roller without excessive displacement.
- C. The Contractor shall not permit heavy equipment, including rollers to stand on finished surface before it has thoroughly cooled or set.
- D. The Contractor shall compact the asphaltic concrete mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

- E. The Contractor shall start rolling longitudinally at extreme lower side of sections and proceed toward center of pavement. The Contractor shall roll to slightly different lengths on alternate roller runs.
- F. The Contractor shall not roll centers of sections first under any circumstances.
- G. Breakdown Rolling:
  - 1. The Contractor shall accomplish breakdown or initial rolling immediately following rolling of transverse and longitudinal joints and the outside edge.
  - 2. The Contractor shall operate rollers as close as possible to paver without causing pavement displacement.
  - 3. The Contractor shall check crown, grade, and smoothness after breakdown rolling.
  - 4. The Contractor shall repair displaced areas by loosening at once with lutes or rakes and filling, if required, with hot loose material before continuing rolling.
- H. Second Rolling:
  - 1. The Contractor shall follow breakdown rolling as soon as possible, while the asphaltic concrete mixture is hot and in condition for compaction.
  - 2. The Contractor shall continue second rolling until the asphaltic concrete mixture has been thoroughly compacted.
- I. Finish Rolling:
  - 1. The Contractor shall perform finish rolling while the asphaltic concrete mixture is still warm enough for removal of roller marks.
  - 2. The Contractor shall continue rolling until roller marks are eliminated and the course has attained specified density.
- J. Patching:
  - 1. The Contractor shall remove and replace defective areas.
  - 2. The Contractor shall cut-out and fill with fresh, hot asphalt concrete.
  - 3. The Contractor shall compact by rolling to specified surface density and smoothness.
  - 4. The Contractor shall remove deficient areas for full depth of course.
  - 5. The Contractor shall cut sides perpendicular and parallel to direction of traffic with edges vertical.
  - 6. The Contractor shall apply tack coat to exposed surfaces before placing new asphaltic concrete mixture.

### **3.07 CLEANING AND PROTECTION**

- A. Cleaning: After completion of paving operations, the Contractor shall clean surfaces of excess or spilled asphalt materials to the satisfaction of the Program Manager.
- B. Protection:

1. After final rolling, the Contractor shall not permit vehicular traffic on asphaltic concrete pavements until it has cooled and hardened and in no case no sooner than six (6) hours.
2. The Contractor shall provide barricades and warning devices as required to protect pavement and the general public.
- C. Maintenance: The Contractor shall maintain the surfaces of pavements until the acceptance of the Work. Maintenance shall include replacement, overlaying, milling, and reshaping as necessary to prevent raveling of the road material, the preservation of smooth surfaces and the repair of damaged or unsatisfactory surfaces, to the satisfaction of the Program Manager.

### **3.08 STANDARD GRANITE CURB, GRADE B**

- A. This work shall consist of furnishing and installing the standard granite curb as directed by the Program Manager. In general, granite curb required to be installed shall match existing granite curb that has been removed or damaged in the progress of the Work.
- B. Installation of standard granite curb, Grade B, shall include saw cutting existing asphalt concrete pavement a minimum of one (1) inch and removing remaining pavement to subgrade, excavation of base and subgrade as necessary to install the granite curbing and backfilling and compacting of the installation.

### **3.09 SPECIALTY BRICK PAVER REPLACEMENT**

- A. This work shall consist of replacing existing brick pavement required to be removed for installation of sanitary sewers or connection of services.
- B. Existing brick pavers removed to accommodate sanitary sewers or services or damaged by the Work shall be removed in neat, rectangular sections the full width of the pavement. Existing concrete base slabs shall be cut with a concrete saw and removed prior to replacement. Replacement construction shall match existing pavement section including concrete base slab.

### **3.010 SPECIAL BRICK SIDEWALK REPLACEMENT**

- A. This work shall consist of replacing existing brick sidewalks required to be removed for connection of services or for installation of sanitary sewers.
- B. Existing brick sidewalk removed to accommodate the sanitary sewers or services or damaged by the Work shall be removed in neat, rectangular sections the full width of the sidewalk or driveway on a line perpendicular to the street. Existing concrete base slabs shall be cut with a concrete saw and removed prior to replacement. Brick pavers shall be laid on a four (4)-inch thick concrete base slab and meet the same requirements as Standard Concrete Sidewalk four (4) inches thick.

