



April 24, 2024

**INVITATION TO BID  
BL059-24  
TRENCHLESS STORMWATER PIPE REHABILITATION ON AN ANNUAL CONTRACT**

The Gwinnett County Board of Commissioners is soliciting competitive sealed bids from qualified contractors for the **Provision of Trenchless Stormwater Pipe Rehabilitation on an Annual Contract** for the Department of Water Resources.

Bids should be typed or submitted in ink and returned in a sealed container marked on the outside with the BL# and Company Name. Bids will be received until **2:50 P.M. local time on May 23, 2024** at the Gwinnett County Financial Services - Purchasing Division – 2<sup>nd</sup> Floor, 75 Langley Drive, Lawrenceville, Georgia 30046. Any bid received after this date and time will not be accepted. Bids will be publicly opened and read at 3:00 P.M. Apparent bid results will be available the following business day on our website [www.gwinnettcounty.com](http://www.gwinnettcounty.com).

A **Webex** Pre-Proposal Conference is scheduled for **10:00 AM on May 09, 2024**. To access, dial 1-408-418-9388, enter Access Code 2349 725 0694. All contractors are strongly urged to attend.

Questions regarding bids should be directed to Brittany Bryant, CPPB, Purchasing Associate III, at [Brittany.Bryant@GwinnettCounty.com](mailto:Brittany.Bryant@GwinnettCounty.com) or by calling 770-822-7759, **no later than 3:00PM on May 16, 2024**. Bids are legal and binding upon the vendor when submitted. All bids should be submitted in duplicate.

All suppliers must submit with bid, a bid bond, certified check or cashier's check in the amount of five percent (5%) of the total bid. **Failure to submit a bid bond with the proper rating will result in the bid being deemed non-responsive.** Successful supplier will be required to meet insurance requirements, submit a one hundred percent (100%) performance bond and a one hundred percent (100%) payment bond. Insurance and Bonding Company should be licensed to do business by the Georgia Secretary of State, authorized to do business in Georgia by The Georgia Insurance Department, listed in the Department of Treasury's Publication of Companies holding Certificates of Authority as Acceptable Surety on Federal Bonds and as acceptable reinsuring companies. **The bid bond, payment bond, and performance bond must have an A.M. Best rating of A-X or higher.**

Gwinnett County does not discriminate on the basis of disability in the admission or access to its programs or activities. Any requests for reasonable accommodations required by individuals to fully participate in any open meeting, program or activity of Gwinnett County Government should be directed to the ADA Coordinator at the Gwinnett County Justice and Administration Center, 770-822-8165.

The written bid documents supersede any verbal or written prior communications between the parties.

The County will award the Contract to the lowest "qualified" bidder, subject with the Owner's right to reject any or all bids, to waive technicalities, and to make an award deemed in its best interests. The County reserves the right make an award as deemed in its best interest, which may include awarding a bid to a single bidder or multiple bidders; or to award the whole bid, only part of the bid, or none of the bid to single or multiple bidders, based on its sole discretion of its best interest. With limited response, Gwinnett County reserves the right to extend the solicitation opening date as appropriate in order to assure a competitive procurement process.

Award notification will be posted after award on the County website, [www.gwinnettcounty.com](http://www.gwinnettcounty.com) and companies submitting a bid will be notified via email.

We look forward to your bid and appreciate your interest in Gwinnett County.

Brittany Bryant, CPPB  
Purchasing Associate III

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**BID CHECKLIST**

**Documents that should be submitted at the time of bid opening.**

ITEM #	Check Box	DESCRIPTION	PAGE #
1	<input type="checkbox"/>	Contractor Information	14
2	<input type="checkbox"/>	Addenda Acknowledgement	15
3	<input type="checkbox"/>	<u>Bid Schedule</u> Bidders <b>MUST</b> bid for Section A and minimum (1) other section (B, C, D, E)	17-53
4	<input type="checkbox"/>	<u>References</u> Bidders should submit a minimum three (3) references <b>per</b> section submitted.	54
5	<input type="checkbox"/>	Contractors Affidavit and Agreement	55
6	<input type="checkbox"/>	Code of Ethics Affidavit	56
7	<input type="checkbox"/>	List of Sub-Contractors	57
8	<input type="checkbox"/>	Bidder's Affidavit	58
9	<input type="checkbox"/>	Form of Non-Collusion Affidavit	59
10	<input type="checkbox"/>	<b><u>Bid Bond (MUST BE SUBMITTED WITH BID or bid will not be accepted)</u></b>	60-61

**Project Description:**

Work required under this contract includes furnishing materials, qualified labor, equipment, etc. for Trenchless rehabilitation of 15-inch through 120-inch diameter storm water drainage systems through various technologies on an annual basis. Work includes erosion control measures, landscaping and permanent grassing, structure rehabilitation and/or replacement, pipe replacement, road and driveway restoration, and all materials necessary to install the above.

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**BID NUMBER: BL059-24**

**BID DATE: MAY 23, 2024**

**PROJECT: PROVISION OF TRENCHLESS STORMWATER PIPE REHABILITATION ON AN ANNUAL CONTRACT**

The complete Bid Document Package will include the NOTICE OF BID; Plans and Specifications (including General Conditions), Bid Documents and contract documents as outlined below.

- a. The following items are available to all interested parties at no cost.
  - 1) NOTICE OF BID
  - 2) Specifications (including General Conditions)
  - 3) Bid Documents which include:
    - (1) Instructions to Bidders
    - (2) Bid Form
    - (3) Contractor Affidavit and Agreement
    - (4) Ethics Affidavit
    - (5) Bidder's Affidavit Form
    - (6) Non-Collusion Affidavit Form
    - (7) Bid Bond Form
  - 4) Contract Documents which include:
    - (1) Contract Agreement
    - (2) Performance Bond
    - (3) Payment Bond

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INSTRUCTIONS TO BIDDERS**

1. DEFINED TERMS:

- 1.1 The terms used in Instructions to Bidders and defined in General Conditions shall have meanings assigned to them in the General Conditions.
- 1.2 The term "Successful Bidder" means the Bidder to whom the Owner awards or expects to award the contract.

2. COPIES OF BID DOCUMENTS:

- 2.1 Bid Document Package may be available in advance to contractors and other interested parties at the cost and location stipulated in the NOTICE OF BID.
- 2.2 Complete sets of Bid Documents shall be used in preparing Bids. The Owner assumes no responsibility for errors or misinterpretations resulting from using incomplete sets of Bid Documents.
- 2.3 The Owner, in making Bid Documents available on the above terms, does so only to obtain Bids on Work and does not confer license or grant for any other use.
- 2.4 Any part of the Bid Documents may be modified by Addenda.

**Where forms are provided, THEY SHOULD BE USED WITHOUT SUBSTITUTION! Use of forms other than those provided by the County may constitute a non-responsive Bid and may be rejected. BID BOND SHOULD BE SUBMITTED ON THE BID BOND FORMS FOR THE INDIVIDUAL PROJECT YOU ARE BIDDING. PRIOR GWINNETT COUNTY BID BOND FORMS SHALL NOT BE USED.**

3. QUALIFICATIONS OF BIDDERS:

- 3.1 If stated in the NOTICE OF BID, Bidders should attend a pre-bid conference at the time and place designated in the NOTICE OF BID.
- 3.2 The Department may make any investigations deemed necessary to determine Bidder's ability to perform the Work, and Bidder shall furnish all information and data requested by the Department. Bidder's inclusion as a pre-qualified Bidder will not prohibit the Owner from reserving right to reject any bid from any Bidder that the Department considers not properly qualified to carry out Contract obligations or able to satisfactorily complete the Work on schedule. Contractor providing the utility work must have a current valid Utility Contractors License.
- 3.3 If Bidder does not have offices in the State of Georgia, such Bidder shall designate a proper agent in the State of Georgia on whom service can be made in the event of litigation.

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4. EXAMINATION OF BID DOCUMENTS AND SITE

- 4.1 Before submitting Bid, EA Bidder shall: (a) examine the Bid Document Package thoroughly; (b) become familiar with local conditions affecting cost or Work progress or performance; (c) become familiar with federal, state, and local laws, ordinances, rules, and regulations affecting cost or Work progress or performance; (d) study and carefully correlate Bidder's observations with the Bid Document Package; and, (e) notify the Gwinnett County Purchasing Division concerning conflicts, errors, or discrepancies in Bid Document Package.
- 4.2 On request, the Engineer may provide EA Bidder access to the site to conduct investigations and tests that Bidder deems necessary in order to submit Bid subject to easement acquisitions and existing conditions.
- 4.3 Land where Work is to be performed, rights-of-way for access to site, and other lands designated for use by Contractor in performing Work are identified in General Conditions and Plans. The Contractor's operations must be confined inside such property, rights-of-way or easement lines as provided by the County.

**The Contractor shall not enter any easements except upon written direction from the Engineer.**

- 4.4 Bid submission will constitute **incontrovertible** representation that Bidder understands and has complied with requirements contained in this Article 4, and that Bidder has read and understood the Bid Document Package and hereby stipulates that the documents are sufficient in scope and detail to indicate and convey understanding for terms and conditions in order to perform Work.

5. ADDENDA AND INTERPRETATIONS

- 5.1 Questions concerning meaning or intent of Bid Document Package shall be directed in writing to Brittany Bryant, CPPB at [Brittany.Bryant@GwinnettCounty.com](mailto:Brittany.Bryant@GwinnettCounty.com). Replies will be issued by Addenda mailed or delivered to parties on the plan holders list. **Questions received after May 16, 2024, after 3 p.m. may not be answered.** Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 5.2 Addenda may be issued to modify Bid Document Package as deemed necessary by the Department.

6. BID SECURITY:

- 6.1 EA Bid shall be accompanied by Bid Security made payable to Owner in the amount equal to five percent (5%) of the Bidder's maximum Bid Price. Bid Security shall be cashier's check or Bid Bond issued by Surety meeting requirements contained in paragraph 24 below. **Bid bond should be on County provided form found in the bid package. Failure to use County forms may constitute a non-responsive bid and shall be rejected.**
- 6.2 Bid Security for Successful Bidder will be retained until Bidder has executed Agreement and furnished required payment and performance bonds. If Successful Bidder fails to furnish the qualifications submittals or fails to execute and deliver Agreement and furnish required Payment and Performance Bonds within fifteen (15) calendar days

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after Notice of Award, Owner may annul Notice of Award and Bidder's Bid Security will be forfeited.

In accordance with O.C.G.A §36-91-50, Bid Security may be retained by Owner until the sixty-first (61st) day after Bid opening, unless the bidder provides written notice to the County prior to the scheduled expiration date that the bid will be extended for a time period specified by the County. If Notice of Award is issued within sixty (60) calendar days after Bid opening, Bid Security for Bidder receiving Notice of Award may be retained by Owner up to sixty (60) calendar days after Notice of Award.

6.3 Bid Bond shall be issued by company having a registered agent in State of Georgia and shall comply with the additional requirements of paragraph 24 below.

7. CONTRACT TIME:

This is an annual contract with four (4) options to renew.

8. EXAMINATION OF BID PLANS AND SPECIFICATIONS:

Bidders are advised to carefully examine the Bid Plans and Specifications for the proposed Work. The Bid Plans indicate the surface and underground structures likely to affect the prosecution of the Work insofar as they have been determined, but the information indicated is not guaranteed as being correct and complete. Bidders are expected to examine the Bid Plans and the location of the Work, verify all information with authorities concerned, and judge for themselves all the circumstances affecting the cost of the Work and the time required for its completion, and shall assume all patent and latent risks in connection therewith.

9. SOIL CONDITIONS:

The Engineer does not make any representations as to the soil conditions to be encountered or as to foundation materials. The Contractor must assume all risk as to the nature and behavior of the soil which may be encountered or of soil or water which underlies the Work or is adjacent thereto, including any difficulties that may be due to quicksand or other unfavorable conditions that may be encountered in the Work, whether apparent upon surface inspection or disclosed only in the process of carrying forward the Work.

10. RIGHTS OF WAY/EASEMENTS :

The County shall obtain all rights of way and easements required for the project unless otherwise specified.

11. BID SCHEDULE:

11.1 All major equipment items listed on the bid form shall be bid according to the following: The Bidder must include in the lump sum cost of the circled and named (A), (B), (C), (D) or (E) Manufacturer/Supplier in this listing of major equipment items. The Bidder must circle one of the named Manufacturers/Suppliers, indicating which Manufacturer/Supplier the Contractor's Bid is based on. If an acceptable deduct is provided for substitute equipment and the equipment is accepted by the OWNER, the amount of deduct shall be accounted for by a change order after award of the contract by the OWNER.

11.2 Should a Bidder fail to indicate which manufacturer or supplier his Base Bid is based on, or circles more than one listed manufacturer/supplier per item, the Bidder shall provide the first listed ("A") manufacturer/supplier for his Bid for the amount included in the Total Base Bid at no increase in the Contract amount.

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- 11.3 The Bidder may indicate a Substitute Manufacturer/Supplier by writing in the substitute and writing in the amount of deduct for the Substitute Manufacturer/Supplier. Should a write-in substitute be disallowed by the OWNER as "not equal" or "not desired," then the Bidder shall supply the circled Manufacturer/Supplier.
- 11.4 A substitute Manufacturer/Supplier will be deemed equal provided the proposed substitute is explicitly demonstrated by the Bidder to be equivalent to or better than the product named and described in the Specifications in form, function, performance, reliability, quality, and general configuration. Determination of equality in reference to the project design requirements will be made by the OWNER.
- 11.5 Changes by the Bidder to items listed in the Major Equipment Schedule will not be considered after receipt of Bids.
12. SUBCONTRACTORS, SUPPLIERS AND OTHERS:
- 12.1 The Bidder is cautioned that any person, firm or other party to whom it is proposed to award a subcontract under this Contract must meet the same conditions of experience, competent personnel and workman's compensation insurance as the Bidder.
- If requested by the Engineer, the Successful Bidder and any other Bidder shall, within seven (7) calendar days after request, submit to the Engineer experience statement with pertinent information for similar projects and other qualifications for EA subcontractor, supplier, person, and organization. If the Engineer, after due investigation has reasonable objection to any proposed subcontractor, supplier, person, or organization, the Engineer may, before giving Notice of Award, request Successful Bidder to submit acceptable substitute without increase in Contract Price or Contract Time. If Successful Bidder declines to make substitution, the Engineer may elect not to award contract to Bidder. Bidder's declining to make substitution will not constitute grounds for sacrificing Bid Security.
- 12.2 Procedures for approving Subcontractors after executing Agreement are described in the General Conditions. No subcontractors may be employed without the specific written authorization of the Engineer.
- 12.3 No Contractor will be required to employ subcontractor, supplier, person, or organization against whom Contractor has reasonable objection.
13. BID FORM:
- 13.1 Bid Form is included in the Bid Document package purchased by the Bidders.
- 13.2 Bid Forms should be completed and submitted in duplicate.
- 13.3 Bids by corporations shall be executed in corporate name by president or vice-president (or other corporate officer accompanied by evidence indicating officer has authority to sign) and corporate seal shall be affixed and attested by secretary or assistant secretary. Corporate address and state of incorporation shall be shown below signature. If Bid is executed by someone other than president or vice-president, attach to Bid certified corporate resolution by board of directors authorizing person to execute Bid for Corporation.

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- 13.4 Bids by partnerships shall be executed in partnership name and signed by partner, whose title shall appear under signature and official partnership address shall be shown below signature.
- 13.5 If requested, person signing Bid for corporation or partnership shall produce evidence satisfactory to Owner indicating person's authority to bind corporation or partnership.
- 13.6 Names should be typed or printed below signature.
- 13.7 Bid should contain acknowledgment Bidder has received Addenda (Addenda numbers should be filled in on Bid Form).
- 13.8 Address and telephone number for communications regarding Bid should be shown.
14. QUANTITIES OF WORK:  
The quantities of Work as given for Unit Price Items in the Bid Form are approximate and are assumed solely for comparison of the bids. They are not guaranteed to be accurate statements or estimates of quantities of Work that are to be performed under the Contract, and any departure, therefore will not be accepted as valid grounds for any claim for damages, for extension of time or for loss of profits; nor will any additional payments other than that bid or stipulated under the Unit Prices, be made regardless of the actual quantities required or ordered to complete the Work.
15. SUBMISSION OF BIDS:
- 15.1 Bids shall be submitted in duplicate before time and at place indicated in NOTICE OF BID and shall be submitted in a sealed envelope with notation "BID NUMBER, PROJECT NAME, NAME OF BIDDER, DATE AND TIME OF OPENING" on face. If Bid is sent through mail or other delivery system, sealed envelope shall be enclosed in separate envelope with same notations as above on face.
- 15.2 Bids should be submitted on the bid schedule provided in the bid document on white paper, 8-1/2" x 11", single sided, and with no holes punched. EA Bid shall contain following documents in completed form (County forms should be used without substitution):
- (1) Instructions to Bidders
  - (2) Bid Form **ONE MARKED "ORIGINAL" AND ONE MARKED "COPY"**
  - (3) Contractor Affidavit and Agreement
  - (4) Ethics Affidavit
  - (5) Bidder's Affidavit Form
  - (6) Non-Collusion Affidavit Form
  - (7) Bid Bond Form(Surety Bond on County provided Form or Certified or Cashier's Check)
- 15.3 More than one Bid received for same work from individual, firm, partnership, corporation, or association under same or different names will not be considered. Reasonable grounds for believing any Bidder is interested in more than one Bid for same work will cause Owner to reject all Bids from Bidder. If Owner believes collusion exists among Bidders, Bids from participants in collusion will not be considered.
- 15.4 Conditions, limitations, or provisions attached by the Bidder to the Bid Forms may cause its rejection.



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16. MODIFICATION AND WITHDRAWAL OF BIDS:
- 16.1 Withdrawal Prior to Time for Receiving Bids – Bids may be modified or withdrawn, with proper identification, at any time prior to deadline for submitting Bids. Bid Withdrawal will not prejudice Bidder's rights to submit new Bid prior to Bid Date and Time.
- 16.2 Withdrawal After Time for Receiving Bids – After period for receiving Bids has expired, no Bid may be withdrawn, modified, or explained except as provided for in paragraph 18 below.
17. OPENING OF BIDS:
- Bids will be opened publicly at the time and place set forth in the NOTICE OF BID and read aloud. Base Bids and major alternates will be made available after Bid opening.
- 17.1 After Bid opening, Bidder has up to forty-eight (48) hours to notify Gwinnett County Purchasing Division office that Bidder made an obvious error in Bid calculation. Bid Bond withdrawal for this reason shall be requested in writing within this same forty-eight (48) hour period. Said written request shall be accompanied by sufficient documentation to demonstrate the origin and composition of the "obvious error".
- 17.2 Bid Bond may not be withdrawn for any other reason.
18. BIDS TO REMAIN OPEN:
- Bids shall remain open for acceptance by Owner for sixty (60) calendar days after Bid opening, unless the bidder provides written notice to the County prior to the scheduled expiration date that the bid will be extended for a time period specified by the County. Owner may, at its sole discretion, release any Bid prior to that date.
19. AWARD OF CONTRACT:
- 19.1 To extent permitted by applicable state and federal laws and regulations, Owner reserves right to reject any and all Bids, to waive any and all informalities, and to disregard nonconforming, non-responsive, or conditional Bids. Bids may be considered irregular and subject to rejection if they show serious omission, unauthorized form alterations, use of unauthorized forms, unauthorized alternate bids, incomplete or unbalanced unit prices, or other irregularities. Discrepancies between words and figures will be resolved in favor of correct sum. Any mistake which is obviously a clerical one, such as an error in price extension, or in placement of decimal points, reversal of prices, FOB destination, FOB point of origin, etc., may be corrected by the purchasing authority after verification is made by the bidder. However, under no circumstances can unit prices be changed.
- 19.2 Contract will be awarded by Owner pursuant to applicable law. Nothing contained herein shall place duty upon Owner to reject bids or award contract based upon anything other than Owner's sole discretion as described herein.
- 19.3 The Department may consider qualifications and experience for subcontractors, suppliers, persons, and organizations proposed for Work.
- 19.4 The Department may conduct investigations deemed necessary to assist in evaluating Bids and to establish responsibility, qualifications, and financial ability for Bidders, proposed Subcontractors, persons, and organizations to do Work. Owner reserves right to reject Bid from any Bidder not passing evaluation.

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- 19.5 One contract for work will be awarded, if award is made, to the lowest responsible and responsive Bidder. The County reserves the right make an award as deemed in its best interest, which may include awarding a bid to a single bidder or multiple bidders; or to award the whole bid, only part of the bid, or none of the bid to single or multiple bidders, based on its sole discretion of its best interest. This project may be awarded by base bid or base bid plus selected alternates, if applicable, as deemed in the best interest of the County. Successful Bidder will be required to perform Work as Prime Contractor. Work performed by Contractor shall be 50% minimum. No Contract assignment or subcontracting will be allowed without written permission from the Engineer.
- 19.6 This project may be awarded by base bid or base bid plus selected alternates, if applicable, as deemed in the best interest of the County." Successful Bidder will be required to perform Work as Prime Contractor. Work performed by Contractor shall be 50% minimum. No Contract assignment or subcontracting will be allowed without written permission from the Engineer.
- 19.7 The Successful Bidder will be required to furnish a Performance and Payment Bond, EA in a sum not less than one hundred percent (100%) of the amount of the Contract. The Bonds shall be that of an approved surety meeting the requirements as noted in paragraphs 6 and 23 herein.
- 19.8 If at any time after the execution and approval of the Contract and of the Surety Bonds as required in the Bid NOTICE, the Owner shall deem any of the Sureties upon such Bonds to be unsatisfactory, or such Bonds to be inadequate security for the Owner, the Contractor shall, within five (5) calendar days after notice from the Owner to do so, furnish new or additional Contract Bonds, in form and sum, and signed by such Sureties who all shall be satisfactory to the Owner. No further payment will be deemed due nor will any further payment be made to the Contractor unless such new or additional Bonds are furnished and approved. The premium on such Bonds shall be paid by the Contractor.

Failure of the Contractor to submit approved Performance and Payment Bonds within the required five (5) calendar days shall, at the discretion of the Owner, constitute a forfeiture of the Bid Bond.

20. SUBMITTALS BY SUCCESSFUL BIDDER:

- 20.1 Owner intends to award contract to Bidder competent to perform and complete Work in satisfactory manner. The Department will require Successful Bidder to submit, within seven (7) calendar days after receiving written request from the Engineer and prior to contract award, Preliminary Progress Schedule and Schedule of Values, as set forth below.
- 20.2 Preliminary Progress Schedule shall be submitted in triplicate and include time-scaled schedule and narrative in accordance with appropriate formats established in Engineer's written request for schedules. Activities in schedule shall show order Successful Bidder proposes to perform Work within constraints and sequencing conditions set forth in Specifications (including General Conditions) and shall indicate starting and completion dates for key milestones and Work pertaining to EA Specifications division within EA major structure or geographical area on site. Activities shall identify significant submittals and approvals, major equipment

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deliveries, equipment testing, Owner's responsibilities, affected utilities, and other similarly involved third parties.

- 20.3 Schedule of Values shall include Bid itemization by major structures or Work areas.
- 20.4 Successful Bidder and surety, if any, agree any delays within Bidder's control in delivering submittals shall constitute request by Bidder for time extension and Bid shall remain open for Owner's acceptance. If Owner agrees to time extension, Bidder shall comply with Submittal Requirement within five (5) additional calendar days. At Owner's option, failure by Successful Bidder to deliver submittals within extended period will void Bid evaluation and will constitute proof Successful Bidder has abandoned Bid, Bid Security may be declared forfeited to Owner as liquidated damages, and Work may be awarded to another Bidder.

21. BUSINESS LICENSE:

Bidder need not list Gwinnett County business license number on bid form. Successful Bidder's submittals shall include a copy of Bidder's business license.

22. TAXES:

Contractor shall pay applicable sales, consumer, use, and other similar taxes required by law. Contractor is responsible for reviewing pertinent state statutes involving sales tax and complying with requirements.

The Contract prices for articles, materials, or equipment named herein are subject to increase by the amount of any additional tax or taxes affecting the articles, materials or equipment involved in the Contract imposed by or under the authority of the Federal, State or Local Government and passed or taking effect after the receipt of Bids, and shall continue in effect during such time as such tax or taxes are lawfully collectible; provided, however, that in the event of such increase in cost, the claim shall be presented within thirty days and supported by evidence of such additional tax, satisfactory to the County Attorney.

23. QUALIFICATIONS OF SURETY COMPANIES:

In order to be acceptable to Owner, surety company issuing Bid Guaranty Bonds or 100% Performance/Payment bonds as required in Bid NOTICE shall meet and comply with following minimum standards:

- 23.1 Bonding Company should be licensed to do business in Georgia by the Georgia Secretary of State, authorized to do business in Georgia by the Georgia Insurance Department, listed in the Department of the Treasury's Publication of Companies Holding Certificates of Authority as Acceptable Surety on Federal Bonds and as Acceptable Reinsuring Companies and must have an A.M. Best rating of A-V or higher.
- 23.2 All bonds should be submitted on forms provided by Gwinnett County and agencies providing bonds and insurance should, if required, provide proof that they meet the criteria outlined in the bid and contract documents.
- 23.3 Surety shall be admitted to do business in State of Georgia and shall be registered to provide such surety by the State of Georgia Insurance Commissioner.

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- 23.4 Attorneys-in-fact who sign bid bonds or performance/payment Bonds shall file with bond certified power of attorney to sign bond.
- 23.5 Surety company agents shall list name, address, and telephone number on bonds.
- 23.6 Performance and Payment Bonds shall extend twelve (12) months beyond date of final payment and shall contain waiver for alteration to Contract terms, time extensions, or forbearance on Owner's part.
24. EXECUTION OF WRITTEN CONTRACT:  
Successful Bidder will be required to sign written contract identified in bid package as Sample Agreement. Unsigned Agreement will be submitted to Successful Bidder either prior to or along with the Notice of Award. The Contractor shall sign and deliver the fully executed Agreements to Owner with all required bonds within fifteen (15) calendar days following receipt of Agreement forms, (unless otherwise stipulated by the Owner).
25. AREA OFFICE:  
If required by the Engineer, the Contractor will be required to establish an office and an equipment and spare parts storage yard within Gwinnett County to conduct this work and must arrange to cope with any emergency that may arise in connection with the Work on a twenty-four (24) hour per day, seven (7) day per week basis.
26. PROTESTS:  
Owner is responsible for resolving protests concerning contract award, claims, disputes, alleged license fees, and other related procurement matters in accordance with sound business judgment and good administrative practice. Following procedures shall be used for this purpose:
- 26.1 Any party with direct financial interest adversely affected by Owner's procurement decision shall file protest under this article, or be barred further relief.
- 26.2 Protest shall: (a) be made in writing, oral protests will not be permitted; (b) adequately state basis for protest and relief requested; and (c) be received by Owner within seven (7) calendar days from date basis for protest was, or should have been, known.
- 26.3 Owner may defer protested procurement upon receiving procedurally adequate protests, provided in any event awarding contract, subcontract, or procurement for sub item may be permitted, at Owner's sole discretion, where award will not materially affect resolving protest.
- 26.4 Protest shall be limited to: (a) issues arising from procurement provisions contained in Specifications; and (b) state or local law. No protest may be filed with respect to basic project design.
- 26.5 The Purchasing Director will establish procedures for resolving protests. Owner will rely for protest resolution on decisions issued under Georgia law, as well as decisions issued by other states, Federal courts, U.S. Comptroller General, or other Federal agencies with extensive procurement expertise, if state law is not clearly established.

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27. SOLID WASTE ORDINANCE:  
No individual, partnership, corporation or other entity shall engage in solid waste handling except in such a manner as to confirm to and comply with the current Gwinnett County Solid Waste Ordinance and all other applicable local, state and federal legislation, rules, regulation and orders.
28. GENERAL CONTRACTORS LICENSE  
**Effective July 1, 2008: All General Contractors must have a current valid license from the State Licensing Board for Residential and General Contractors, unless specifically exempted from holding such license pursuant to Georgia law (O.C.G.A. Section 43-41-17).**
29. NO COMMUNICATIONS POLICY  
Individuals, firms and businesses seeking an award of a Gwinnett County contract may not initiate or continue any verbal or written communications regarding a solicitation with any County officer, elected official, employee or other County representative without permission of the Purchasing Associate named in the solicitation between the date of the issuance of the solicitation and the date of the final contract award by the Board of Commissioners. Violations will be reviewed by the Purchasing Director. If determined that such communication has compromised the competitive process, the offer submitted by the individual, firm or business may be disqualified from consideration for award.
30. CODE OF ETHICS  
"Proposer/Bidder" shall disclose under oath the name of all elected officials whom it employs or who have a direct or indirect pecuniary interest in the business entity, its affiliates, or its subcontractors. The "Proposer/Bidder" shall execute a Code of Ethics affidavit. Failure to submit the affidavit during the bid or proposal process shall render the bid or proposal non-responsive.

The act of submitting false information or omitting material information shall be referred to the Purchasing Policy & Review Committee for action pursuant to the Purchasing Ordinance or to the District Attorney for possible criminal prosecution.

Any business entity holding a contract with Gwinnett County that subsequent to execution of the contract or issuance of the purchase order employs, subcontracts with, or transfers a direct or indirect pecuniary interest in the business entity to an elected official shall within five (5) days disclose such fact in writing under oath to the Clerk of the Board of Commissioners. Failure to comply shall be referred to the Purchasing Policy & Review Committee for action pursuant to the Purchasing Ordinance or to the District Attorney for possible criminal prosecution.

**SECTION I  
INSTRUCTIONS TO BIDDERS**

31. BIDDER'S ACKNOWLEDGEMENT:

**NOTE: See Paragraph 14 of "Instruction to Bidders" for requirements in completing signature block below and remainder of this page.**

The undersigned bidder acknowledges all requirements outlined in the above "Instructions To Bidders Package" and all documents referred to therein. This signed form must accompany the completed bid form submitted at the time of bid.

The County requires that all who enter into a contract for the physical performance of services with the County must satisfy O.C.G.A. § 13-10-91 and Rule 300-10-1-.02, in all manner, and such are conditions of the contract.

In compliance with the attached specifications and O.C.G.A. §36-91-50, the undersigned offers and agrees, if this bid is accepted by the Board of Commissioners within sixty (60) days of the date of bid opening, to furnish any or all of the items upon which prices are quoted, at the price set opposite EA item, delivered to the designated point(s) within the time specified in the bid schedule. By submission of this bid, I understand that Gwinnett County uses Electronic Payments for remittance of goods and services. Vendors should select their preferred method of electronic payment upon notice of award. For more information on electronic payments, please refer to the [Electronic Payment](#) information in the instructions to bidders.

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_  
(President, Vice President or Corporate Officer)

PRINTED NAME: \_\_\_\_\_

ATTESTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
(Secretary of Corporation)

PRINTED NAME: \_\_\_\_\_ TITL \_\_\_\_\_

SEAL

(Corporate Seal Required if Bidder is a Corporation)

LEGAL BUSINESS NAME: \_\_\_\_\_

COMPLETE ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

TELEPHONE NO.: \_\_\_\_\_

FACSIMILE NO.: \_\_\_\_\_

E-MAIL ADDRESS: \_\_\_\_\_

**SECTION I  
INSTRUCTIONS TO BIDDERS**

(This Bid Form is part of the Bid Documents)

**BID NUMBER: BL059-24**

**BID DATE: MAY 23, 2024**

SUBMITTAL DATE: \_\_\_\_\_

BY: \_\_\_\_\_  
(Bidder)

**PROJECT DESCRIPTION: Provision of Trenchless Stormwater Pipe Rehabilitation on an Annual Contract**

THIS BID IS SUBMITTED TO: Gwinnett County, Georgia (hereinafter called Owner) acting through its Board of County Commissioners

1. Undersigned Bidder offers and agrees to enter into Agreement with Owner, in accordance with the instructions, requirements and forms included in Bid Document Package (including the NOTICE OF BID, Instructions to Bidders Package and Pre-Qualification Package [where applicable]), and to complete all Work for the Bid Price and within required calendar days, all in accordance with the Bid Document Package.
2. Bidder accepts terms and conditions contained in Bid Document Package including without limitation those dealing with Owner's time for accepting Bid and disposition of Bid Security.
3. In submitting this Bid, Bidder makes representations required by Instructions to Bidders and further warrants and represents:
  - a. Bidder has examined Bid Document Package, including NOTICE OF BID and Instructions to Bidders, and following addenda:

No. _____	Dated _____	No. _____	Dated _____
No. _____	Dated _____	No. _____	Dated _____
No. _____	Dated _____	No. _____	Dated _____
No. _____	Dated _____	No. _____	Dated _____
  - b. Bidder has examined site and locality where the Work is to be performed and legal requirements (federal, state, and local laws, ordinances, rules, and regulations) and conditions affecting Work cost, difficulty, progress, or performance and has made independent investigations as Bidder deems necessary.
  - c. Bidder has carefully studied reports and drawings indicating subsurface conditions and drawings depicting physical conditions as identified in General Conditions and accepts

**SECTION I**  
**INSTRUCTIONS TO BIDDERS**

determination concerning technical data contained in reports and drawings on which Bidder is entitled to rely.

- d. Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) examinations, investigations, explorations, tests, and studies (in addition to or to supplement those referred to in "c." above) pertaining to subsurface or physical conditions at site or otherwise affecting cost, progress, performance, or furnishing Work as Bidder considers necessary for performing or furnishing Work at Contract Price, within Contract Time, and in accordance with terms and conditions contained in Bid Document Package, including specifically provisions stated in General Conditions and no additional examinations, investigations, explorations, tests, reports, or similar information or data are or will be required by Bidder.
- e. Bidder has reviewed and checked Plans and data shown or indicated on Bid Document Package with respect to existing underground facilities at or contiguous to site and assumes responsibility for accurately locating underground facilities. No additional examinations, investigations, explorations, tests, reports, or similar information or data concerning underground facilities are or will be required by Bidder in order to perform and furnish Work at Contract Price, within Contract Time, and in accordance with terms and conditions contained in Bid Document Package, including specifically provisions stated in General Conditions.
- f. Bidder has correlated results from observations, examinations, investigations, explorations, tests, reports, and studies with terms and conditions contained in Bid Document Package.
- g. Bidder has given Owner written notice concerning conflicts, errors, or discrepancies discovered in Bid Document Package and written resolution by Owner is acceptable to Bidder.
- h. This Bid is genuine and not made in interest of or for any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules produced by any group, association, organization, or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit false or sham Bid; Bidder has not solicited or induced any person, firm, or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.
- i. Bidder should submit a projected Monthly Cash Flow projection with the bid. The monthly projections should add up to the Bid Amount on the Bid Form.



BID NUMBER: BL059-24

BID FORM

BID DATE: MAY 23, 2024

COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

**FAILURE TO RETURN THIS PAGE AS PART OF YOUR BID DOCUMENT MAY RESULT IN REJECTION OF BID.**

4. The bidder submits the following Unit Price Work Bid Prices for the Trenchless Stormwater Pipe Rehabilitation on an Annual Contract identified as part of this bid. Work included within EA Bid Item is described in the Specification Section listed for that Bid Item. Payment for each Bid Item is described in Specification Section 01 22 15.11 – Measurement and Payment listed for that Bid Item. **Bidders must submit Section A (Common Civil Work) and at least one of the other four (4) Sections (B, C, D or E). All projects under this contract will require work under Section A and one other Section (B, C, D, or E). Since Section A will be a component of each Section (B, C, D, and E), the bid totals for each individual section will be added to the bid totals for Section A to determine low bidder for Sections B, C, D, and E.** The County reserves the right to make an award as deemed in its best interest, which may include awarding a bid to a single bidder or multiple bidders; or to award the whole bid, only part of the bid, or none of the bid to single or multiple bidders, based on its sole discretion of its best interest. Gwinnett County reserves the right to reject individual sections.

BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
<b>SECTION A (COMMON CIVIL WORK)</b>						
<b>EXPLORATION AND REMOVAL ITEMS</b>						
1	02 32 19	Exploratory Excavations	50	HR	\$	\$
2	02 41 13.23	Removal of existing non- drainage structures	25	EA	\$	\$
3	02 41 13.23	Removal of existing drainage structures	125	EA	\$	\$
4	02 41 13.23	Remove existing pipe size 12" and greater, all types	850	LF	\$	\$
5	02 42 11	Debris removal	5,000	CY	\$	\$
<b>CAST IN PLACE CONCRETE</b>						
6	03 30 00	Concrete structures, class a, cast in place, including reinforcing steel	100	CY	\$	\$
7	03 30 00	Concrete structures, class a, cast in place, without reinforcing steel	100	CY	\$	\$
<b>MASONRY ITEMS</b>						
8	04 21 13	Brick masonry	250	CY	\$	\$
9	04 43 13	Rubble masonry	250	CY	\$	\$
<b>CLEARING AND EARTHWORK</b>						
10	31 11 00	Clearing and grubbing	40,000	SY	\$	\$

BID NUMBER: BL059-24

BID FORM

BID DATE: MAY 23, 2024

COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
11	31 11 00	Tree removal (6" – 12")	75	EA	\$	\$
12	31 11 00	Tree removal (13" – 23")	20	EA	\$	\$
13	31 11 00	Tree removal (> 24")	10	EA	\$	\$
14	31 23 00	Additional excavation cost where depth of cover to top of pipe (>10.0')	100	LF	\$	\$
15	31 23 00	Channel excavation	5,000	CY	\$	\$
16	31 23 00	Additional excavation	5,000	CY	\$	\$
17	31 23 00	Borrow excavation	5,000	CY	\$	\$
18	31 23 00	Spoil removal	5,000	CY	\$	\$
19	31 23 00	Rock excavation	50	CY	\$	\$
20	31 23 00	Classified stone (#57, #5, #4, crusher run, gab, etc.)	250	TON	\$	\$
21	31 23 23.33	Flowable fill	500	CY	\$	\$
<b>EROSION AND SEDIMENT CONTROL</b>						
22	31 25 00	Mulch complete	250	SY	\$	\$
23	31 25 00	Pine straw complete	4,000	EA	\$	\$
24	31 25 00	Silt fence type c, complete	1,000	LF	\$	\$
25	31 25 00	Hay bales complete	250	EA	\$	\$

BID NUMBER: BL059-24

BID FORM

BID DATE: MAY 23, 2024

COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
<b>STABILIZATION ITEMS</b>						
26	31 25 00	Permanent soil reinforcing mat Installed (GADOT sect 710)	100	SY	\$	\$
27	31 32 23	Pressure grouting soil stabilization	100	CY	\$	\$
28	31 37 00	Plastic filter fabric Installed	500	SY	\$	\$
29	31 37 00	Stone rip rap type I, complete in place	1,000	TON	\$	\$
30	31 37 00	Stone rip rap type III, complete in place	75	TON	\$	\$
<b>SITE RESTORATION AND LANDSCAPING</b>						
31	32 12 16	Asphalt paving resurfacing	25	TON	\$	\$
32	32 16 13	Sidewalk, 4" thick	250	SY	\$	\$
33	32 16 13	6" x 24" x 12" high back curb and gutter	750	LF	\$	\$
34	32 16 13	6" x 24" x 10" roll back curb and gutter	500	LF	\$	\$
35	32 31 13	Fence removal and replacement, complete	250	LF	\$	\$
36	32 31 13	Temporary fencing	1,000	LF	\$	\$
37	32 31 13	Orange barrier fence	7,000	LF	\$	\$
38	32 32 29	Timber structures	150	SF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
39	32 92 00	Permanent seeding complete	15,000	SY	\$	\$
40	32 92 00	Temporary seeding complete	7,500	SY	\$	\$
41	32 92 00	Sodding complete	7,500	SY	\$	\$
42	32 92 00	Topsoil complete	750	CY	\$	\$
43	32 93 43	Tree replacement: hardwoods, 2"	25	EA	\$	\$
44	32 93 43	Tree replacement: pines, 2"	5	EA	\$	\$
45	32 93 43	Shrub replacement: 1 gallon	50	EA	\$	\$
46	32 93 43	Shrub replacement: 3 gallons	250	EA	\$	\$
47	32 93 43	Shrub replacement: 5 gallons	50	EA	\$	\$
48	32 93 43	Shrub replacement: 7 gallons	50	EA	\$	\$
49	32 93 43	Tree/shrub replacement: 15 gallons	25	EA	\$	\$
50	32 93 43	Bedding flowers: per flat of 18	100	EA	\$	\$
<b>STORM LINE TELEVISION INSPECTION (FOR PIPE INVESTIGATION ONLY)</b>						
51	33 01 30.16	Storm Line TV Inspection	25,000	LF	\$	\$
<b>STORM LINE CLEANING</b>						
52	33 01 30.51	12" pipe – light	100	LF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
53	33 01 30.51	15" pipe – light	100	LF	\$	\$
54	33 01 30.51	18" pipe – light	5,000	LF	\$	\$
55	33 01 30.51	21" pipe – light	750	LF	\$	\$
56	33 01 30.51	24" pipe – light	4,000	LF	\$	\$
57	33 01 30.51	30" pipe – light	3,000	LF	\$	\$
58	33 01 30.51	36" pipe – light	2,500	LF	\$	\$
59	33 01 30.51	42" pipe – light	2,000	LF	\$	\$
60	33 01 30.51	48" pipe – light	2,000	LF	\$	\$
61	33 01 30.51	54" pipe – light	650	LF	\$	\$
62	33 01 30.51	60" pipe – light	650	LF	\$	\$
63	33 01 30.51	66" pipe – light	175	LF	\$	\$
64	33 01 30.51	72" pipe – light	325	LF	\$	\$
65	33 01 30.51	78" pipe – light	100	LF	\$	\$
66	33 01 30.51	84" pipe – light	100	LF	\$	\$
67	33 01 30.51	90" pipe – light	100	LF	\$	\$
68	33 01 30.51	96" pipe – light	100	LF	\$	\$

**BID NUMBER: BL059-24**

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
69	33 01 30.51	102" pipe – light	100	LF	\$	\$
70	33 01 30.51	108" pipe – light	100	LF	\$	\$
71	33 01 30.51	114" pipe – light	100	LF	\$	\$
72	33 01 30.51	120" pipe – light	100	LF	\$	\$
73	33 01 30.51	12" pipe – heavy	100	LF	\$	\$
74	33 01 30.51	15" pipe – heavy	100	LF	\$	\$
75	33 01 30.51	18" pipe – heavy	1,000	LF	\$	\$
76	33 01 30.51	21" pipe – heavy	100	LF	\$	\$
77	33 01 30.51	24" pipe – heavy	500	LF	\$	\$
78	33 01 30.51	30" pipe – heavy	500	LF	\$	\$
79	33 01 30.51	36" pipe – heavy	300	LF	\$	\$
80	33 01 30.51	42" pipe – heavy	200	LF	\$	\$
81	33 01 30.51	48" pipe – heavy	100	LF	\$	\$
82	33 01 30.51	54" pipe – heavy	100	LF	\$	\$
83	33 01 30.51	60" pipe – heavy	100	LF	\$	\$
84	33 01 30.51	66" pipe – heavy	100	LF	\$	\$

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COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
85	33 01 30.51	72" pipe – heavy	100	LF	\$	\$
86	33 01 30.51	78" pipe – heavy	100	LF	\$	\$
87	33 01 30.51	84" pipe – heavy	100	LF	\$	\$
88	33 01 30.51	90" pipe – heavy	100	LF	\$	\$
89	33 01 30.51	96" pipe – heavy	100	LF	\$	\$
90	33 01 30.51	102" pipe – heavy	100	LF	\$	\$
91	33 01 30.51	108" pipe – heavy	100	LF	\$	\$
92	33 01 30.51	114" pipe – heavy	100	LF	\$	\$
93	33 01 30.51	120" pipe – heavy	100	LF	\$	\$
94	33 01 30.51	12" to 36" pipe - specialty	275	LF	\$	\$
95	33 01 30.51	>36" to 78" pipe - specialty	600	LF	\$	\$
96	33 01 30.51	>78" to 120" pipe - specialty	200	LF	\$	\$
<b>STRUCTURE REHABILITATION</b>						
97	33 01 30.71	Invert installation, 4' diameter	100	EA	\$	\$
98	33 01 30.71	Invert installation, 5' diameter	50	EA	\$	\$
99	33 01 30.71	Invert installation, 6' diameter	10	EA	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
<b>POINT REPAIRS</b>						
100	33 01 30.71	Invert installation, 7' diameter	5	EA	\$	\$
101	33 01 30.71	Invert installation, 8' diameter	5	EA	\$	\$
102	33 01 30.71	Invert installation, other configurations	500	SF	\$	\$
103	33 01 30.71	Drainage structure rehabilitation	1,000	SF	\$	\$
104	33 01 30.71	Mortar grout crack/joint	500	LF	\$	\$
105	33 01 30.72	Internal pipe point repairs Includes cutting, trimming, jacking, etc	1,000	LF	\$	\$
<b>LATERAL REINSTATEMENT</b>						
106	33 01 30.72	Service lateral reinstatement - remote	5	EA	\$	\$
107	33 01 30.72	Service lateral reinstatement - man entry	5	EA	\$	\$
<b>BYPASS PUMPING</b>						
108	33 01 30.74	Bypass pumping setup - equipment and hose placement	50	EA	\$	\$
109	33 01 30.74	2" pumping operation time	400	HR	\$	\$
110	33 01 30.74	4" pumping operation time	350	HR	\$	\$
111	33 01 30.74	6" pumping operation time	100	HR	\$	\$



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BID FORM

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
112	33 01 30.74	8" pumping operation time	75	HR	\$	\$
113	33 01 30.74	10" pumping operation time	50	HR	\$	\$
114	33 01 30.74	12" pumping operation time	25	HR	\$	\$
<b>REPLACEMENT PIPE</b>						
115	33 41 13	12" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
116	33 41 13	12" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
117	33 41 13	15" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
118	33 41 13	15" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
119	33 41 13	18" aluminum coated (type 2) corrugated metal pipe (detail 1)	150	LF	\$	\$
120	33 41 13	18" aluminum coated (type 2) corrugated metal pipe (detail 2)	150	LF	\$	\$
121	33 41 13	21" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
122	33 41 13	21" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
123	33 41 13	24" aluminum coated (type 2) corrugated metal pipe (detail 1)	200	LF	\$	\$
124	33 41 13	24" aluminum coated (type 2) corrugated metal pipe (detail 2)	200	LF	\$	\$

**BID NUMBER: BL059-24**

**BID FORM**

**BID DATE: MAY 23, 2024**

**COMPANY'S NAME: \_\_\_\_\_**

**BIDDER'S SIGNATURE: \_\_\_\_\_**

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
125	33 41 13	30" aluminum coated (type 2) corrugated metal pipe (detail 1)	50	LF	\$	\$
126	33 41 13	30" aluminum coated (type 2) corrugated metal pipe (detail 2)	50	LF	\$	\$
127	33 41 13	36" aluminum coated (type 2) corrugated metal pipe (detail 1)	150	LF	\$	\$
128	33 41 13	36" aluminum coated (type 2) corrugated metal pipe (detail 2)	150	LF	\$	\$
129	33 41 13	42" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
130	33 41 13	42" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
131	33 41 13	48" aluminum coated (type 2) corrugated metal pipe (detail 1)	120	LF	\$	\$
132	33 41 13	48" aluminum coated (type 2) corrugated metal pipe (detail 2)	120	LF	\$	\$
133	33 41 13	54" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
134	33 41 13	54" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
135	33 41 13	60" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
136	33 41 13	60" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
137	33 41 13	66" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
138	33 41 13	66" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$

**BID NUMBER: BL059-24**

**BID FORM**

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
139	33 41 13	72" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
140	33 41 13	72" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
141	33 41 13	78" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
142	33 41 13	78" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
143	33 41 13	84" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
144	33 41 13	84" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
145	33 41 13	90" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
146	33 41 13	90" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
147	33 41 13	96" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
148	33 41 13	96" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
149	33 41 13	102" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
150	33 41 13	102" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
151	33 41 13	108" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
152	33 41 13	108" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$

BID NUMBER: BL059-24

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BID DATE: MAY 23, 2024

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
153	33 41 13	114" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
154	33 41 13	114" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
155	33 41 13	120" aluminum coated (type 2) corrugated metal pipe (detail 1)	10	LF	\$	\$
156	33 41 13	120" aluminum coated (type 2) corrugated metal pipe (detail 2)	10	LF	\$	\$
157	33 41 13	15" RCP pipe - any configuration (detail 1)	10	LF	\$	\$
158	33 41 13	15" RCP pipe - any configuration (detail 2)	10	LF	\$	\$
159	33 41 13	18" RCP pipe - any configuration (detail 1)	300	LF	\$	\$
160	33 41 13	18" RCP pipe - any configuration (detail 2)	300	LF	\$	\$
161	33 41 13	24" RCP pipe - any configuration (detail 1)	200	LF	\$	\$
162	33 41 13	24" RCP pipe - any configuration (detail 2)	200	LF	\$	\$
163	33 41 13	30" RCP pipe - any configuration (detail 1)	150	LF	\$	\$
164	33 41 13	30" RCP pipe - any configuration (detail 2)	150	LF	\$	\$
165	33 41 13	36" RCP pipe – any configuration (detail 1)	10	LF	\$	\$
166	33 41 13	36" RCP pipe – any configuration (detail 2)	10	LF	\$	\$

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**BID FORM**

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**COMPANY'S NAME: \_\_\_\_\_**

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
167	33 41 13	42" RCP pipe - any configuration (detail 1)	100	LF	\$	\$
168	33 41 13	42" RCP pipe - any configuration (detail 2)	100	LF	\$	\$
169	33 41 13	48" RCP pipe - any configuration (detail 1)	10	LF	\$	\$
170	33 41 13	48" RCP pipe - any configuration (detail 2)	10	LF	\$	\$
171	33 41 13	54" RCP pipe - any configuration (detail 1)	80	LF	\$	\$
172	33 41 13	54" RCP pipe - any configuration (detail 2)	80	LF	\$	\$
173	33 41 13	60" RCP pipe – any configuration (detail 1)	10	LF	\$	\$
174	33 41 13	60" RCP pipe – any configuration (detail 2)	10	LF	\$	\$
175	33 41 13	66" RCP pipe - any configuration (detail 1)	10	LF	\$	\$
176	33 41 13	66" RCP pipe - any configuration (detail 2)	10	LF	\$	\$
177	33 41 13	72" RCP pipe – any configuration (detail 1)	10	LF	\$	\$
178	33 41 13	72" RCP pipe – any configuration (detail 2)	10	LF	\$	\$
179	33 41 13	84" RCP pipe - any configuration (detail 1)	10	LF	\$	\$
180	33 41 13	84" RCP pipe - any configuration (detail 2)	10	LF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
181	33 41 13	96" RCP pipe – any configuration (detail 1)	10	LF	\$	\$
182	33 41 13	96" RCP pipe – any configuration (detail 2)	10	LF	\$	\$
183	33 41 13	13.5"x22" reinforced concrete arch pipe (detail 1)	10	LF	\$	\$
184	33 41 13	13.5"x22" reinforced concrete arch pipe (detail 2)	10	LF	\$	\$
185	33 41 13	18"x28.5" reinforced concrete arch pipe (detail 1)	10	LF	\$	\$
186	33 41 13	18"x28.5" reinforced concrete arch pipe (detail 2)	10	LF	\$	\$
187	33 41 13	22.5"x36.5" reinforced concrete arch pipe (detail 1)	10	LF	\$	\$
188	33 41 13	22.5"x36.5" reinforced concrete arch pipe (detail 2)	10	LF	\$	\$
189	33 41 13	26.5"x43.5" reinforced concrete arch pipe (detail 1)	10	LF	\$	\$
190	33 41 13	26.5"x43.5" reinforced concrete arch pipe (detail 2)	10	LF	\$	\$
191	33 41 13	31.5"x51.5" reinforced concrete arch pipe (detail 1)	10	LF	\$	\$
192	33 41 13	31.5"x51.5" reinforced concrete arch pipe (detail 2)	10	LF	\$	\$
193	33 41 13	36"x58.5" reinforced concrete arch pipe (detail 1)	10	LF	\$	\$
194	33 41 13	36"x58.5" reinforced concrete arch pipe (detail 2)	10	LF	\$	\$
195	33 41 13	40"x65" reinforced concrete arch pipe (detail 1)	10	LF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
196	33 41 13	40"x65" reinforced concrete arch pipe (detail 2)	10	LF	\$	\$
197	33 41 13	45"x73" reinforced concrete arch pipe (detail 1)	10	LF	\$	\$
198	33 41 13	45"x73" reinforced concrete arch pipe (detail 2)	10	LF	\$	\$
199	33 41 13	18" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 1)	10	LF	\$	\$
200	33 41 13	18" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 2)	10	LF	\$	\$
201	33 41 13	24" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 1)	10	LF	\$	\$
202	33 41 13	24" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 2)	10	LF	\$	\$
203	33 41 13	30" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 1)	10	LF	\$	\$
204	33 41 13	30" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 2)	10	LF	\$	\$
205	33 41 13	36" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 1)	10	LF	\$	\$
206	33 41 13	36" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 2)	10	LF	\$	\$
207	33 41 13	42" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 1)	10	LF	\$	\$
208	33 41 13	42" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 2)	10	LF	\$	\$
209	33 41 13	48" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 1)	10	LF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
210	33 41 13	48" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 2)	10	LF	\$	\$
211	33 41 13	54" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 1)	10	LF	\$	\$
212	33 41 13	54" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 2)	10	LF	\$	\$
213	33 41 13	60" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 1)	10	LF	\$	\$
214	33 41 13	60" smooth lined corrugated high-density polyethylene (HDPE) pipe (detail 2)	10	LF	\$	\$
215	33 41 13	4" corrugated polyethylene pipe - solid or perforated	275	LF	\$	\$
216	33 41 13	6" corrugated polyethylene pipe - solid or perforated	25	LF	\$	\$
217	33 41 13	8" corrugated polyethylene pipe - solid or perforated	25	LF	\$	\$
218	33 41 13	10" corrugated polyethylene pipe - solid or perforated	25	LF	\$	\$
219	33 41 13	12" corrugated polyethylene pipe - solid or perforated	25	LF	\$	\$
<b>DRAINAGE STRUCTURES</b>						
220	33 49 13	Complete catch basin, group 1 (GDOT 1033 / 1034)	50	VF	\$	\$
221	33 49 13	Complete catch basin, group 2 (GDOT 1033 / 1034)	25	VF	\$	\$
222	33 49 13	Replacement top for 1033/1034, complete	50	EA	\$	\$