**END OF SECTION**

**SECTION 02710**  
**CONCRETE CURBS, GUTTERS AND SIDEWALKS**

**PART 1 — GENERAL**

**1.01 SECTION INCLUDES**

- A. Preparation of Subgrade.
- B. Setting Forms.
- C. Curb Construction.
- D. Sidewalk Construction.

**1.02 RELATED SECTIONS**

- A. Section 02700 - Pavement Repairs

**PART 2 — PRODUCTS**

**2.01 FORMS**

- A. Materials for curb forms shall be standard metal, wood, or fiberglass forms free from defects which would impair the appearance or structural quality of the completed curb. Form material for the face of the curb shall not have any horizontal joints closer than seven (7) inches from the top of the curb. The Contractor shall provide stakes and bracing materials as required to hold forms securely in place.
- B. Materials for sidewalk forms shall be standard metal forms. The Contractor shall provide stakes and bracing materials as required to hold forms securely in place.
- C. Use flexible spring steel forms or laminated boards to form radius bends as required.

**2.02 CRUSHED STONE BASE**

- A. Crushed stone base shall consist of clean three-quarters ( $\frac{3}{4}$ ) inch or smaller graded aggregate, free from foreign material and meeting the Georgia Department of Transportation Standard Specifications, Construction and Transportation Systems, latest edition.

**2.03 EXPANSION JOINT FILLER**

- A. Expansion joint filler shall be one-half ( $\frac{1}{2}$ ) inch thick, preformed asphalt-impregnated, expansion joint material conforming to the requirements of ASTM D994.

**2.04 CONCRETE**

- A. Ready-Mix, 3,000 psi compressive strength, conforming to ASTM C94.



## **2.05 CURING COMPOUND**

- A. Liquid membrane-forming curing compound shall be clear or translucent, suitable for spray application and shall conform to the requirements of ASTM C309, Type 1.

## **PART 3 – EXECUTION**

### **3.01 PREPARATION OF SUBGRADE**

- A. The Contractor shall bring the areas on which curbs and sidewalks are to be constructed to required grade on prepared subgrade and compact by sprinkling and rolling or mechanical tamping. As depressions occur, the Contractor shall refill with suitable material and recompact.

### **3.02 SETTING FORMS**

- A. The Contractor shall construct forms to the shape, lines, grades, and dimensions shown on the Plans. The Contractor shall stake wood or steel forms securely in place, true to line and grade.
- B. Forms on the face of the curb shall not have any horizontal joints within seven (7) inches of the top of the curb. The Contractor shall brace forms to prevent change of shape or movement in any direction resulting from the weight of the concrete during placement. The Contractor shall construct short-radius curved forms to exact radius. Tops of forms shall not depart from gradeline more than one-eighth (1/8) inch when checked with a ten (10) foot straightedge. Alignment of straight sections shall not vary more than one-eighth (1/8) inch in ten (10) feet.

### **3.03 CURB CONSTRUCTION**

- A. The Contractor shall construct curbs to line and grade shown on the Plans. Curbs shall conform to the details shown on the Plans.
- B. The Contractor shall place preformed asphalt-impregnated expansion joints at intervals not exceeding fifty (50) feet and at the beginning and end of curved portions of the curb.
- C. The Contractor shall place contraction joints in the curb at intervals not exceeding fifteen (15) feet. Contraction joints shall be of the open joint type and shall be provided by inserting a thin, oiled steel sheet vertically in the fresh concrete to force coarse aggregate away from the joint. The steel sheet shall be inserted in the full depth of the curb. The Contractor shall place, process, finish, and cure concrete in conformance with the applicable requirements of ACI 614, and the requirements of this section. Whenever the requirements differ, the more stringent shall govern. After initial set has occurred in the concrete and prior to removing the front curb form, steel sheet shall be removed with a sawing motion. The Contractor shall finish top of curb with a steel trowel and finish edges with a steel edging tool.
- D. As soon as the concrete has set sufficiently to support its own weight, the Contractor shall form and finish all exposed surfaces. The Contractor shall finish formed face by rubbing with a burlap sack or similar device that will produce a uniformly textured surface, free of form marks, honeycomb, and other defects. All defective concrete shall be removed and replaced at the Contractor's sole expense. Upon completion of the finishing, the Contractor shall apply an approved curing compound to exposed surfaces of the curb. Curing shall continue for a minimum of five (5) days.