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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
223	33 49 13	Replace catch basin throat only single wing	30	EA	\$	\$
224	33 49 13	Replace catch basin throat only double wing	30	EA	\$	\$
225	33 49 13	Complete manhole, type 1 (GDOT 1011A)	80	VF	\$	\$
226	33 49 13	Complete manhole, type 2 (GDOT 1011A)	40	VF	\$	\$
227	33 49 13	Install manhole covers complete	10	EA	\$	\$
228	33 49 13	Complete drop inlet, group 1 (GDOT 1019A, GDOT 9031S, GC P&D 609, or GC P&D 610)	50	VF	\$	\$
229	33 49 13	Complete drop inlet, group 2 (GDOT 1019A, GDOT 9031S, GC P&D 609, or GC P&D 610)	25	VF	\$	\$
230	33 49 13	Replacement top for GC P&D 609, with ring & cover, complete	20	EA	\$	\$
231	33 49 13	Replacement top for GC P&D 610, with ring & cover, complete	20	EA	\$	\$
232	33 49 13	Replacement top for GDOT 1019A, with frame & grate, complete	20	EA	\$	\$
233	33 49 13	Replacement top for GDOT 9031S, with steel plate, complete	20	EA	\$	\$
234	33 49 13	Tie into existing structures	15	EA	\$	\$
235	33 49 13	Adjust manhole, catch basin, and drop inlet to grade	100	VF	\$	\$
236	33 49 13	Headwall for 15" pipe	5	EA	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
237	33 49 13	Headwall for 18" pipe	10	EA	\$	\$
238	33 49 13	Headwall for 21" pipe	5	EA	\$	\$
239	33 49 13	Headwall for 24" pipe	10	EA	\$	\$
240	33 49 13	Headwall for 30" pipe	5	EA	\$	\$
241	33 49 13	Headwall for 36" pipe	5	EA	\$	\$
242	33 49 13	Headwall for 42" pipe	5	EA	\$	\$
243	33 49 13	Headwall for 48" pipe	5	EA	\$	\$
244	33 49 13	Headwall for 54" pipe	5	EA	\$	\$
245	33 49 13	Headwall for 60" pipe	5	EA	\$	\$
246	33 49 13	Headwall for 66" pipe	5	EA	\$	\$
247	33 49 13	Headwall for 72" pipe	5	EA	\$	\$
248	33 49 13	Headwall for 84" pipe	5	EA	\$	\$
249	33 49 13	Headwall for 96" pipe	5	EA	\$	\$
250	33 41 13	Concrete safety flared end section, 15" diameter	2	EA	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
251	33 41 13	Concrete safety flared end section, 18" diameter	2	EA	\$	\$
252	33 41 13	Concrete safety flared end section, 24" diameter	2	EA	\$	\$
253	33 41 13	Concrete safety flared end section, 30" diameter	2	EA	\$	\$
254	33 41 13	Concrete safety flared end section, 36" diameter	2	EA	\$	\$
255	33 41 13	Concrete safety flared end section, 42" diameter	2	EA	\$	\$
256	33 41 13	Concrete safety flared end section, 48" diameter	2	EA	\$	\$
257	33 41 13	Metal safety flared end section, 15" diameter	2	EA	\$	\$
258	33 41 13	Metal safety flared end section, 18" diameter	2	EA	\$	\$
259	33 41 13	Metal safety flared end section, 24" diameter	2	EA	\$	\$
260	33 41 13	Metal safety flared end section, 30" diameter	2	EA	\$	\$
261	33 41 13	Metal safety flared end section, 36" diameter	2	EA	\$	\$
262	33 41 13	Metal safety flared end section, 42" diameter	2	EA	\$	\$
263	33 41 13	Metal safety flared end section, 48" diameter	2	EA	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
<b>TRAFFIC CONTROL</b>						
264	34 41 16.10	Traffic control major total per project	15	EA	\$	\$
<b>ROADWAY RESTORATION</b>						
265	34 71 10	Street cut, detail 'A'	100	SY	\$	\$
266	34 71 10	Street cut, detail 'B'	100	SY	\$	\$
267	34 71 10	Street cut, detail 'C'	100	SY	\$	\$
268	34 71 10	Street cut, detail 'D'	100	SY	\$	\$
269	34 71 10	Driveway restoration, 6" concrete	500	SY	\$	\$
270	34 71 10	Driveway restoration, 8" concrete	20	SY	\$	\$
<b>MISCELLANEOUS ITEMS</b>						
271	01 22 15.11	Foreman	10	HR	\$	\$
272	01 22 15.11	Laborer	50	HR	\$	\$
273	01 22 15.11	Approved force account work	1	EA	\$1.00	\$1.00
<b>SECTION A TOTAL</b>						<b>\$</b>

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
<b>SECTION B (CURED IN PLACE PIPE)</b>						
<b>STYRENATED CURED IN PLACE PIPE LINER, FINISHED THICKNESS (12' OR LESS DEPTH)</b>						
<b>WATER CURED</b>						
274	33 01 30.72	12" pipe - 7.5mm	1	LF	\$	\$
275	33 01 30.72	15" pipe - 9.0mm	20	LF	\$	\$
276	33 01 30.72	18" pipe - 9.0mm	100	LF	\$	\$
277	33 01 30.72	21" pipe - 9.0mm	50	LF	\$	\$
278	33 01 30.72	24" pipe - 12.0mm	100	LF	\$	\$
279	33 01 30.72	30" pipe - 13.5mm	50	LF	\$	\$
280	33 01 30.72	36" pipe - 16.5mm	50	LF	\$	\$
281	33 01 30.72	42" pipe - 19.5mm	200	LF	\$	\$
282	33 01 30.72	48" pipe - 19.5mm	200	LF	\$	\$
283	33 01 30.72	54" pipe - 24.0mm	150	LF	\$	\$
284	33 01 30.72	60" pipe - 28.5mm	100	LF	\$	\$
285	33 01 30.72	66" pipe - 30.0mm	1	LF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
286	33 01 30.72	72" pipe – 32.5mm	1	LF	\$	\$
287	33 01 30.72	78" pipe – 33.0mm	1	LF	\$	\$
288	33 01 30.72	84" pipe – 35.5mm	1	LF	\$	\$
289	33 01 30.72	90" pipe – 38.0mm	1	LF	\$	\$
290	33 01 30.72	96" pipe – 40.5mm	1	LF	\$	\$
291	33 01 30.72	102" pipe – 43.0mm	1	LF	\$	\$
292	33 01 30.72	108" pipe – 46.0mm	1	LF	\$	\$
293	33 01 30.72	114" pipe – 50.0mm	1	LF	\$	\$
294	33 01 30.72	120" pipe – 53.0mm	1	LF	\$	\$
295	33 01 30.72	Additional Cost Per 1.5mm Thickness – 12" Pipe	1	LF	\$	\$
296	33 01 30.72	Additional Cost Per 1.5mm Thickness – 15" Pipe	1	LF	\$	\$
297	33 01 30.72	Additional Cost Per 1.5mm Thickness – 18" Pipe	1	LF	\$	\$
298	33 01 30.72	Additional Cost Per 1.5mm Thickness – 21" Pipe	1	LF	\$	\$
299	33 01 30.72	Additional Cost Per 1.5mm Thickness – 24" Pipe	1	LF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
300	33 01 30.72	Additional Cost Per 1.5mm Thickness – 30” Pipe	1	LF	\$	\$
301	33 01 30.72	Additional Cost Per 1.5mm Thickness – 36” Pipe	1	LF	\$	\$
302	33 01 30.72	Additional Cost Per 1.5mm Thickness – 42” Pipe	1	LF	\$	\$
303	33 01 30.72	Additional Cost Per 1.5mm Thickness – 48” Pipe	1	LF	\$	\$
304	33 01 30.72	Additional Cost Per 1.5mm Thickness – 54” Pipe	1	LF	\$	\$
305	33 01 30.72	Additional Cost Per 1.5mm Thickness – 60” Pipe	1	LF	\$	\$
306	33 01 30.72	Additional Cost Per 1.5mm Thickness – 66” Pipe	1	LF	\$	\$
307	33 01 30.72	Additional Cost Per 1.5mm Thickness – 72” Pipe	1	LF	\$	\$
308	33 01 30.72	Additional Cost Per 1.5mm Thickness – 78” Pipe	1	LF	\$	\$
309	33 01 30.72	Additional Cost Per 1.5mm Thickness – 84” Pipe	1	LF	\$	\$
310	33 01 30.72	Additional Cost Per 1.5mm Thickness – 90” Pipe	1	LF	\$	\$
311	33 01 30.72	Additional Cost Per 1.5mm Thickness – 96” Pipe	1	LF	\$	\$
312	33 01 30.72	Additional Cost Per 1.5mm Thickness – 102” Pipe	1	LF	\$	\$
313	33 01 30.72	Additional Cost Per 1.5mm Thickness – 108” Pipe	1	LF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
314	33 01 30.72	Additional Cost Per 1.5mm Thickness – 114" Pipe	1	LF	\$	\$
315	33 01 30.72	Additional Cost Per 1.5mm Thickness – 120" Pipe	1	LF	\$	\$
<b>STYRENE FREE CURED IN PLACE PIPE LINER, FINISHED THICKNESS (12' OR LESS DEPTH)</b>						
<b>WATER CURED</b>						
316	33 01 30.72	12" pipe - 7.5mm	1	LF	\$	\$
317	33 01 30.72	15" pipe – 9.0mm	20	LF	\$	\$
318	33 01 30.72	18" pipe – 9.0mm	100	LF	\$	\$
319	33 01 30.72	21" pipe – 9.0mm	50	LF	\$	\$
320	33 01 30.72	24" pipe – 12.0mm	100	LF	\$	\$
321	33 01 30.72	30" pipe – 13.5mm	50	LF	\$	\$
322	33 01 30.72	36" pipe – 16.5mm	50	LF	\$	\$
323	33 01 30.72	42" pipe – 19.5mm	200	LF	\$	\$
324	33 01 30.72	48" pipe – 19.5mm	200	LF	\$	\$
325	33 01 30.72	54" pipe – 24.0mm	150	LF	\$	\$
326	33 01 30.72	60" pipe – 28.5mm	100	LF	\$	\$



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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
327	33 01 30.72	66" pipe – 30.0mm	1	LF	\$	\$
328	33 01 30.72	72" pipe – 32.5mm	1	LF	\$	\$
329	33 01 30.72	78" pipe – 33.0mm	1	LF	\$	\$
330	33 01 30.72	84" pipe – 35.5mm	1	LF	\$	\$
331	33 01 30.72	90" pipe – 38.0mm	1	LF	\$	\$
332	33 01 30.72	96" pipe – 40.5mm	1	LF	\$	\$
333	33 01 30.72	102" pipe – 43.0mm	1	LF	\$	\$
334	33 01 30.72	108" pipe – 46.0mm	1	LF	\$	\$
335	33 01 30.72	114" pipe – 50.0mm	1	LF	\$	\$
336	33 01 30.72	120" pipe – 53.0mm	1	LF	\$	\$
337	33 01 30.72	Additional Cost Per 1.5mm Thickness – 12" Pipe	1	LF	\$	\$
338	33 01 30.72	Additional Cost Per 1.5mm Thickness – 15" Pipe	1	LF	\$	\$
339	33 01 30.72	Additional Cost Per 1.5mm Thickness – 18" Pipe	1	LF	\$	\$
340	33 01 30.72	Additional Cost Per 1.5mm Thickness – 21" Pipe	1	LF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
341	33 01 30.72	Additional Cost Per 1.5mm Thickness – 24” Pipe	1	LF	\$	\$
342	33 01 30.72	Additional Cost Per 1.5mm Thickness – 30” Pipe	1	LF	\$	\$
343	33 01 30.72	Additional Cost Per 1.5mm Thickness – 36” Pipe	1	LF	\$	\$
344	33 01 30.72	Additional Cost Per 1.5mm Thickness – 42” Pipe	1	LF	\$	\$
345	33 01 30.72	Additional Cost Per 1.5mm Thickness – 48” Pipe	1	LF	\$	\$
346	33 01 30.72	Additional Cost Per 1.5mm Thickness – 54” Pipe	1	LF	\$	\$
347	33 01 30.72	Additional Cost Per 1.5mm Thickness – 60” Pipe	1	LF	\$	\$
348	33 01 30.72	Additional Cost Per 1.5mm Thickness – 66” Pipe	1	LF	\$	\$
349	33 01 30.72	Additional Cost Per 1.5mm Thickness – 72” Pipe	1	LF	\$	\$
350	33 01 30.72	Additional Cost Per 1.5mm Thickness – 78” Pipe	1	LF	\$	\$
351	33 01 30.72	Additional Cost Per 1.5mm Thickness – 84” Pipe	1	LF	\$	\$
352	33 01 30.72	Additional Cost Per 1.5mm Thickness – 90” Pipe	1	LF	\$	\$
353	33 01 30.72	Additional Cost Per 1.5mm Thickness – 96” Pipe	1	LF	\$	\$
354	33 01 30.72	Additional Cost Per 1.5mm Thickness – 102” Pipe	1	LF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
355	33 01 30.72	Additional Cost Per 1.5mm Thickness – 108" Pipe	1	LF	\$	\$
356	33 01 30.72	Additional Cost Per 1.5mm Thickness – 114" Pipe	1	LF	\$	\$
357	33 01 30.72	Additional Cost Per 1.5mm Thickness – 120" Pipe	1	LF	\$	\$
<b>STYRENATED CURED IN PLACE PIPE LINER, FINISHED THICKNESS (12' OR LESS DEPTH)</b>						
<b>STEAM CURED</b>						
358	33 01 30.72	12" pipe - 7.5mm	1	LF	\$	\$
359	33 01 30.72	15" pipe – 9.0mm	200	LF	\$	\$
360	33 01 30.72	18" pipe – 9.0mm	5,000	LF	\$	\$
361	33 01 30.72	21" pipe – 9.0mm	250	LF	\$	\$
362	33 01 30.72	24" pipe – 12.0mm	3,000	LF	\$	\$
363	33 01 30.72	30" pipe – 13.5mm	2,000	LF	\$	\$
364	33 01 30.72	36" pipe – 16.5mm	1,000	LF	\$	\$
365	33 01 30.72	42" pipe – 19.5mm	500	LF	\$	\$
366	33 01 30.72	Additional Cost Per 1.5mm Thickness – 12" Pipe	1	LF	\$	\$
367	33 01 30.72	Additional Cost Per 1.5mm Thickness – 15" Pipe	1	LF	\$	\$

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
368	33 01 30.72	Additional Cost Per 1.5mm Thickness – 18" Pipe	1	LF	\$	\$
369	33 01 30.72	Additional Cost Per 1.5mm Thickness – 21" Pipe	1	LF	\$	\$
370	33 01 30.72	Additional Cost Per 1.5mm Thickness – 24" Pipe	1	LF	\$	\$
371	33 01 30.72	Additional Cost Per 1.5mm Thickness – 30" Pipe	1	LF	\$	\$
372	33 01 30.72	Additional Cost Per 1.5mm Thickness – 36" Pipe	1	LF	\$	\$
373	33 01 30.72	Additional Cost Per 1.5mm Thickness – 42" Pipe	1	LF	\$	\$
<b>STYRENE FREE CURED IN PLACE PIPE LINER, FINISHED THICKNESS (12' OR LESS DEPTH) STEAM CURED</b>						
374	33 01 30.72	12" pipe - 7.5mm	1	LF	\$	\$
375	33 01 30.72	15" pipe – 9.0mm	100	LF	\$	\$
376	33 01 30.72	18" pipe – 9.0mm	1,000	LF	\$	\$
377	33 01 30.72	21" pipe – 9.0mm	100	LF	\$	\$
378	33 01 30.72	24" pipe – 12.0mm	1,000	LF	\$	\$
379	33 01 30.72	30" pipe – 13.5mm	500	LF	\$	\$
380	33 01 30.72	36" pipe – 16.5mm	1500	LF	\$	\$

BID NUMBER: BL059-24

BID FORM

BID DATE: MAY 23, 2024

COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

FAILURE TO RETURN THIS PAGE AS PART OF YOUR BID DOCUMENT MAY RESULT IN REJECTION OF BID.

BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY	UNIT PRICE	TOTAL PRICE
381	33 01 30.72	42" pipe – 19.5mm	250 LF	\$	\$
382	33 01 30.72	Additional Cost Per 1.5mm Thickness – 12" Pipe	1 LF	\$	\$
383	33 01 30.72	Additional Cost Per 1.5mm Thickness – 15" Pipe	1 LF	\$	\$
384	33 01 30.72	Additional Cost Per 1.5mm Thickness – 18" Pipe	1 LF	\$	\$
385	33 01 30.72	Additional Cost Per 1.5mm Thickness – 21" Pipe	1 LF	\$	\$
386	33 01 30.72	Additional Cost Per 1.5mm Thickness – 24" Pipe	1 LF	\$	\$
387	33 01 30.72	Additional Cost Per 1.5mm Thickness – 30" Pipe	1 LF	\$	\$
388	33 01 30.72	Additional Cost Per 1.5mm Thickness – 36" Pipe	1 LF	\$	\$
389	33 01 30.72	Additional Cost Per 1.5mm Thickness – 42" Pipe	1 LF	\$	\$
<b>INVERSION SETUP</b>					
390	33 01 30.72	Inversion setup charge 12"-24" CIPP	300 EA	\$	\$
391	33 01 30.72	Inversion setup charge 30"-42" CIPP	100 EA	\$	\$
392	33 01 30.72	Inversion setup charge 48"-72" CIPP	25 EA	\$	\$
393	33 01 30.72	Inversion setup charge 78"-120" CIPP	1 EA	\$	\$
<b>SECTION B TOTAL</b>					<b>\$</b>
<b>SECTION A + SECTION B TOTAL</b>					<b>\$</b>

BID NUMBER: BL059-24

BID FORM

BID DATE: MAY 23, 2024

COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

FAILURE TO RETURN THIS PAGE AS PART OF YOUR BID DOCUMENT MAY RESULT IN REJECTION OF BID.

BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
<b>SECTION C ULTRA VIOLET (UV) CURED IN PLACE PIPE LINER, FINISHED THICKNESS (12' OR LESS DEPTH)</b>						
394	33 01 30.72	12" pipe – 3.0mm	1	LF	\$	\$
395	33 01 30.72	15" pipe – 3.0mm	10	LF	\$	\$
396	33 01 30.72	18" pipe – 4.0mm	200	LF	\$	\$
397	33 01 30.72	21" pipe – 4.0mm	50	LF	\$	\$
398	33 01 30.72	24" pipe – 5.0mm	200	LF	\$	\$
399	33 01 30.72	30" pipe – 6.0mm	100	LF	\$	\$
400	33 01 30.72	36" pipe – 7.0mm	50	LF	\$	\$
401	33 01 30.72	42" pipe – 8.0mm	10	LF	\$	\$
402	33 01 30.72	48" pipe – 9.0mm	10	LF	\$	\$
403	33 01 30.72	Additional Cost Per 1.0mm Thickness – 12" Pipe	1	LF	\$	\$
404	33 01 30.72	Additional Cost Per 1.0mm Thickness – 15" Pipe	1	LF	\$	\$
405	33 01 30.72	Additional Cost Per 1.0mm Thickness – 18" Pipe	1	LF	\$	\$

BID NUMBER: BL059-24

BID FORM

BID DATE: MAY 23, 2024

COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

FAILURE TO RETURN THIS PAGE AS PART OF YOUR BID DOCUMENT MAY RESULT IN REJECTION OF BID.

BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
406	33 01 30.72	Additional Cost Per 1.0mm Thickness – 21” Pipe	1	LF	\$	\$
407	33 01 30.72	Additional Cost Per 1.0mm Thickness – 24” Pipe	1	LF	\$	\$
408	33 01 30.72	Additional Cost Per 1.0mm Thickness – 30” Pipe	1	LF	\$	\$
409	33 01 30.72	Additional Cost Per 1.0mm Thickness – 36” Pipe	1	LF	\$	\$
410	33 01 30.72	Additional Cost Per 1.0mm Thickness – 42” Pipe	1	LF	\$	\$
411	33 01 30.72	Additional Cost Per 1.0mm Thickness – 48” Pipe	1	LF	\$	\$
<b>Inversion Setup</b>						
412	33 01 30.72	Insertion setup charge 12”-30” UV CIPP	1	EA	\$	\$
413	33 01 30.72	Insertion setup charge 36”-48” UV CIPP	1	EA	\$	\$
<b>SECTION C TOTAL</b>						\$
<b>SECTION A + SECTION C TOTAL</b>						\$
<b>SECTION D Centrifugally Cast Pipe (Ccp)</b>						
414	33 01 30.72	Ccp for 30” pipe – 1.0 in min thickness	1	LF	\$	\$
415	33 01 30.72	Ccp for 36” pipe – 1.0 in min thickness	1	LF	\$	\$
416	33 01 30.72	Ccp for 42” pipe – 1.0 in min thickness	250	LF	\$	\$

BID NUMBER: BL059-24

BID FORM

BID DATE: MAY 23, 2024

COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
417	33 01 30.72	Ccp for 48" pipe – 1.5 in min thickness	500	LF	\$	\$
418	33 01 30.72	Ccp for 54" pipe – 1.5 in min thickness	500	LF	\$	\$
419	33 01 30.72	Ccp for 60" pipe – 1.5 in min thickness	500	LF	\$	\$
420	33 01 30.72	Ccp for 66" pipe – 1.5 in min thickness	250	LF	\$	\$
421	33 01 30.72	Ccp for 72" pipe – 1.5 in min thickness	500	LF	\$	\$
422	33 01 30.72	Ccp for 78" pipe – 2.0 in min thickness	1	LF	\$	\$
423	33 01 30.72	Ccp for 84" pipe – 2.0 in min thickness	250	LF	\$	\$
424	33 01 30.72	Ccp for 90" pipe – 2.0 in min thickness	1	LF	\$	\$
425	33 01 30.72	Ccp for 96" pipe – 2.0 in min thickness	100	LF	\$	\$
426	33 01 30.72	Ccp for 102" pipe – 2.0 in min thickness	1	LF	\$	\$
427	33 01 30.72	Ccp for 108" pipe – 2.0 in min thickness	1	LF	\$	\$
428	33 01 30.72	Ccp for 114" pipe – 2.0 in min thickness	1	LF	\$	\$
429	33 01 30.72	Ccp for 120" pipe – 2.5 in min thickness	1	LF	\$	\$
430	33 01 30.72	Additional cost per 0.5 in thickness – 30" pipe	1	LF	\$	\$



BID NUMBER: BL059-24

BID FORM

BID DATE: MAY 23, 2024

COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
431	33 01 30.72	Additional cost per 0.5 in thickness – 30” pipe	1	LF	\$	\$
432	33 01 30.72	Additional cost per 0.5 in thickness – 36” pipe	1	LF	\$	\$
433	33 01 30.72	Additional cost per 0.5 in thickness – 42” pipe	1	LF	\$	\$
434	33 01 30.72	Additional cost per 0.5 in thickness – 48” pipe	1	LF	\$	\$
435	33 01 30.72	Additional cost per 0.5 in thickness – 54” pipe	1	LF	\$	\$
436	33 01 30.72	Additional cost per 0.5 in thickness – 60” pipe	1	LF	\$	\$
437	33 01 30.72	Additional cost per 0.5 in thickness – 66” pipe	1	LF	\$	\$
438	33 01 30.72	Additional cost per 0.5 in thickness – 72” pipe	1	LF	\$	\$
439	33 01 30.72	Additional cost per 0.5 in thickness – 84” pipe	1	LF	\$	\$
440	33 01 30.72	Additional cost per 0.5 in thickness – 90” pipe	1	LF	\$	\$
441	33 01 30.72	Additional cost per 0.5 in thickness – 96” pipe	1	LF	\$	\$
442	33 01 30.72	Additional cost per 0.5 in thickness – 102” pipe	1	LF	\$	\$
443	33 01 30.72	Additional cost per 0.5 in thickness – 108” pipe	1	LF	\$	\$
444	33 01 30.72	Additional cost per 0.5 in thickness – 114” pipe	1	LF	\$	\$

BID NUMBER: BL059-24

BID FORM

BID DATE: MAY 23, 2024

COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

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BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
445	33 01 30.72	Additional cost per 0.5 in thickness – 120" pipe	1	LF	\$	\$
<b>SECTION D TOTAL</b>						\$
<b>SECTION A + SECTION D TOTAL</b>						\$
<b>SECTION E (SLIPLINING):</b>						
<b>Sliplining</b>						
446	33 01 30.72	Sliplining for 12" existing pipe	1	LF	\$	\$
447	33 01 30.72	Sliplining for 15" existing pipe	1	LF	\$	\$
448	33 01 30.72	Sliplining for 18" existing pipe	1	LF	\$	\$
449	33 01 30.72	Sliplining for 21" existing pipe	1	LF	\$	\$
450	33 01 30.72	Sliplining for 24" existing pipe	1	LF	\$	\$
451	33 01 30.72	Sliplining for 30" existing pipe	1	LF	\$	\$
452	33 01 30.72	Sliplining for 36" existing pipe	1	LF	\$	\$
453	33 01 30.72	Sliplining for 42" existing pipe	10	LF	\$	\$
454	33 01 30.72	Sliplining for 48" existing pipe	10	LF	\$	\$
455	33 01 30.72	Sliplining for 54" existing pipe	50	LF	\$	\$

BID NUMBER: BL059-24

BID FORM

BID DATE: MAY 23, 2024

COMPANY'S NAME: \_\_\_\_\_

BIDDER'S SIGNATURE: \_\_\_\_\_

FAILURE TO RETURN THIS PAGE AS PART OF YOUR BID DOCUMENT MAY RESULT IN REJECTION OF BID.

BID ITEM	SPECIFICATION SECTION	DESCRIPTION	APPROX. ANNUAL QTY		UNIT PRICE	TOTAL PRICE
456	33 01 30.72	Sliplining for 60" existing pipe	50	LF	\$	\$
457	33 01 30.72	Sliplining for 66" existing pipe	1	LF	\$	\$
466	33 01 30.72	Sliplining for 120" existing pipe	1	LF	\$	\$
458	33 01 30.72	Sliplining for 72" existing pipe	50	LF	\$	\$
459	33 01 30.72	Sliplining for 78" existing pipe	1	LF	\$	\$
460	33 01 30.72	Sliplining for 84" existing pipe	10	LF	\$	\$
461	33 01 30.72	Sliplining for 90" existing pipe	1	LF	\$	\$
462	33 01 30.72	Sliplining for 96" existing pipe	10	LF	\$	\$
463	33 01 30.72	Sliplining for 102" existing pipe	1	LF	\$	\$
464	33 01 30.72	Sliplining for 108" existing pipe	1	LF	\$	\$
465	33 01 30.72	Sliplining for 114" existing pipe	1	LF	\$	\$
<b>SECTION E TOTAL</b>						<b>\$</b>
<b>SECTION A + SECTION E TOTAL</b>						<b>\$</b>
<b>OVERALL BID TOTAL (SECTION A + B + C + D + E)</b>						<b>\$</b>

**FAILURE TO RETURN THIS PAGE AS PART OF YOUR BID DOCUMENT MAY RESULT IN REJECTION OF BID.**

Gwinnett County requires pricing to remain firm for the duration of the initial term of the contract. Failure to hold firm pricing for the initial term of the contract will be sufficient cause for Gwinnett County to declare bid non-responsive. **Contract to begin August 21, 2024, or upon award.**

Unless otherwise noted, quoted prices will remain firm for four (4) additional 12-month periods. If a percentage increase/decrease is a part of the renewal options, please note this in the space provided together with an explanation.

Renewal Option 1:	_____ % Increase	_____ % Decrease	Explanation_____
Renewal Option 2:	_____ % Increase	_____ % Decrease	Explanation_____
Renewal Option 3:	_____ % Increase	_____ % Decrease	Explanation_____
Renewal Option 4:	_____ % Increase	_____ % Decrease	Explanation_____

Termination for Cause: The County may terminate this agreement for cause upon ten days prior written notice to the contractor of the contractor’s default in the performance of any term of this agreement. Such termination shall be without prejudice to any of the County’s rights or remedies by law.

Termination for Convenience: The County may terminate this agreement for its convenience at any time upon 30 days written notice to the contractor. In the event of the County’s termination of this agreement for convenience, the contractor will be paid for those services actually performed. Partially completed performance of the agreement will be compensated based upon a signed statement of completion to be submitted by the contractor, which shall itemize each element of performance.

Certification Of Non-Collusion In Bid Preparation \_\_\_\_\_  
Signature Date

**FAILURE TO RETURN THIS PAGE AS PART OF YOUR BID DOCUMENT MAY RESULT IN REJECTION OF BID.**

**BID FORM**

Attached prices shall include all labor, materials, bailing, shoring, removal, overhead (Direct and Indirect), profit, insurance, bonds, and other costs, to cover all finished Work.

Bidder agrees this Bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after scheduled closing time for receiving bids.

There is enclosed herewith a certified or cashier's check or a Bid Bond to the order of Gwinnett County, Georgia, in the sum of Dollars \_\_\_\_\_

Check or Bid Bond shall be equal to, not less than, the amount stipulated in NOTICE TO BID and it is understood and agreed that said check or Bid Bond shall be subject to terms and conditions stipulated in Bid Document Package.

Undersigned Bidder hereby agrees to each and every stipulation in Bid Document Package pertaining to the submission of Bids and further, if awarded the Contract, duly agrees to execute and secure the required Contract and Bid Document Package within fifteen (15) days from service of Notice of Award and deliver a surety bond or bonds as required by General Conditions. The name and business address of Bidder to which all formal Notices shall be sent:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Undersigned Bidder states the names and addresses of persons interested as principals in this Bid are as follows: (Write first name in full):

\_\_\_\_\_  
\_\_\_\_\_

Bidder shall state on line below, if a corporation, the name of State in which incorporated and the date of said incorporation:

\_\_\_\_\_

Undersigned Bidder states (he/she/they) (is a/are) citizen(s) of the United States and all partners, associates, or principals interested herein are citizens of the United States, except: (Give full names and addresses):

\_\_\_\_\_  
\_\_\_\_\_

Undersigned Bidder submitting this Bid certifies and affirms that such Bid is genuine and not collusive or sham; that said Bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any Bidder or person, to put in a sham Bid, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person to fix the Bid Price of affiant or any other Bidder, or to fix any overhead, profit, or cost element of said Bid Price, or of that of any other Bidder, or to secure any advantage against Gwinnett County or any person interested in the proposed Contract; and that all statements contained in said Bid are true, and further, that such Bidder has not directly or indirectly submitted this Bid, or the contents thereof, or divulged information or data relative thereto to any association or to any member or agent thereof; and, that no member of Owner or other officers or employees of said Owner is interested directly or indirectly in the Bid or in any portion of the Bid nor the Contract or any part of the Contract which may be awarded the undersigned Bidder on the basis of such Bid.

The undersigned bidder acknowledges the requirements of the Plans and Specifications for the **Provision of Trenchless Stormwater Pipe Rehabilitation on an Annual Contract**. It is further understood that the above quantities are approximate, are solely for the purpose of comparing proposals, and are not represented by the Owner as an accurate statement of the actual work to be performed under the Contract.

**FAILURE TO RETURN THIS PAGE AS PART OF YOUR BID DOCUMENT MAY RESULT IN REJECTION OF BID.**

**REFERENCES**

Gwinnett County requests a minimum of three (3) references where work of a similar size and scope has been completed be submitted for **EACH SECTION** submitted. **(Minimum Section A + One (1) or More Sections (B, C, D, E)**

Note: References should be customized for each project, rather than submitting the same set of references for every project bid. The references listed should be of similar size and scope of the project being bid on. Do not submit a project list in lieu of this form.

Reference for Section \_\_\_\_\_

1. Company Name \_\_\_\_\_

Brief Description of Project \_\_\_\_\_

Completion Date \_\_\_\_\_

Contract Amount \$ \_\_\_\_\_ Start Dates \_\_\_\_\_

Contact Person \_\_\_\_\_ Telephone \_\_\_\_\_

E-Mail Address \_\_\_\_\_

2. Company Name \_\_\_\_\_

Brief Description of Project \_\_\_\_\_

Completion Date \_\_\_\_\_

Contract Amount \$ \_\_\_\_\_ Start Date \_\_\_\_\_

Contact Person \_\_\_\_\_ Telephone \_\_\_\_\_

E-Mail Address \_\_\_\_\_

3. Company Name \_\_\_\_\_

Brief Description of Project \_\_\_\_\_

Completion Date \_\_\_\_\_

Contract Amount \$ \_\_\_\_\_ Start Date \_\_\_\_\_

Contact Person \_\_\_\_\_ Telephone \_\_\_\_\_

E-Mail Address \_\_\_\_\_

Company Name \_\_\_\_\_



Solicitation Name & No. BL059-24, TRENCHLESS STORMWATER PIPE REHABILITATION ON AN ANNUAL CONTRACT

CONTRACTOR AFFIDAVIT AND AGREEMENT (THIS FORM SHOULD BE FULLY COMPLETED AND RETURNED WITH YOUR SUBMITTAL)

By executing this affidavit, the undersigned contractor verifies its compliance with The Illegal Immigration Reform Enhancements for 2013, stating affirmatively that the individual, firm, or corporation which is contracting with the Gwinnett County Board of Commissioners has registered with and is participating in a federal work authorization program\* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security] to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act, in accordance with the applicability provisions and deadlines established therein.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services or the performance of labor pursuant to this contract with the Gwinnett County Board of Commissioners, contractor will secure from such subcontractor(s) similar verification of compliance with the Illegal Immigration Reform and Enforcement Act on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a copy of each such verification to the Gwinnett County Board of Commissioners at the time the subcontractor(s) is retained to perform such service.

E-Verify \* User Identification Number Date Registered

Legal Company Name

Street Address

City/State/Zip Code

BY: Authorized Officer or Agent (Contractor Signature) Date

Title of Authorized Officer or Agent of Contractor

Printed Name of Authorized Officer or Agent

For Gwinnett County Use Only: Document ID # Issue Date: Initials:

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE DAY OF, 20

Notary Public My Commission Expires:

\* As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is "E-Verify" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).



**Bid # & Description BL059-24, TRENCHLESS STORMWATER PIPE REHABILITATION ON AN ANNUAL CONTRACT**  
**CODE OF ETHICS AFFIDAVIT**

**PLEASE RETURN THIS FORM COMPLETED WITH YOUR SUBMITTAL. SUBMITTED FORMS ARE REQUIRED PRIOR TO EVALUATION.**

In accordance with Section 54-33 of the Gwinnett County Code of Ordinances the undersigned bidder/proposer makes the following full and complete disclosure under oath, to the best of their knowledge, of the name(s) of all elected officials whom it employs or who have a direct or indirect pecuniary interest in or with the vendor, its affiliates or its subcontractors:

1. \_\_\_\_\_  
Company Submitting Bid/Proposal

2. Please select one of the following:  
 No information to disclose (*complete only section 4 below*)  
 Disclosed information below (*complete section 3 & section 4 below*)

3. If additional space is required, please attach list:

\_\_\_\_\_  
Gwinnett County Elected Official Name      Gwinnett County Elected Official Name  
  
\_\_\_\_\_  
Gwinnett County Elected Official Name      Gwinnett County Elected Official Name

4. BY: \_\_\_\_\_  
Authorized Officer or Agent Signature

Sworn to and subscribed before me this  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Printed Name of Authorized Officer or Agent  
  
\_\_\_\_\_  
Title of Authorized Officer or Agent of Contractor

\_\_\_\_\_  
Notary Public

(seal)

Note: See Gwinnett County Code of Ethics Ordinance E02011, Sec. 54-33. The ordinance will be available to view in its' entirety at **GwinnettCounty.com**



**GWINNETT COUNTY, GEORGIA  
LIST OF SUBCONTRACTORS**

I do \_\_\_\_\_, do not \_\_\_\_\_, propose to subcontract some of the work on this project. I propose to Subcontract work to the following subcontractors:

NAME AND ADDRESS	TYPE OF WORK

Company Name \_\_\_\_\_

**BIDDER'S AFFIDAVIT**

(This Bidder's Affidavit is part of the Bid Documents)

**BID NUMBER: BL059-24**

**BID DATE: MAY 23, 2024**

**PROJECT NAME: TRENCHLESS STORMWATER PIPE REHABILITATION ON AN ANNUAL CONTRACT**

STATE OF \_\_\_\_\_)

COUNTY OF \_\_\_\_\_)

\_\_\_\_\_  
(Name Printed)

being duly sworn, deposes and says that he resides at  
\_\_\_\_\_

\_\_\_\_\_  
that he is the

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Name of Bidder)

who signed the above Bid Form, that he was duly authorized to sign and that the Bid is the true offer of the Bidder, that the seal attached is the seal of the Bidder and that all the declarations and statements contained in the Bid are true to the best of his knowledge and belief.