- E. Upon completion of the curing period, but not before seven (7) days have elapsed since pouring the concrete, the Contractor shall backfill the curb with earth, free from rocks two (2) inches or larger and other foreign material. The Contractor shall tamp backfill firmly in place.
- F. Finished curb shall present a uniform appearance for both grade and alignment. The Contractor shall remove any section of the curb showing abrupt changes in alignment or grade, or which is more than one-quarter (1/4.) inch away from its location as staked, and construct new curb in its place at the Contractor's sole expense.

### **3.04 SIDEWALK CONSTRUCTION**

- A. Sidewalks shall be four (4) inches thick in walk areas and six (6) inches thick in driveway areas.
- B. At locations where the new sidewalks are to abut existing concrete, the Contractor shall saw concrete for a depth of one-half (1/2) inch and chip the old concrete back to sound material on a straight line, clean the surface, and apply a neat cement paste just prior to pouring the new sidewalk.
- C. The Contractor shall place preformed asphalt expansion joints as in the adjacent curb, where the sidewalk ends at a curb, and around posts, poles, or other objects protruding through the sidewalk.
- D. The Contractor shall provide contraction joints transversely to the walks at locations opposite the contraction joints in the curb. These joints shall be three- sixteenths (3/16) inch weakened plane joints. They shall be straight and at right angles to the surface of the walk.
- E. The Contractor shall place, process, finish, and cure concrete in conformance with the applicable requirements of ACI 614 and the requirements of this section. Where the requirements differ, the more stringent shall govern.
- F. The Contractor shall broom the surface with a fine-hair broom at right angles to the length of the walk and tool all edges, joints, and markings. The Contractor shall mark the walks transversely at five (5) foot intervals with a joining tool. Upon completion of the finishing, the Contractor shall apply an approved curing compound to exposed surfaces. The Contractor shall protect the sidewalk from damage for a period of seven (7) days from the date of pouring.

**END OF SECTION**

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**SECTION 02730**  
**POINT REPAIRS TO SANITARY SEWERS**

**PART 1 – GENERAL**

**1.1 SCOPE**

- A. This Section describes all Work, materials and equipment required for point repairs to sections of existing sanitary sewers. The scope includes the complete installation of a point repair by open cut (external point repair) or through trenchless operations (internal point repair).

**1.2 RELATED SECTIONS**

- A. Section 01015: Control of Work
- B. Section 01510: Sanitary Sewer Main Television & sonar Inspection (CCTV)
- C. Section 01520: Sewer Flow Control
- D. Section 02324: Trenching & Trench Backfilling
- E. Section 02520: Internal Point Repairs to Sanitary Sewers
- F. Section 02535: Gravity Flow Sanitary Sewer
- G. Section 02650: Testing for Acceptance of Sanitary Sewers

**1.3 DEFINITIONS**

- a. Point Repair: is the method used to correct a major offset, blockage, sag, collapse, cracks, fractures, deformed pipe, or other type of restriction the impedes or prohibits the proper operation of the pipeline in the sanitary sewer system.
- B. External Point Repair - This rehabilitation method is for correcting a defect on a mainline requiring excavation. This type of repair shall include excavation, replacing a section of pipe up to eight (8) linear feet in length; replacing up to one (1) service connection, installing flexible repair couplings or boots as applicable, backfilling, disposal and site restoration

All pipe and fittings furnished for this work must comply with the requirements of Section 02535 Gravity Flow Sanitary Sewers. The replacement pipe section shall be the same size and material as the existing pipe unless the existing pipe is vitrified clay. In such case, PVC

shall be used as the pipe section material unless otherwise directed by the Owner's Representative.

It is the Contractor's sole responsibility to establish elevation and/or survey controls necessary to attain true line and grade for the replacement pipe section for all External Point Repairs. No abrupt deflections in line or grade will be allowed.

- C. Internal Point Repair - This rehabilitation method is for internally correcting a defect on a mainline. This type of repair shall include lining a limited section of pipe up to eight (8) linear feet in length. Several internal point repairs may be installed in a single segment only as directed by the Owner's Representative.

All pipe and fittings furnished for this work shall comply with the requirements of Section 02535 Gravity Flow Sanitary Sewers.