\_\_\_\_\_  
(Affiant)

Subscribed and Sworn to before me this \_\_\_\_\_ Day of \_\_\_\_\_ 20\_\_\_\_\_

\_\_\_\_\_  
(Notary Public)

My Commission expires \_\_\_\_\_, 20\_\_\_\_\_

(SEAL)

**FORM OF NON-COLLUSION AFFIDAVIT**

(This Non-Collusion Affidavit is Part of the Bid Documents)

**BID NUMBER: BL059-24**

**BID DATE: MAY 23, 2024**

**PROJECT NAME: TRENCHLESS STORMWATER PIPE REHABILITATION ON AN ANNUAL CONTRACT**

STATE OF \_\_\_\_\_)

SS.

COUNTY OF \_\_\_\_\_)

\_\_\_\_\_

being first duly sworn, deposes and says that he is

\_\_\_\_\_

(sole owner, partner, president, secretary, etc.)

the party making the foregoing Proposal or Bid; that such Bid is genuine and not collusive or sham; that said Bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any Bidder or person, to put in a sham Bid, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the Bid Price of affiant or any other Bidder, or to fix any overhead, profit or cost element of said Bid Price, or of that of any other Bidder, or to secure any advantage against Gwinnett County, or any person interested in the proposed Contract; and that all statements in said Proposal or Bid are true; and further, that such Bidder has not, directly or indirectly submitted this Bid, or the contents thereof, or divulged information or data relative thereto to any association or to any member or agent thereof.

\_\_\_\_\_

(Affiant)

Subscribed and Sworn to before me this \_\_\_\_\_ Day of \_\_\_\_\_ 20\_\_\_\_\_

\_\_\_\_\_

(Notary Public in and for)

\_\_\_\_\_

(County)

My Commission expires \_\_\_\_\_, 20\_\_\_\_\_

(SEAL)

BL059-24  
Gwinnett County, Georgia

**BID BOND**

KNOW ALL MEN BY THESE PRESENTS: that

---

(Name of Contractor)

---

(Address of Contractor)

a

---

(Corporation, Partnership or Individual)

hereinafter called Principal, and

---

(Name of Surety)

---

(Address of Surety)

a Corporation of the State of \_\_\_\_\_, and a surety authorized by law to do business in the State of Georgia, hereinafter called Surety, are held and firmly bound unto

Gwinnett County Board of Commissioners  
(Name of Obligee)

75 Langley Drive, Lawrenceville, Georgia 30046  
(Address of Obligee)

Thereinafter referred to as Obligee: in the penal sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_) in lawful money of the United States, for the payment of which sum will and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to submit, or has submitted, to Gwinnett County, Georgia, a proposal for furnishing materials, labor, and equipment for:

WHEREAS, the Principal desires to file this Bond in accordance with law in lieu of a certified Bidder's check otherwise required to accompany this Proposal.

NOW, THEREFORE, the conditions of this obligation are such that if the proposal be accepted, the Principal shall within ten days after receipt of notification of the acceptance, execute a Contract in accordance with the Proposal and upon the terms, conditions, and prices set forth in the form and manner required by Gwinnett County, Georgia, and execute a sufficient and satisfactory Performance Bond and Payment Bond payable to Gwinnett County, Georgia, each in the amount of 100% of the total Contract Price, in form and with security satisfactory to said Gwinnett County, Georgia, and otherwise, to be and remain in full force and virtue in law, and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to Gwinnett County, Georgia, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

Gwinnett County, Georgia

PROVIDED, FURTHER, that Principal and Surety agree and represent that this bond is executed pursuant to and in accordance with the applicable provisions of the Official Code of Georgia Annotated, as Amended, including, but not limited to, O.C.G.A. § 36-91-1 et seq., and is intended to be and shall be constructed as a bond in compliance with the requirements thereof.

Signed, sealed and dated this \_\_\_\_\_ day of \_\_\_\_\_, A.D., 20\_\_\_\_\_.

ATTEST:

\_\_\_\_\_  
(Principal Secretary)

(SEAL)

\_\_\_\_\_  
(Principal)

By: \_\_\_\_\_

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

\_\_\_\_\_  
(Witness as to Principal)

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

\_\_\_\_\_  
(Surety)

By: \_\_\_\_\_  
(Attorney-in-Fact)

ATTEST:

\_\_\_\_\_  
Resident or Nonresident Agent  
(SEAL)

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

\_\_\_\_\_  
(Witness as to Surety)  
\_\_\_\_\_  
(Address)

NOTE: If Contractor is Partnership, all partners should execute Bond. Surety Companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.

Principal Secretary, Principal and Witness as to Principal signature lines must be signed by three different individuals. Additionally, Resident or Nonresident Agent, Witness as to Surety, and Attorney-in-fact must be signed by three different individuals.

*\*Gwinnett County requires that all Contracts between parties be entered into via the following documents. If any exceptions are taken to any part of this document, each must be stated in detail and submitted as part of your bid document. If no exceptions are noted, it is assumed that the party fully agrees to the contract in its entirety. Exceptions to the sample contract provided in this request for proposal will be considered in terms of responsiveness when making the award.*

**SAMPLE SERVICE PROVIDER CONTRACT  
BL059-24**

This **CONTRACT** made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ by and between Gwinnett County, Georgia (Party of the First Part, hereinafter called the "County"), and \_\_\_\_\_ (Party of the Second Part, hereinafter called the "Service Provider").

**NOW THEREFORE**, for and in consideration of the mutual promises and obligations contained herein and under the conditions hereinafter set forth, the parties do hereby agree as follows:

**1. TERM:**

This contract shall commence \_\_\_\_ (insert date) \_\_\_\_\_, for a one-year period with four (4) options to renew for an additional one-year period.

**2. ATTACHMENTS:**

This Contract shall consist of the Service Provider's bid/proposal and all Invitations to Bid/Proposals including all drawings, specifications, price lists, Instructions to Bidders, General Conditions, Special Provisions, Detailed Specifications, addenda, and change orders issued after execution of the Contract (hereinafter collectively referred to as the "Bid"), which are specifically incorporated herein by reference (Exhibit A). In the event of a conflict between the County's contract documents and the Service Provider's bid/proposal, the County's contract documents shall control.

**3. PERFORMANCE:**

Service Provider agrees to furnish all skill and labor of every description necessary to carry out and complete in good, firm and substantial, workmanlike manner, the work specified, in strict conformity with the Bid.

**4. PRICE:**

As full compensation for the performance of this Contract, the County shall pay the Service Provider for the actual quantity of work performed. Bid amount shown on Exhibit A is the total obligation of the County pursuant to OCGA section 36-60-13 (a) (3). The fees for the work to be performed under this Contract shall be charged to the County in accordance with the rate schedule referenced in the Bid (Exhibit A). The County agrees to pay the Service Provider following receipt by the County of a detailed invoice, reflecting the actual work performed by the Service Provider.

**5. INDEMNIFICATION AND HOLD HARMLESS:**

Service Provider agrees to protect, defend, indemnify, and hold harmless the COUNTY, its commissioners, officers, agents and employees from and against any and all liability, damages, claims, suits, liens, and judgments, for whatever nature, including claims for contribution and/or indemnification, for injuries to or death of any person or persons, or damage to the property or other rights of any person or persons to the extent arising out of and attributed to the negligent acts, errors, or omissions of the Service Provider. Service Provider's obligation to protect, defend, indemnify, and hold harmless, as set forth hereinabove shall include any matter arising out of any patent, trademark, copyright, or service mark, or any actual or alleged unfair competition disparagement of product or service, or other business tort of any type whatsoever, or any actual or alleged violation of trade regulations.

Service Provider further agrees to protect, defend, indemnify, and hold harmless the COUNTY, its commissioners, officers, agents, and employees from and against any and all claims or liability for compensation under the Worker's Compensation Act arising out of injuries sustained by any employee of the Service Provider.

**6. TERMINATION FOR CAUSE:**

The County may terminate this Contract for cause upon ten (10) days prior written notice to the Service Provider of the Service Provider's default in the performance of any term of this Contract. Such termination shall be without prejudice to any of the County's rights or remedies provided by law.

**7. TERMINATION FOR CONVENIENCE:**

The County may terminate this Contract for its convenience at any time upon 30 days written notice to the Service Provider. In the event of the County's termination of this Contract for convenience, the Service Provider will be paid for those services actually performed. Partially completed performance of the Contract will be compensated based upon a signed statement of completion to be submitted by the Service Provider who shall itemize each element of performance.

**8. CONTRACT NOT TO DISCRIMINATE:**

During the performance of this Contract, the Service Provider will not discriminate against any employee or applicant for employment because of race, creed, color, sex, national origin, age, or disability which does not preclude the applicant or employee from performing the essential functions of the position. The Service Provider will also, in all solicitations or advertisements for employees placed by qualified applicants, consider the same without regard to race, creed, color, sex, national origin, age, or disability which does not preclude the applicant from performing the essential functions of the job. The Service Provider will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this Contract so that such provision will be binding upon each subservice provider, providing that the foregoing provisions shall not apply to contracts or subservice providers for standard commercial supplies of raw materials.

**9. ASSIGNMENT:**

The Service Provider shall not sublet, assign, transfer, pledge, convey, sell or otherwise dispose of the whole or any part of this Contract or his right, title, or interest therein to any person, firm, or corporation without the previous consent of the County in writing.

**10. WAIVER:**

A waiver by either party of any breach of any provision, term, covenant, or condition of this Contract shall not be deemed a waiver of any subsequent breach of the same or any other provision, term, covenant, or condition.

**11 SEVERABILITY:**

The parties agree that each of the provisions included in this Contract is separate, distinct and severable from the other and remaining provisions of this Contract, and that the invalidity of any Contract provision shall not affect the validity of any other provision or provisions of this Contract.

**12. GOVERNING LAW:**

The parties agree that this Contract shall be governed and construed in accordance with the laws of the State of Georgia. This Contract has been signed in Gwinnett County, Georgia.

**13. MERGER CLAUSE:**

The parties agree that the terms of this Contract include the entire Contract between the parties, and as such, shall exclusively bind the parties. No other representations, either oral or written, may be used to contradict the terms of this Contract.

(Signatures Next Page)

**IN WITNESS WHEREOF**, the parties hereto, acting through their duly authorized agents, have caused this **CONTRACT** to be signed, sealed and delivered.

GWINNETT COUNTY, GEORGIA

By: \_\_\_\_\_  
Nicole L. Hendrickson, Chairwoman  
Gwinnett County Board of Commissioners

ATTEST:

Tina King, County Clerk

\_\_\_\_\_  
Signature  
  
Board of Commissioners

APPROVED AS TO FORM:

\_\_\_\_\_  
Signature  
Gwinnett County Staff Attorney

SERVICE PROVIDER: \_\_\_\_\_

BY: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

ATTEST:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name  
Corporate Secretary  
(Seal)



BL059-24  
Gwinnett County, Georgia

BOND # \_\_\_\_\_

**PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS: that

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_  
(Corporation, Partnership or Individual)

hereinafter called Principal, and

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

a Corporation of the State of \_\_\_\_\_, and a surety authorized by law to do business in the State of Georgia, hereinafter called Surety, are held and firmly bound unto

Gwinnett County Board of Commissioners  
\_\_\_\_\_

(Name of Obligee)

75 Langley Drive, Lawrenceville, Georgia 30046  
(Address of Obligee)

hereinafter referred to as Obligee, are held and firmly bound unto said Obligee and all persons doing work or furnishing skill, tools, machinery, supplies, or material under or for the purpose of the Contract hereinafter referred to, in the penal sum of \_\_\_\_\_

\_\_\_\_\_ Dollars

(\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which sum will and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such, as whereas the principal entered into a certain contract, hereto attached, with the Obligee.

NOW, THEREFORE THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall well, truly, fully and faithfully perform said contract according to its terms, covenants, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Obligee, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreement of any and all duly authorized modifications of said contract that may hereafter be made, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED FURTHER, that said Surety to this Bond, for value received, hereby stipulates and agrees that no change, extension of time, alterations, or additions to the terms of the Contract or to the Work to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alterations, or additions to the terms of the Contract or to the work to be performed thereunder.

PROVIDED, FURTHER, that Principal and Surety agree and represent that this bond is executed pursuant to and in accordance with the applicable provisions of the Official Code of Georgia Annotated, as Amended, including, but not limited to, O.C.G.A. § 36-91-1 et seq., and is intended to be and shall be construed as a bond in compliance with the requirements thereof.

(Signatures Next Page)

BL059-24  
Gwinnett County, Georgia  
ATTEST:

\_\_\_\_\_  
(Principal)

\_\_\_\_\_  
(Principal Secretary)

By: \_\_\_\_\_

(SEAL)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Witness as to Principal)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Surety)

ATTEST:

By: \_\_\_\_\_  
(Attorney-in-Fact)

\_\_\_\_\_  
Resident or Nonresident Agent

(SEAL)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Witness as to Surety)

\_\_\_\_\_  
(Address)

**BONDING AGENT CONTACT INFO**

Print Name \_\_\_\_\_

Company Name \_\_\_\_\_

E-Mail \_\_\_\_\_

Phone \_\_\_\_\_

**NOTE: If Contractor is Partnership, all partners should execute Bond. Surety Companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.**

**Principal Secretary, Principal and Witness as to Principal signature lines must be signed by three different individuals. Additionally, Resident or Nonresident Agent, Witness as to Surety, and Attorney-in-fact must be signed by three different individuals.**

BL059-24  
Gwinnett County, Georgia

BOND # \_\_\_\_\_

**PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS: that

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_  
(Corporation, Partnership or Individual)

hereinafter called Principal, and

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

a Corporation of the State of \_\_\_\_\_, and a surety authorized by law to do business in the State of Georgia, hereinafter called Surety, are held and firmly bound unto

Gwinnett County Board of Commissioners  
(Name of Obligee)

75 Langley Drive, Lawrenceville, Georgia 30046  
(Address of Obligee)

hereinafter called Obligee;

for the use and protection of all subcontractors and all persons supplying labor, services, skill, tools, machinery, materials and/or equipment in the prosecution of the work provided for in the contract hereinafter referred to in the full and just sum of \_\_\_\_\_

\_\_\_\_\_ Dollars

(\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which sum, will and truly to be made, the Principal and Surety bind themselves, their, and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such, as whereas the Principal entered into a certain contract, hereto attached, with the Obligee.

NOW, THEREFORE THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall well, truly, and faithfully perform said Contract according to its terms, covenants, and conditions, and shall promptly pay all persons furnishing labor, materials services, skill, tools, machinery and/or equipment for use in the performance of said Contract, then this obligation shall be void; otherwise it shall remain in full force and effect.

ALL persons who have furnished labor, materials, services, skill, tools, machinery and/or equipment for use in the performance of said Contract shall have a direct right of action on this Bond, provided payment has not been made in full within ninety (90) days after the last day on which labor was performed, materials, services, skill, tools, machinery, and equipment furnished or the subcontract completed.

BL059-24  
Gwinnett County, Georgia

PROVIDED FURTHER, that said Surety to this Bond, for value received, hereby stipulates and agrees that no change, extension of time, alterations, or additions to the terms of the Contract or to the Work to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alterations, or additions to the terms of the Contract or to the work to be performed thereunder.

PROVIDED, HOWEVER, that no suit or action shall be commenced hereunder by any person furnishing labor, materials, services, skill, tools, machinery, and/or equipment having a direct contractual relationship with a subcontractor, but no contractual relationship express or implied with the Principal:

Unless such person shall have given notice to the Principal within ninety (90) days after such person did, or performed the last of the work or labor, or furnished the last of the materials, services, skill, tools, machinery and/or equipment for which claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials, services, skill, tools, machinery and/or equipment were furnished, or for whom the work or labor was done or performed. Such a notice shall be served by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Principal, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State in which the aforesaid project is located, save that such service need not be made by a public officer, and a copy of such notice shall be delivered to the Obligee, to the person and at the address provided for in the Contract, within five (5) days of the mailing of the notice to the Principal.

PROVIDED, FURTHER, that any suit under this bond must be instituted before the expiration of one (1) year after the acceptance of the public works covered by the Contract by the proper authorities.

PROVIDED, FURTHER, that Principal and Surety agree and represent that this bond is executed pursuant to and in accordance with the applicable provisions of the Official Code of Georgia Annotated, as Amended, including, but not limited to, O.C.G.A. § 36-91-1 et seq., and is intended to be and shall be construed as a bond in compliance with the requirements thereof.

[Signatures Next Page]

BL059-24  
Gwinnett County, Georgia  
ATTEST:

\_\_\_\_\_  
(Principal)

\_\_\_\_\_  
(Principal Secretary)

By: \_\_\_\_\_

(SEAL)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Witness as to Principal)

\_\_\_\_\_  
(Address)

\_\_\_\_\_

\_\_\_\_\_  
(Surety)

ATTEST:

By: \_\_\_\_\_  
(Attorney-in-Fact)

\_\_\_\_\_  
Resident or Nonresident Agent

(SEAL)

\_\_\_\_\_

\_\_\_\_\_  
(Witness as to Surety)

(Address)

\_\_\_\_\_  
(Address)

\_\_\_\_\_

**BONDING AGENT CONTACT INFO**

Print Name \_\_\_\_\_

Company Name \_\_\_\_\_

E-Mail \_\_\_\_\_

Phone \_\_\_\_\_

**NOTE: If Contractor is Partnership, all partners should execute Bond. Surety Companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.**

**Principal Secretary, Principal and Witness as to Principal signature lines must be signed by three different individuals. Additionally, Resident or Nonresident Agent, Witness as to Surety, and Attorney-in-fact must be signed by three different individuals.**

## INSURANCE REQUIREMENTS

1. Statutory Workers' Compensation Insurance
  - (a) Employers Liability:
    - ✓ Bodily Injury by Accident - \$100,000 each accident
    - ✓ Bodily Injury by Disease - \$500,000 policy limit
    - ✓ Bodily Injury by Disease - \$100,000 each employee
  
2. Commercial General Liability Insurance
  - (a) \$1,000,000 limit of liability per occurrence for bodily injury and property damage
  - (b) Separate \$1,000,000 Owner's and Contractor's Protective policy with Gwinnett County Board of Commissioners as **Named Insured**
  - (c) The following additional coverage must apply:
    - ✓ 1986 (or later) ISO Commercial General Liability Form
    - ✓ Dedicated Limits per Project Site or Location (CG 25 03 or CG 25 04)
    - ✓ Additional Insured Endorsement (Form B CG 20 10 with a modification for completed operations or a separate endorsement covering Completed Operations)
    - ✓ Blanket Contractual Liability
    - ✓ Broad Form Property Damage
    - ✓ Severability of Interest
    - ✓ Underground, explosion, and collapse coverage
    - ✓ Personal Injury (deleting both contractual and employee exclusions)
    - ✓ Incidental Medical Malpractice
    - ✓ Hostile Fire Pollution Wording
  
3. Auto Liability Insurance
  - (a) \$500,000 limit of liability per occurrence for bodily injury and property damage
  - (b) Comprehensive form covering all owned, non-owned, leased, hired, and borrowed vehicles
  - (c) Additional Insured Endorsement
  - (d) Contractual Liability
  
4. Umbrella Liability Insurance - Minimum \$5,000,000 limit of liability
  - (a) The following additional coverage must apply
    - ✓ Additional Insured Endorsement
    - ✓ Concurrency of Effective Dates with Primary
    - ✓ Blanket Contractual Liability
    - ✓ Drop Down Feature
    - ✓ Care, Custody, and Control - Follow Form Primary
    - ✓ Aggregates: Apply Where Applicable in Primary
    - ✓ Umbrella Policy must be as broad as the primary policy
  
5. Builder's Risk Insurance or Installation Floater Insurance required on all new structures, bridges, overpasses, tunnels, culverts and railroad crossings - limit at least as broad as contract amount
  
6. Gwinnett County Board of Commissioners should be shown as an additional insured on General Liability, Auto Liability and Umbrella Liability policies.
  