## **1.4 SUBMITTALS**

- A. The Contractor shall submit shop drawings for external point repair pipe material, couplings, CIPP point repair material and delineate staging, traffic control, and access arrangement when the complexity of the repair warrants, as determined by the Owner's Representative and in accordance with Section 02500 Pipe Rehabilitation by Cured-in-Place Pipe (CIPP) Method (30 Calendar Days before the Point Repair).
- B. All internal CIPP point repair submittals shall comply with the related requirements of Section 02500 Pipe Rehabilitation by Cured-in-Place Pipe (CIPP) Method.
- C. Pre-installation CCTV inspection reports and videos. Pre-installation reports and videos shall be provided no later than 30 calendar days before the point repair installation
1. D. Post-installation CCTV inspection reports and videos. Post-installation reports and videos shall be provided within 10 calendar days after the point repair and reinstatement of all laterals

## **PART 2 – PRODUCTS**

### **2.1 PIPE AND PIPE FITTINGS**

- A. All pipe and fittings for external point repairs shall be PVC, or ductile iron pipe (DIP) as specified in Section 02535 Gravity Flow Sanitary Sewers.

- B. All related sections for internal CIPP point repairs, materials, specifications, trial tests, warranty and standards for CIPP point repairs shall comply with the requirements of Section 02520 Internal Point Repairs to Sanitary Sewers where applicable with the exception of only epoxy resins shall be used with internal point repairs.

## **PART 3 – EXECUTION**

### **3.1 GENERAL**

The Contractor shall furnish all labor, tools, materials, and equipment necessary for installation and jointing of the pipe. All piping and lining shall be installed in accordance with the Contract Documents in a neat workmanlike manner and shall be set for accurate line and elevation. All piping shall be thoroughly cleaned before installation, and care shall be taken to keep the piping clean throughout the installation.

### **3.2 PREPARATION**

A. Flow Control: Flow control shall be exercised, as required, per Section 01520 Sewer Flow Control.

B. Internal Point Repairs preconditioning and cleaning – Prior to installing internal point repair, clean sewer pipe before pre-insertion television inspection. Debris removed from sewer during cleaning shall be transported in watertight containers and disposed of in accordance with local, State, and Federal regulations.

C. The Owner's Representative authorization to proceed will be contingent on the acceptance of an internal condition assessment video of the prepared sewer confirming the sewer is free from all debris and inherent conditions adversely affecting the smooth introduction of the CIPP point repair into the sewer to be repaired. The internal condition assessment shall accurately portray the position of defects and laterals affected by the proposed remediation. Any lateral introduced into the sewer being treated at the location of the CIPP point repair shall be introduced within the middle third of the repair. Internal condition assessment prior and post lining shall be included in the cost of the repair.

### **3.3 REMOVAL AND REPLACEMENT OF SEWER**

A. After the limits of a particular portion of the existing sewer have been established on the ground, operations shall progress generally as follows:

1. Carefully remove or protect surface features in work area. Expose a full section of existing pipe, including the joints at each end. Take

adequate precautions not to disturb any other existing underground facilities. Handle all excavated materials as described in Section 02324 Trenching and Trench Backfilling.

2. The pipe section being replaced shall be isolated by plugging and/or bypass pumping as described in Sections 01520 Sewer Flow Control or by any other method proposed by the Contractor and acceptable by the Owner's Representative.
  3. After the defect is located and exposed, the defective pipe, or fitting, shall be removed by cutting each side along lines perpendicular to the longitudinal axis of the pipe to leave "spigot ends" to be connected to replacement pipe. Dispose of the existing pipe and concrete encasement, if any.
  4. Excavate the trench to a minimum of 8-inches below the proposed pipe bottom, place bedding material in the trench and shape to form continuous uniform support for the pipe barrel.
5. Pipe shall be installed and jointed, normally beginning at its low or outlet end and proceeding upstream, with the bell ends facing upstream toward the direction of flow. Make connections to existing manholes or existing pipe remaining in place. Install wyes or tees, with branches temporarily plugged, to make reconnections to existing service laterals, if any. Complete bedding or encasement and place compacted backfill as necessary to avoid flotation if water should enter the trench. Encasement will only be allowed if the Owner's Representative confirms future pipe-bursting will not be required.
6. Complete placing and compacting backfill. For purposes of the external point repair, the material excavated is considered suitable backfill, provided the excavated material meets the requirements of Section 02324 Trenching and Trench Backfilling for suitable backfill.
7. Restore surface features to at least as good condition as existed before construction began, including landscaping, grass, roadways, driveways and walks.
8. For External Point Repairs only, perform leakage test in accordance with Section 02650, Testing for Acceptance of Sanitary Sewers.

### **3.4 EXCAVATION AND BACKFILL**

The Contractor shall excavate and backfill in accordance with Section 02324 Trenching and Trench Backfilling. Under no circumstances shall the Contractor be allowed to remove concrete or asphalt without prior saw cutting. The saw cutting shall be deep enough to produce an even, straight cut.

### **3.5 LAYING PIPE**

- A. Proper and suitable tools and appliances for the safe convenient handling and laying of pipe shall be used and shall, in general, agree with

manufacturer's recommendations. At the time of laying, the pipe shall be examined carefully for defects, and should any pipe be discovered to be defective after being laid, it shall be removed and replaced with sound pipe by the Contractor at the Contractor's expense.

B. Upon satisfactory completion of the pipe bedding, a continuous trough for the pipe barrel and recesses for the pipe bells, or couplings, shall be excavated by hand digging. When the pipe is laid in the prepared trench, true to line and grade, the pipe barrel shall receive continuous, uniform support and no pressure shall be exerted on the pipe joints from the trench bottom.

C. Pipe shall be installed in accordance with the manufacturer's recommendation. . Prior to lowering each section of pipe into the trench, the pipe shall be inspected to insure the interior is clean and to check for joint scratches, chipped ends, and imperfect gasket seats. The examination of the pipe shall be acceptable to the Owner's Representative. Any defective pipe or fitting discovered after the pipe is laid shall be removed and replaced with a satisfactory pipe or fitting without additional cost to the Owner.

D. Lines shall be laid straight and depth of cover shall be maintained uniform with respect to finish grade, whether grading is completed or proposed at time of pipe installation. No abrupt changes in direction or grade will be allowed.

E. After pipe has been laid, reviewed and found satisfactory, sufficient backfill shall be placed along the pipe barrel to hold the pipe securely in place during the test. No backfill shall be placed over the joints until the test is satisfactorily completed, leaving the exposed joints to view for the detection of visible leaks. Upon satisfactory completion of the test, backfilling of the trench shall be completed.

### **3.6 INSTALLATION OF PIPE**

PVC and DIP shall be installed in accordance with Section 02535 Gravity Flow Sanitary Sewers.

### **3.7 PIPE-TO-PIPE CONNECTIONS**

Pipe-to-pipe connections shall be made in accordance with Section 02535 Gravity Flow Sanitary Sewers by using flexible banded couplings or adapters, couplings with compression joints in compliance with ASTM C 425.

### **3.8 PIPE-TO-MANHOLE CONNECTIONS**



When a sound pipe stub-out exists from a manhole to which connection is to be made, a pipe-to-pipe connection shall be made as described above. If one is not present or is faulty, an opening shall be cut in the manhole wall and the connection, consisting of a pipe stub-out with an EPDM rubber boot assembly grouted into the opening with non-shrink grout shall be made to form a corrosion resistant, watertight seal. The invert, benches and floor inside the manhole shall be cut and reshaped as necessary.

### **3.9 TELEVISION INSPECTION**

Post Construction CCTV inspection per Section 01510 Sanitary Sewer Main Television and Sonar Inspection (CCTV) is required for all Internal and External Point Repairs on sanitary sewers. The post-installation CCTV inspection shall take place as quickly after completion of each section as is feasible, but in no case more than ten (10) calendar days thereafter. The Contractor is required to submit the post-installation CCTV videos within ten (10) calendar days of completing the rehabilitation of a sewer segment. The repairs shall demonstrate the full and effective rectification of the extant defect and/or obstruction, including infiltration etc., to the complete satisfaction of the Owner's Representative. The Post Construction CCTV inspection is not required for Pipe Blockage Repairs or Sanitary Sewer Sag Repairs performed prior to pipe-bursting or pipe replacement.

### **1 3.10 TRAFFIC CONTROL**

2

Refer to Specification Section 01015 Control of Work.

**END OF SECTION**

**SECTION 02956**  
**SANITARY SEWER CLEANING**

**PART 1 – GENERAL**

**1.01 Section Includes**

- A. This section includes specifications for sewer line cleaning to remove foreign materials and debris from the mains and restore the pipe to a minimum of 95% of the through flow channel and cross section, for clear viewing of the interior surfaces of the lines during television inspection, or as required for other specified rehabilitation or purpose.