7. The cancellation should provide 10 days notice for nonpayment and 30 days notice of cancellation.
  
8. Certificate Holder should read:  
Gwinnett County Board of Commissioners  
75 Langley Drive  
Lawrenceville, GA 30046-6935

9. Insurance Company, except Worker' Compensation carrier, must have an A.M. Best Rating of A-10 or higher. Certain Workers' Comp funds may be acceptable by the approval of the Insurance Unit. European markets including those based in London and domestic surplus lines markets that operate on a non-admitted basis are exempt from this requirement provided that the contractor's broker/agent can provide financial data to establish that a market is equal to or exceeds the financial strengths associated with the A.M. Best's rating of A-10 or better.
10. Insurance Company should be licensed to do business by the Georgia Department of Insurance.
11. Certificates of Insurance, and any subsequent renewals, must reference specific bid/contract by project name and project/bid number.
12. The Contractor shall agree to provide complete certified copies of current insurance policy(ies) or a certified letter from the insurance company(ies) if requested by the County to verify the compliance with these insurance requirements.
13. All insurance coverages required to be provided by the Contractor will be primary over any insurance program carried by the County.
14. Contractor shall incorporate a copy of the insurance requirements as herein provided in each and every subcontract with each and every Subcontractor in any tier, and shall require each and every Subcontractor of any tier to comply with all such requirements. Contractor agrees that if for any reason Subcontractor fails to procure and maintain insurance as required, all such required Insurance shall be procured and maintained by Contractor at Contractor's expense.
15. No Contractor or Subcontractor shall commence any work of any kind under this Contract until all insurance requirements contained in this Contract have been complied with and until evidence of such compliance satisfactory to Gwinnett County as to form and content has been filed with Gwinnett County. **The Acord Certificate of Insurance or a preapproved substitute is the required form in all cases where reference is made to a Certificate of Insurance or an approved substitute.**
16. The Contractor shall agree to waive all rights of subrogation against the County, the Board of Commissioners, its officers, officials, employees, and volunteers from losses arising from work performed by the contractor for the County.
17. Special Form Contractors' Equipment and Contents Insurance covering owned, used, and leased equipment, tools, supplies, and contents required to perform the services called for in the Contract. The coverage must be on a replacement cost basis. The County will be included as a Loss Payee in this coverage for County owned equipment, tools, supplies, and contents.
18. The Contractor shall make available to the County, through its records or records of their insurer, information regarding a specific claim related to any County project. Any loss run information available from the contractor or their insurer relating to a County project will be made available to the county upon their request.
19. Compliance by the Contractor and all subcontractors with the foregoing requirements as to carrying insurance shall not relieve the Contractor and all Subcontractors of their liability provisions of the Contract.
20. The Contractor and all Subcontractors are to comply with the Occupational Safety and Health Act of 1970, Public Law 91-956, and any other laws that may apply to this Contract.
21. The Contractor shall at a minimum apply risk management practices accepted by the contractors' industry.

#### Surety Bonds (If Required)

All of the surety requirements will stay the same except the Surety Company must have the same rating as item 9 above.

**STANDARD GENERAL CONDITIONS  
OF THE CONSTRUCTION CONTRACT**

Prepared by

**ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE**

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

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ASSOCIATED GENERAL CONTRACTORS OF AMERICA

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AMERICAN SOCIETY OF CIVIL ENGINEERS

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PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE  
*A Practice Division of the*  
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS  
INSTITUTE



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1420 King Street, Alexandria, VA 22314-2794  
(703) 684-2882  
[www.nspe.org](http://www.nspe.org)

American Council of Engineering Companies  
1015 15th Street N.W., Washington, DC 20005  
(202) 347-7474  
[www.acec.org](http://www.acec.org)

American Society of Civil Engineers  
1801 Alexander Bell Drive, Reston, VA 20191-4400  
(800) 548-2723  
[www.asce.org](http://www.asce.org)

Associated General Contractors of America  
2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308  
(703) 548-3118  
[www.agc.org](http://www.agc.org)

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STANDARD GENERAL CONDITIONS OF THE  
CONSTRUCTION CONTRACT

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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
  2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
  3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
  5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
  7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
  8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
  9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
  10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer’s written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.

16.1 Designer - The individual or entity named as such in the Agreement, if a different person

17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 01 of the Specifications. The General Requirements are applicable to all Sections of the Specifications and to the entire Work.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
- 25.1 *Liquidated Damages* – amounts shall be as stipulated in the Agreement. Liquidated damages shall apply to the Contract Times for the Project. Liquidated Damages shall be both additive and cumulative. Liquidated Damages shall end upon Substantial Completion, Completion of the Work associated with each Milestone Date, and upon final completion of the Work.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed. The Owner may designate an authorized representative to exercise the authority, in whole or in part, identified in these contract Documents, with such designation being identified in the Supplementary Conditions.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.



33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, specified design related submittals, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents to provide the following: (i) the Owner full time, uninterrupted,

continuous operation of the work; and (ii) all required functional, performance, and operational or startup testing has been successfully demonstrated for all components, devices, equipment, and systems to the satisfaction of the Engineer in accordance with the requirements of the Specifications; and (iii) all required inspections and other work necessary for the Engineer to certify “substantially complete” have been completed. ~~, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended.~~ The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.

44.1 Submittals – All administrative documents, Shop Drawings, Samples, product data, manufacturer’s literature, quality control documents, design related documents, record documents, contract close-out documents, and/or any other specified document prepared or assembled by or for Contractor and submitted by Contractor to the Owner and/or Engineer.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the

Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

## 1.02 Terminology

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

### B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

### C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

### D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
  - a. does not conform to the Contract Documents; or
  - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
  - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

### E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
  2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
  3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
  4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

#### G. Contract Times

1. All Contract Times and time limits stated in the Contract Documents are of the essence of the Agreement. The Contractor shall proceed with the Work at a rate of progress which will ensure completion within the Contract Times. It is expressly understood and agreed by and between the Contractor and the Owner, that the Contract Times for the Work described herein are reasonable time, taking into consideration the average climatic and economic conditions, and other factors prevailing in the locality of the Work. If the Contractor shall fail to perform the Work required within the Contract Times, or extended Contract Times if authorized by Change Order, then the Contractor shall pay to the Owner the full amount of liquidated damages specified in the Contract Documents for each calendar day that the Contractor shall be in default after the Contract Times stipulated in the Contract Documents.

## ARTICLE 2 – PRELIMINARY MATTERS

### 2.01 *Delivery of Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor ~~and Owner~~ shall ~~each~~ deliver to the ~~Owner~~~~either~~, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which ~~Ownereither of them~~ or any additional insured may reasonably

request) which Contractor ~~is and Owner respectively are~~ required to purchase and maintain in accordance with Article 5.

## 2.02 *Copies of Documents*

- A. Owner ~~shall~~will furnish to Contractor up to ~~ten~~four printed or hard copies of the ~~Drawings and Project Manual~~Contract Documents and one counterpart of the executed Contract Agreement. Additional copies will be furnished upon request at the cost of reproduction.

## 2.03 *Commencement of Contract Times; Notice to Proceed*

- A. ~~The~~ Contract Times will commence to run on the ~~thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated~~date established in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. ~~In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.~~

## 2.04 *Starting the Work*

- A. Contractor ~~shall~~may start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

## 2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the ~~Effective Date of the Agreement~~Commencement of the Contract Time (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
2. a preliminary Schedule of Submittals; which indicates each required Submittal and the dates for submitting, time for reviewing and processing each Submittal (periodic Submittals may be listed by a common monthly date); and
3. a preliminary Schedule of Values for all of the Work in a format acceptable to the Engineer Owner and in accordance with the requirements specified in the General Requirements.

~~which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.~~

## 2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

## 2.07 *Initial Acceptance of Schedules*

- A. ~~At least 10 days before submission of the first Application for Payment a~~ Within ten days after the preconstruction conference a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
  1. The Progress Schedule will be acceptable to Engineer as being the Contractor's schedule for the ~~if it provides an~~ orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor. The Progress Schedule may subsequently be adjusted in accordance with Paragraph 6.04 and applicable provisions of the General Requirements.
  2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals. The Schedule of Submittals may subsequently be adjusted in accordance with Paragraph 6.04 and applicable provisions of the General Requirements.
  3. Contractor's Schedule of Values will be acceptable to the Engineer as to form and substance if it is provided in accordance with the requirements specified in the General Requirements. ~~provides a reasonable allocation of the Contract Price to component parts of the Work.~~

## 2.08 *Licensing*

Prior to execution of the ~~Contract~~ Agreement by the Owner, the Contractor shall deliver proof of licensure compliance to the Owner for any Work to be performed under this

[Contract which is governed by the Construction Industry Licensing Board of Georgia \(O.C.G.A. Section 43-14-1 et seq\), or its rules or regulations.](#)

## ARTICLE 3 – CONTRACT DOCUMENTS; INTENT, AMENDING, REUSE

### 3.01 *Intent*

- A. The individual components of the Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.
- D. Where the word “similar” occurs in the Contract Document, it shall have a general meaning and not be interpreted as being identical, and all details shall be worked out in relation to their location and their connection with other parts of the Work.
- E. Each and every clause or other provision required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be amended to make such insertion.
- F. Wherever in the Contract Documents the terms “as ordered”, “as directed”, “as required”, “as allowed”, “as approved” or terms of like effect or import are used, or the adjectives “reasonable”, “suitable”, “acceptable”, “proper” or “satisfactory” or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of the Engineer as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to the Engineer any duty or authority to supervise or direct the furnishing or performance of Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.10 or any other provision of the Contract Documents.

- G. “Imperative” or “Command” type language is used in the Contract Documents. This command language refers to and is directed to the Contractor.
- H. All products (material or equipment) identified in the Contract Documents and all products incidental to the identified products, shall be new and unused and provided by Contractor unless specified otherwise.
- I. Emphasis, such as italics or quotes, has been used throughout the Contract Documents. Use of emphasis shall not change the meaning of the term emphasized.

### 3.02 *Reference Standards*

#### A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

### 3.03 *Reporting and Resolving Discrepancies*

#### A. *Reporting Discrepancies:*

1. *Contractor’s Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor’s Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation , (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then



Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge or reasonably should have known thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

- a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
- b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

c. In resolving inconsistencies within the Contract Documents, precedence shall be given in the following descending order:

1. Amendments
2. Change Orders
3. Work Change Directives
4. Field Orders
5. Engineer's written interpretations and clarifications
6. Notice to Proceed
7. Addenda
8. Contract Agreement
9. Supplementary Conditions
10. General Conditions
11. Specifications

12. Drawings (Figure dimensions on Drawings shall take precedence over scaled dimensions and detailed drawings shall take precedence over general drawings.)

### 13. Bidding Requirements

#### 3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
  - 1. A Field Order; or
  - ~~2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or~~
  - 23. Engineer's written interpretation or clarification.

#### 3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
  - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
  - 2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

#### 3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

#### **ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS**

##### *4.01 Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

##### *4.02 Subsurface and Physical Conditions*

###### *A. Reports and Drawings: The Supplementary Conditions identify:*

1. those reports ~~known to Owner~~ of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by the Engineer in preparing the Contract Documents; -and
2. those drawings ~~known to Owner~~ of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities that have been utilized by the Engineer in preparing the Contract Documents).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

#### 4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer’s Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner’s obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer’s findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, ~~will~~may be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
  - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
  - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
  - a. Contractor knew or should have known of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
  - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
  - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

#### 4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
  - a. reviewing and checking all such information and data;
  - b. locating all Underground Facilities shown or indicated in the Contract Documents;
  - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
  - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

*B. Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall ~~may~~ be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

C. The dimensions and descriptions given on the Drawings for adjacent work by others, if any, (including any existing facilities or utilities previously constructed for Owner) are based on the design drawings and not as-built drawings. Prior to commencing the Work, the Contractor shall verify all as-built conditions and information whenever existing facilities or utilities may impact the Work. Failure of Contractor to so verify all as-built conditions prior to commencing the Work shall bar Contractor from later seeking additional compensation for conflicts with existing facilities or utilities.

D. Prior to the construction or installation of any proposed facility or pipeline, the Contractor shall expose all existing utilities true to their vertical and horizontal location, within the vicinity of the Work. In order to avoid conflicts between existing and proposed facilities or utilities, the Contractor shall either relocate the existing or proposed utility on a temporary or permanent basis, or shall take whatever means necessary to protect the existing facilities or utilities during the installation of proposed utilities, as approved by the Engineer. No additional payment will be made for the relocation of existing utilities or for any work associated with the protection of existing facilities or utilities.

#### 4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

B. Engineer may check the lines, elevations, and reference marks set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered as approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate construction of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades.

C. The Contractor shall review the Contract Documents and the Project site to determine the presence and location of any property or rights-of-way monuments or markers, and to assess the possibility of disruption to these monuments or markers. It will be the Contractor's responsibility to flag, erect guard post, or provide offset references for the protection or the re-monumentation of these property or rights-of-way monuments or markers. In the event these monuments or markers are covered over or disturbed, it will be the Contractor's responsibility to employ a surveyor licensed in the state of Georgia to re-establish those monuments or markers of property or rights-of-way, which were present prior to Work on the Project.

D. It shall be the Contractor's responsibility to verify all reference points shown on the Contract Documents prior to beginning Work on the site. This verification shall be conducted by professionally qualified personnel in a manner which will verify the accuracy of the information shown in the Contract Documents. On projects which involve the connection to, or additions to existing structures, the elevations of these existing structures shall also be verified. Any findings which differ from those shown on the Contract Documents shall be submitted in writing to the Engineer for resolution.

E. Additional surveys necessary for the construction staking shall be performed by the Contractor, the cost of which shall be incorporated into the appropriate items of Work.

On projects in which payment is classified by depth of cut, the construction staking shall be performed in a manner that will allow for the determination of cut classification.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
  2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
  3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.



- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may issue a Work Change Directive or Change Order as appropriate. ~~order the portion of the Work that is in the area affected by such condition to be deleted from the Work.~~ If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 5 – BONDS AND INSURANCE

### 5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment ~~becomes due~~ is made by the Owner or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

### 5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as ~~may be provided below~~ in the Supplementary Conditions.
  - 1. Surety shall be in good standing with Georgia's Insurance Commissioner's Office.
  - 2. Surety and Insurers must have an A.M. Best Financial Strength Rating and a Financial Size Category as stated in the insurance requirements specified elsewhere in these Contract Documents.
  - 3. The surety shall have an underwriting limitation in Circular 570 in excess of the Contract Amount.

### 5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. ~~Deleted. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.~~
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

### 5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
  - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
  - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
  - 4. claims for damages insured by ~~reasonably~~ available personal injury liability coverage which are sustained:
    - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

- b. by any other person for any other reason;
  - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
  - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
- 1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
  - 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
  - 3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
  - 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
  - 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
  - 6. include completed operations coverage:
    - a. Such insurance shall remain in effect for two years after final payment.
    - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

C. The limits of liability for the insurance required by paragraph 5.04.B.2 of the General Conditions shall provide coverage specified in the Supplementary Conditions or greater where required by Laws and Regulations.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, ~~Owner~~Contractor shall purchase and maintain property insurance as required in the Supplementary Conditions upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

- ~~1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;~~
- ~~2. be written on a Builder's Risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;~~
- ~~3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);~~
- ~~4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;~~
- ~~5. allow for partial utilization of the Work by Owner;~~
- ~~6. include testing and startup; and~~

- ~~7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.~~
- ~~B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.~~
- ~~C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.~~
- ~~D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.~~
- ~~E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.~~

#### 5.07 Waiver of Rights

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 by Contractor will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. ~~Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and,~~

~~in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused.~~ None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by ~~Owner~~Contractor as trustee or otherwise payable under any policy so issued.