**1.02 Related Sections**

- A. Section 01510: Sanitary Sewer Main Television and Sonar Inspection
- B. Section 01520: Sewer Flow Control

**1.03 References**

- A. Codes, Specifications, and Standards
- B. Testing and Materials Standards

**1.04 Submittals**

- A. The Contractor shall submit to the Program Manager written documentation the supervisor and field crew leaders responsible for this work have received the proper training, are certified, and have the requisite experience. This documentation will include dates of hands-on experience, employer, description of duties/experience, contact name and phone number. Documentation on any person shall not be longer than 1-page.
- B. Cleaning equipment and methods used.
- C. Site specific cleaning plan/s.

**1.05 PERSONNEL**

- A. The Supervisor must visit the project site daily checking on their personnel and subcontractors, meeting with the field crew leaders as well as checking on the status and progress of the project.
- B. A field crew leader must be with their crew when their crew is working. Each field crew leader can only have one crew. Each crew must have its own field crew leader.

**1.06 RESPONSIBILITY FOR OVERFLOWS/SPILLS AND DAMAGE TO PROPERTY AND UTILITY**

- A. Reference Specification Section 01030 – Special Project Procedures.

## PART 2 – PRODUCTS

### 2.01 GENERAL

- A. The Contractor shall provide all supervision, labor, material, supplies, equipment, transportation, traffic control, etc., necessary to satisfactorily clean the sewer main(s).
- B. **Hydraulically Propelled Equipment:** The equipment used shall be of a movable dam type and be constructed so a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The movable dam shall be equal in diameter to the main being cleaned and shall provide a flexible scraper around the outer periphery to insure removal of grease. If sewer cleaning balls or other equipment, which cannot be collapsed, are used, special precautions to prevent flooding of the sewers and public or private property shall be taken.
- C. **High-Velocity Jet (Hydrocleaning) Equipment:** All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size mains designated to be cleaned. Specialized nozzles capable of concentrating pressurized water either to the crown or lower quadrant of the pipe to be cleaned shall be available on site. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel.
- D. **Mechanically Powered Equipment:** Bucket machines shall be in pairs with sufficient power to perform the work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the main will not be allowed. A power rodding machine shall be either a sectional or continuous rod type capable of holding a minimum of 500 feet of rod. The rod shall be specifically heat-treated steel. To insure safe operation, the machine shall be fully enclosed and have an automatic safety clutch or relief valve.
- E. **Large Diameter Cleaning:** For cleaning large diameter sewer, storm or combination pipes, consideration should be given to a combination hydraulic high volume water and solids separation system. The flow from the sewer will provide water for the pump operation so no potable water is necessary and treatment costs are not a factor. Water volume of up to 250 GPM at 2000 psi+ will move solids to the downstream manhole in high flow conditions. The separation system will dewater solids to 95% (passing a paint filter test) and transfer them to a dump truck for transport to a sewage treatment plant or approved landfill. Sewer water will be filtered to a point where it can be used in the pump for continuous cleaning. No by-passing of sewer flows will be necessary. The unit shall be capable of 24 hour operation and the unit shall not leave the manhole until a section is fully cleaned.
- F. The flow of sewage in the sewer mains shall be utilized to provide the necessary pressures for hydraulic cleaning devices whenever possible. When additional quantities of water from fire hydrants are necessary to avoid delay in normal working procedures, the water shall be conserved and not used unnecessarily. The Contractor's truck/trailer must be permitted by the County as having the proper backflow prevention devices. The approval of the Owner shall be obtained before County water is used. Hydrants shall only be operated under the supervision of the Owner. Contractor shall be responsible for obtaining a hydrant meter from the Owner for this water use as directed by the Program Manager. Contractor shall be responsible for all costs associated with hydrant meter(s).

- G. The Contractor shall be responsible for providing all other necessary hoses and tools for obtaining the water.
- H. The Contractor is expected to have an easement machine available for use where required.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. **Cleaning Precautions:** During cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools (requiring water pressure to provide their cleaning force) or tools retarding the flow in the sewer main are used, precautions, including the direction of the cleaning operation, shall be taken to insure the water pressure created does not damage or cause flooding of public or private property being served by the pipe. Under the Consent Decree with EPA/EPD, work related building back-ups are reportable as spills.
- B. **Cleaning:** The designated manhole sections shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment. Selection of the equipment used shall be based on the conditions of pipes at the time the work commences. The equipment and methods selected shall be satisfactory to the Owner. The equipment shall be capable of cleaning a minimum of 1200 linear feet and of removing dirt, grease, rocks, sand, and other materials and obstructions from the pipes and manholes. If cleaning an entire section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted. Extreme care shall be taken when cleaning in a reverse setup so as not to cause flooding of service lines located along the sewer. If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire manhole section, it will be assumed a major blockage exists and the cleaning effort shall be repeated with other types of equipment. All pipes shall be cleaned to the satisfaction of the Owner.
- C. The term "clean", as used herein, shall mean the complete removal of all garbage, dirt, gravel, rocks, roots, grease, settled sludge and all other solid or semi-solid materials from the pipes and manholes.
  - 1. Light Cleaning is defined as cleaning a pipe with an average depth of foreign material and debris equal to no more than 25% of the diameter of the main over the length of the manhole-to-manhole section. Rocks removed should be smaller than 3" in diameter.
  - 2. Heavy Cleaning is defined as cleaning a pipe with an average depth of foreign material and debris equal to more than 25% of the diameter of the main over the length of the manhole-to-manhole section. Rocks removed should be larger than 3" in diameter. If a pipe is encountered requiring heavy cleaning, the Contractor shall notify the Program Manager of the problem before commencing work.
  - 3. As part of both Light and Heavy Cleaning, the Contractor shall scour debris or grease-laden manhole walls with high velocity water gun. No additional cost will be paid for such scour.
- D. Conditions, such as broken mains and major blockages, may prevent cleaning from being accomplished, especially where additional damage would result if cleaning were attempted, or continued. Should such conditions be encountered, the Contractor shall not be required to clean those specific main sections unless the Owner removes the apparent obstruction.

- E. Whenever mains to be cleaned show evidence of being more than one-half filled with solids, bucket machines and/or rodding machines shall be utilized to remove the major portion of the material before hydraulic equipment or high velocity, hydro-cleaning equipment is brought into use for finishing the cleaning work.
1. When bucket machines are used, the bucketing process shall be done in one main section at a time. A bucket of the proper size shall be placed into the downstream manhole and pulled, in intervals, towards the upstream manhole.
  2. The bucket shall be retrieved and emptied at varying intervals depending upon the amount of materials being removed. When a bucket is retrieved and it is completely full or overflowing with materials, then the length of travel into the main shall be reduced to ensure total removal of debris. This process shall be repeated until the bucket has been pulled through the entire main section. Upon completion of the bucketing or rodding operation, hydraulically propelled cleaning equipment or high velocity hydro-cleaning equipment shall be used to complete the cleaning work.
- F. **Root Removal:** Roots shall be removed from sections designated to be cleaned. Special attention shall be used during the cleaning operation to assure complete removal of roots from the joints. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root saws, chain-slingers, porcupines, and equipment such as high-velocity jet cleaners.
- G. **Material Removal:** All sludge, dirt, sand, rocks, grease, and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing material from manhole section to manhole section, potentially causing main stoppages, accumulations of sand in wet wells, or damage pumping equipment, shall not be permitted.
- H. **Disposal of Materials:** All solids, semisolids and/or liquids resulting from the cleaning operations shall be removed from the work site and disposed of at a site designated by the Owner and approved to accept wastewater debris and liquids. All materials shall be removed from the site no less often than at the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris, etc., on the site of work beyond the stated time, except in totally enclosed containers and as approved by the Owner. **Under no circumstances shall removed debris and/or liquids be dumped onto the ground or streets or into ditches, catch basins or storm drains for any length of time.** Contractor shall be responsible for legally disposing all debris and all disposal costs.
- I. **Protruding Tap Removal:** Service taps extending into the pipe shall be removed by means of hydraulically or mechanically operated equipment. Chain cutters, clamshell cutters, and robotic lateral reinstatement cutters are typical equipment used to remove protruding taps. Taps should be removed so the resulting protrusion is less than 1" at the greatest point, or 10% of sewer main diameter, whichever is smaller. All debris resulting from protruding tap removal shall be removed immediately from the pipe. Where protruding taps are vitrified clay, grinding wheels may be used on lateral reinstatement cutters to insure a smooth finish. Where protruding taps prevent the passage of equipment through the pipe, notify the Owner immediately for point repair execution. Note: All protruding taps must be verified via television inspection prior to inserting any type of cutting tool into the main.
- J. **Grease Removal:** Grease shall be removed in designated sections where grease is a known problem and shall be considered part of the cleaning procedures. The Contractor shall provide a list of lines requiring grease removal to the Owner and the Project Manager so they may be added

to the Owner's on-going maintenance list. Special attention should be given during the cleaning operations to ensure the complete removal of grease from the top of the pipe. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutter and porcupines, and equipment such as high-velocity jet cleaners, and hot water. Chemical means of grease removal will be allowed upon request by the Contractor; however, it is considered subsidiary to Line Cleaning, and no additional payment will be allowed.

### **3.02 ACCEPTANCE**

- A. Acceptance of pipe cleaning shall be made upon the successful completion of the television/sonar inspection indicating a minimum of 95% of the through flow channel and cross section. If the inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to reclean and reinspect the pipe, at no additional cost to the Owner, until the cleaning is shown to be satisfactory.

### **3.03 CLEANING PRECAUTIONS**

- A. Bucket machines or rodding machines shall be used very carefully because of their tendency to "hang-up" on or "wedge against" the sewer main and break it. Only experienced and well-trained operators shall operate the machines(s).
- B. Whenever hydraulically propelled cleaning tools, or high velocity, hydro-cleaning equipment or any tools retarding the flow of water in the sewer mains are used, precautions shall be taken to ensure the water pressure created does not cause any damage or flooding to public or private property being served by the main involved.
- C. Any damage to the sewer mains caused by the Contractor's operations shall be repaired in a manner approved by the Owner at the Contractor's expense. The Owner reserves the right to make said repairs itself and charge the Contractor accordingly.
- D. Damage due to flooding of any public or private property being served by any main over-filled by Contractor's cleaning operations shall also be cleaned, sanitized and repaired or otherwise paid for by the Contractor.

### **3.04 PUBLIC NOTIFICATION – CLEANING**

- A. Public notification is critical and compliance with the public notification criteria is a prerequisite for sanitary sewer cleaning, especially when conducting cleaning on sewers in easements which pass through private property. Notification must be provided to all property occupiers/owners likely to be affected including residential, commercial and institutional (schools, hospitals, nursing homes, etc.). At a minimum, the following steps shall be taken:
  - 1. The Contractor shall print and distribute pre-approved advance notice door hangers 72 hours before conducting sanitary sewer cleaning. The Contractor shall distribute the door hangers to the property owners (residential, commercial and institutional) in the affected area(s). The advance notice door hangers shall be customized by Public Outreach to suit this project and will be provided to the Contractor for printing prior to project commencement. If cleaning efforts are delayed, the Contractor must re-distribute door hangers.

- a. The Contractor is responsible for distributing pre-approved “Right-of-Entry” (ROE) forms and securing signatures from affected property owners on the ROE forms prior to conducting sanitary sewer cleaning.
- B. The Contractor shall keep a daily log of the distribution of the door hangers. This shall be maintained and submitted to the Owner and/or Program Manager upon request.
- C. The Contractor shall alert the appropriate Owner and Program Manager personnel of their work locations on a daily basis.
- D. Contractor will provide and place “Right-of-Way” signs in prominent locations where cleaning is planned 24-hours in advance of commencing the inspection. Signs will be a minimum of 24 inches wide by 18 inches high with letters a minimum of 2 inches high. Signs will be supported a minimum of 12 inches above grade by integral metal frames. Wording on the signs shall be similar to the following:

**SANITARY SEWER CLEANING WILL BE CONDUCTED ON “date” and “time.” Contact “person” with “company” at “phone number” for additional information.**

### **3.05 DOCUMENTATION**

- A. The Contractor shall keep records (in a log-type Access Database form) of the work accomplished in the cleaning of the pipes. With each pay request, digital backup documentation is required. The following information shall be required as a minimum:
  - 1. Location (street address) and type of surface cover
  - 2. Upstream Manhole ID Number to Downstream Manhole ID Number
  - 3. Pipe ID Number
  - 4. Date and Time
  - 5. Length of Pipe
  - 6. Condition and depth of manholes
  - 7. Size and type of main
  - 8. Type and condition of manhole
  - 9. Type of cleaning performed and various types of equipment used.
  - 10. Meter readings (fire hydrant use)
  - 11. Remarks as to type of materials removed, amount of materials removed, and number of hours spent on each pipe section
- B. The Contractor shall complete work on each asset as assigned via the Program Manager. Upon start of work, the Contractor shall receive work orders/assignments as assigned by the Project Manager. The Contractor shall maintain and synchronize the status of each work order/assignment issued.

**END OF SECTION**

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