~~B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:~~

- ~~1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and~~
- ~~2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.~~

~~C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.~~

#### 5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner ~~as fiduciary~~ for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner ~~as fiduciary~~ shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner ~~as fiduciary~~ shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner ~~as fiduciary~~ shall adjust and settle the loss with the insurers. ~~and, if~~

~~required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.~~

#### 5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If ~~either Owner or Contractor~~ has any objection to the coverage afforded by or other provisions of the ~~bonds or~~ insurance required to be purchased and maintained by ~~the other party~~ Contractor in accordance with this Article 5 on the basis of ~~non-conformance~~ not complying with the Contract Documents, ~~the objecting party shall so~~ Owner will notify ~~the other party~~ Contractor in writing thereof within ~~10~~ ten days ~~after receipt of the certificates (or other evidence requested) required by~~ of the date of delivery of such certificate to Owner in accordance with Paragraph 2.01.B. ~~Owner and~~ Contractor shall ~~each~~ provide ~~to the other~~ such additional information in respect of insurance provided by Contractor as ~~the other~~ Owner may reasonably request. ~~If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.~~

#### 5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner chooses ~~finds it necessary~~ to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

### **ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES**

#### 6.01 *Supervision and Superintendence*

A. Contractor shall supervise, provide quality control, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.



- B. At all times during the progress of the Work, Contractor shall assign a competent ~~resident~~ superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. Contractor shall also designate, in writing, a representative, hereinafter referred to as Project Manager, assigned to the Project on a full-time basis during execution of the Work who shall have the authority to act on behalf of Contractor, including executing the orders or directions of the Engineer without delay. This Superintendent and/or Project Manager shall have full authority to promptly supply products, tools, plant equipment, and labor as may be required to diligently prosecute the Work. All communications given to or received from the Superintendent and/or the Project Manager shall be binding on Contractor.
- C. If at any time during the Project the Superintendent or Project Manager leaves the Project site while Work is in progress, Engineer shall be notified and provided with the name of Contractor's representative having responsible charge.
- D. Contractor shall also designate the person responsible for Contractor's quality control while Work is in progress. Engineer shall be notified in writing prior to any change in quality control representative assignment.
- E. Prior to the Commencement of the Contract Time, Contractor shall furnish to the Owner and Engineer the names, resumes, 24 hour contact information and other relevant information associated with the Project Manager and the Superintendent that are to be assigned to this project. The Project Manager and Superintendent must be acceptable to the Owner and Engineer.

#### 6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, skilled, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site. Contractor shall, upon demand from the Engineer, immediately remove any manager, superintendent, foreman or workman whom the Engineer or Owner may consider incompetent or undesirable.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.
- C. Regular working hours may be Monday through Friday, excluding holidays, occurring between the hours of 7:00 AM and 7:00 PM, unless restricted otherwise. Contractor shall establish regular scheduled work times, e.g., four 10-hour days, five 8-hour days, or five 10-hour days within the hours and days allowed above. Approval for specific work outside regular scheduled work times shall be requested no less than 48 hours prior to the requested work period. Contractor shall request approval of changes in regular scheduled work times no less than one week prior to the desired change.

Occasional unscheduled overtime on weekdays may be permitted provided reasonable notice is given to Engineer.

D. Contractor shall pay all extra costs incurred by the Owner associated with work, outside of normal working hours, including additional support services, inspection services, testing services, utilities or other applicable costs. The cost associated with the Owner's inspection overtime will be the amounts as provided in the Supplementary Conditions per hour per individual, depending upon individuals assigned to the Project, the type of work being inspected, and the date of the invoice; i.e., allowing for salary escalation. Contractor will not be responsible for extra costs associated with inspection overtime for work in excess of 40 hours per week when such overtime work is explicitly required by the Contract Documents.

E. Except in the case of emergencies or other unusual circumstances, no work shall be permitted on the project on Sunday.

F. The Engineer will determine to what extent extraordinary onsite personnel work is required during Contractor's overtime work or working hours outside regular scheduled work hours.

### 6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, quality control, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All products provided on this Project shall be products currently manufactured by the manufacturer, i.e., products shall not be discontinued or out-of-date products nor shall they be of the last production run of the product. Contractor shall incorporate the previous sentence in any contract or agreement between Contractor and subcontractor or supplier supplying products provided on this Project. All special warranties and guarantees required by the SpecificationsContract Documents shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.
- D. Without limiting the responsibility or liability of the Contractor pursuant to this agreement, all warranties given by manufacturers on materials or equipment incorporated in the work are hereby assigned by the Contractor to the Owner. Such assignment shall be effective upon completion of Contractor's warranty period. If requested, the Contractor shall execute formal assignments of said manufacturer's warranties to the Owner. All such warranties shall be directly enforceable by the Owner. Such assignment shall in no way affect the Contractor's responsibilities and duties during the warranty period.

#### 6.04 *Progress Schedule*

- A. The Contractor shall proceed with the Work at a rate of progress which will ensure completion within the Contract Time.
- BA. Contractor shall provide all resources, labor, materials, equipment, services, etc. necessary to adhere to the Progress Schedule established in accordance with Paragraph 2.07 and the General Requirements as it may be adjusted from time to time as provided below.
1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) ~~proposed adjustments in and the General Requirements~~ an updated ~~the~~ Progress Schedule ~~that will not result in changing the Contract Times~~ and an updated Schedule of Submittals with each partial payment request, but no less than monthly. Contractor's failure to provide acceptable updated Progress Schedule and Schedule of Submittals will delay processing of the pay request until receipt of the acceptable updated Progress Schedule and/or an updated Schedule of Submittals. Such ~~adjustments will~~ updates and adjustments shall comply with any provisions of the General Requirements applicable thereto.
  2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.
  3. Number of anticipated days associated with adverse weather conditions, as defined in the General Requirements, shall be included on the critical path of Project Schedule.
- C. If the Progress Schedule reflects a completion date prior to the completion date established by the Agreement, this shall afford no basis to claim for delay should Contractor not complete the Work prior to the projected completion date. Instead, all "float" between the completion date in Contractor's schedule and the completion date established in the Agreement shall belong to and is exclusively available to the Owner. Should a change order be executed with a revised completion date, the Progress Schedule shall be revised to reflect the new completion date.

- D. Project Coordination Meetings: The Contractor shall participate in Project Coordination Meetings to be held on the site monthly, or more often if conditions warrant, to establish the current state of completion and revise the schedule as necessary. The Project Coordination Meeting will be conducted by the Owner and/or the Engineer.
- E. The Contractor shall implement the detailed schedule of activities to the fullest extent possible between Project Coordination Meetings.
- F. The Contractor shall prepare its daily report by 10:00 a.m. of the day following the report date. This daily report will contain, as a minimum, the weather conditions; number of workers by craft, including supervision and management personnel on site; active and inactive equipment on site; work accomplished by schedule activity item; problems; and visitors to the jobsite.
- G. If a current activity or series of activities on the overall project schedule is behind schedule and if the late status is not due to an excusable delay for which a time extension would be forthcoming, the Contractor shall attempt to reschedule the activity to be consistent with the overall Project schedule so as not to delay any of the Contract milestones. The Contractor agrees that:
1. The Contractor shall attempt to expedite the activity completion so as to have it agree with the overall progress schedule. Such measures as the Contractor may choose shall be made explicit during the Project Coordination Meeting.
  2. If, within two weeks of identification of such behind-schedule activity, the Contractor is not successful in restoring the activity to an on schedule status, the Contractor shall:
    - a. Carry out the activity with the scheduled crew on an overtime basis until the activity is complete or back on schedule.
    - b. Increase the crew size or add shifts so the activity can be completed as scheduled.
    - c. Commit to overtime or increased crew sizes for subsequent activities, or some combination of the above as deemed suitable by the Engineer.
  3. These actions shall be taken at no increase in the Contract amount.
- H. The Contractor shall maintain a current copy of all construction schedules on prominent display in the Contractor's field office at the Project site.
- I. The Contractor shall cooperate with the Owner and Engineer in all aspects of the Project scheduling system. Failure to implement the Project scheduling system or to provide specified schedules, diagrams and reports, or to implement actions to re-establish progress consistent with the overall progress schedule may be causes for withholding of payment.

## 6.05 *Substitutes and "Or-Equals"*

- ~~A. See General Requirements. — Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.~~
- ~~1. "*Or-Equal*" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:~~
    - ~~a. in the exercise of reasonable judgment Engineer determines that:~~
      - ~~1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;~~
      - ~~2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and~~
      - ~~3) it has a proven record of performance and availability of responsive service.~~
    - ~~b. Contractor certifies that, if approved and incorporated into the Work:~~
      - ~~1) there will be no increase in cost to the Owner or increase in Contract Times; and~~
      - ~~2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.~~
  - ~~2. *Substitute Items:*~~
    - ~~a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.~~
    - ~~b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.~~

- ~~e. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.~~
- ~~d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:~~
- ~~1) shall certify that the proposed substitute item will:~~
    - ~~a) perform adequately the functions and achieve the results called for by the general design;~~
    - ~~b) be similar in substance to that specified, and~~
    - ~~c) be suited to the same use as that specified;~~
  - ~~2) will state:~~
    - ~~a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;~~
    - ~~b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and~~
    - ~~c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;~~
  - ~~3) will identify:~~
    - ~~a) all variations of the proposed substitute item from that specified, and~~
    - ~~b) available engineering, sales, maintenance, repair, and replacement services; and~~
  - ~~4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.~~
- ~~B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.~~

- ~~C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.~~
- ~~D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.~~
- ~~E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.~~
- ~~F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or equal" at Contractor's expense.~~

#### 6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Acceptance of any Subcontractor, other person or organization by Owner shall not constitute a waiver of any right of Owner to reject defective Work. Contractor shall not be required to employ any Subcontractor, ~~Supplier,~~ or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, ~~and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued.~~ No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a

replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
  2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier ~~will~~ shall be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. ~~Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.~~
- H. Owner or Engineer may furnish to any Subcontractor, Supplier or other person or organization, to the extent practicable, information about amounts paid on their behalf to Contractor in accordance with Contractor's Applications for Payment.



- I. Specialty Subcontractors: Contractor shall utilize the services of Specialty Subcontractors on those parts of the Work which is declared as specialty work in Specifications and which, under normal contracting practices, is best performed by Specialty Subcontractors, as required by the Engineer in Engineer's sole discretion, at no additional cost to the Owner. If Contractor desires to self-perform specialty work, Contractor shall submit a request to the Owner, accompanied by evidence that Contractor's own organization has successfully performed the type of work in question, is presently competent to perform the type of work, and the performance of the work by Specialty Subcontractors will result in materially increased costs or inordinate delays.
- J. The Contractor shall perform a minimum of 50 percent of the onsite labor with its own employees.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.
- D. The Contractor shall keep fully informed of all laws, ordinances and regulations of the federal, state, county, city and municipal governments or authorities in any manner affecting those engaged or employed in the Work or the materials used in the Work or in any way affecting the conduct of the Work and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over same.
- E. Contractor shall perform those duties as they relate to O.C.G.A. Section 36-91-92, including filing the Notice of Commencement. Contractor shall provide Owner and Engineer with proof of having performed these duties before any progress payments or final payment shall be considered due and payable to the Contractor.
- F. Where professional engineering and/or architectural services are required in connection with any of the components required by the Contract, all Bidders and component suppliers must make certain that there is full compliance with all applicable laws of the State of Georgia and any other state governing professional engineering and/or

architecture. The Owner and Engineer do not warrant that any entity listed as an acceptable manufacturer is or will be in compliance with such laws.

G. Any fines levied against the Owner for failure of Contractor to properly maintain required NPDES erosion and sediment control measures or any other related requirements will be deducted as set-offs from payments due Contractor.

#### 6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

B. The Contractor shall provide a written tabulation, plus other documentation as may be required, of all taxes, including sales tax, paid by the Contractor to assist the Owner in obtaining sales and/or use tax refunds for eligible machinery and equipment used for the primary purpose of reducing or eliminating air or water pollution as provided for in O.C.G.A. Section 48-8-3 (36) and (37). Such written tabulation shall be included with each partial payment request. Additionally, the tabulation shall be documented with copies of invoices indicating the amount of tax paid, with all blanks completed on the invoice, and with a description of the function of the item included in the tabulation. All taxes will be paid by the Contractor. All refunds will accrue to the Owner.

#### 6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified

hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

#### 6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site Record Documents as specified in the Contract Documents ~~one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference.~~ Upon completion of the Work, these record documents, Samples, and Shop Drawings ~~will~~ shall be delivered to Engineer for Owner.

#### 6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all ~~necessary~~ precautions for the safety of, and shall provide the ~~necessary~~ protection to prevent pollution of or damage, injury or loss to:
  - 1. all persons on the Site or who may be affected by the Work;
  - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
  - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
  - D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
  - E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
  - F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
  - G. The property, improvements or facilities at the site shall be replaced or restored to a condition as good as when Contractor entered upon the Site. In case of failure on the part of Contractor to restore such property, or make good such damages or injury, the Owner may, after 48 hours written notice, or sooner in the case of an emergency, proceed to repair, rebuild, or otherwise restore such property, improvements or facilities as may be deemed necessary. The cost thereof will be deducted from any monies due or which may become due Contractor under this Contract.

#### 6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

#### 6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

#### 6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

#### 6.17 *Shop Drawings, ~~and~~ Samples and Other Submittals*

- A. Contractor shall submit ~~Shop Drawings and Samples~~Submittals to Engineer for review and approval in accordance with the accepted or adjusted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

##### 1. *Shop Drawings:*

- a. Submit number of copies specified in the ~~General Requirements~~Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

##### 2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a ~~Shop Drawing or Sample~~ any Submittal is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:
  - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
  - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
  - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each Shop Drawing and Sample submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will return as incomplete or will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval or disapproval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval or disapproval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

F. Excessive Submittal Resubmission: Engineer will record time required by Engineer for excessive Submittal review occasioned by Contractor's resubmission, in excess of two resubmissions of any required Submittal, caused by unverified, unchecked or unreviewed, incomplete, inaccurate or erroneous, or nonconforming Submittals. Upon receipt of Engineer's accounting of time and costs, Contractor will reimburse Owner for the charges of Engineer's review for excessive resubmissions through set-offs from the recommended Owner payments to Contractor as established in Paragraph 14.02.D. of these General Conditions.

G. In the event that Contractor provided a submittal for a previously approved item, whether such is as a substitution or in addition to the previously approved item, Contractor shall reimburse Owner for Engineer's charges for such time as may be required to perform all reviews of the substitute item, unless the change is specifically requested by the Owner.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*



- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  - 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  - 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  - 1. observations by Engineer;
  - 2. recommendation by Engineer or payment by Owner of any progress or final payment;
  - 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
  - 4. use or occupancy of the Work or any part thereof by Owner;
  - 5. any review and approval of a ~~Shop Drawing or Sample s~~Submittal or the issuance of a notice of acceptability by Engineer;
  - 6. any inspection, test, or approval by others; or
  - 7. any correction of defective Work by Owner.

#### 6.20 *Indemnification and Liability*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly

employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of a person or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such person or entity .

- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor ~~under Paragraph 6.20.A~~ shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
1. the negligent preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  2. negligently giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

D. Contractor, Subcontractors, Suppliers and others on the Project, or their sureties, shall maintain no direct action against the Engineer, their officers, employees, affiliated corporations, consultants, and subcontractors, for any claim arising out of, in connection with, or resulting from the engineering services performed. Only the Owner will be the beneficiary of any undertaking by the Engineer.

#### 6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related

to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

## **ARTICLE 7 – OTHER WORK AT THE SITE**

### *7.01 Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
  - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
  - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

#### 7.02 *Coordination*

- A. If Owner ~~intends to contract~~s with others for the performance of other work on the ~~Project at the~~ Site, the following will be set forth in Supplementary Conditions:
1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
  2. the specific matters to be covered by such authority and responsibility will be itemized; and
  3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination with other contractors.

#### 7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

#### 7.04 *Claims Between Contractors*

- A. Should Contractor cause damage to the work or property of any separate contractor at the site, or should any claim arising out of Contractor's performance of the work at the site be made by any separate contractor against Contractor, Owner, Engineer, or any other person, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by mediation, arbitration, or at law.
- B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner, Engineer, and the officers, directors, employees, agents, and other consultants of each and any of them harmless from and against all claims, costs, losses

and damages, (including, but not limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising directly, indirectly or consequentially out of or resulting from any action, legal or equitable, brought by any separate contractor against Owner, Engineer, or the officers, directors, employees, agents, and other consultants of each and any of them to the extent based on a claim arising out of Contractor's performance of the Work. Should a separate contractor cause damage to the Work or property of Contractor or should the performance of work by any separate contractor at the site give rise to any other claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or the officers, directors, employees, agents, and other consultants of each and any of them or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any mediator or arbitrator which seeks to impose liability on or to recover damages from Owner, Engineer, or the officers, directors, employees, agents, or other consultants of each and any of them on account of any such damage or claim.

C. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor, and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable hereto, Contractor may make a claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, and/or Engineer and the officers, directors, employees, agents, or other consultants of each and any of them for any delay, disruption, interference or hindrance caused by any separate contractor. This Paragraph does not prevent recovery from Owner, Engineer, and/or Designer for activities that are their respective responsibilities.

## **ARTICLE 8 – OWNER'S RESPONSIBILITIES**

### **8.01 *Communications to Contractor***

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

### **8.02 *Replacement of Engineer***

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer ~~to whom Contractor makes no reasonable objection,~~ whose status under the Contract Documents shall be that of the former Engineer.

### **8.03 *Furnish Data***

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

### **8.04 *Pay When Due***

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's shall not have any responsibilities, ~~if any,~~ with respect to purchasing and maintaining liability and property insurance ~~are set forth in Article 5.~~

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

## ARTICLE 9 – ENGINEER’S STATUS DURING CONSTRUCTION

### 9.01 *Owner’s Representative*

- A. Engineer will be Owner’s representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner’s representative during construction are set forth in the Contract Documents.

### 9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor’s executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer’s efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer’s visits and observations are subject to all the limitations on Engineer’s authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer’s visits or observations of Contractor’s Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

### 9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer’s consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

### 9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor<sup>e</sup> as provided in Paragraph 10.05.

#### 9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

#### 9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

#### 9.07 *Determinations for Unit Price Work*

- A. Engineer will have authority to determine the actual quantities and classifications of Unit Price Work performed by Contractor. If Engineer exercises such authority, Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

#### 9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*



- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract

Documents, except that Owner shall determine whether bonds, certificates of insurance and release of liens comply with the Contract Documents.

- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

**ARTICLE 10 – CHANGES IN THE WORK; CLAIMS**

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

1. Owner may, in anticipation of possibly ordering an addition, deletion or revision to the Work, request Contractor to prepare a proposal of cost and times to perform Owner's contemplated changes in the Work. Contractor's written proposal shall be transmitted to the Engineer promptly, but not later than fourteen days after Contractor's receipt of Owner's written request and shall remain a firm offer for a period not less than sixty days after receipt by Engineer.

2. Contractor is not authorized to proceed on an Owner contemplated change in the Work prior to Contractor's receipt of a Change Order (or Work Change Directive) incorporating such change into the Work.

3. Owner's request for proposal or Contractor's failure to submit such proposal within the required time period will not justify a claim for an adjustment in Contract Price or Contract Time (or Milestones).

4. The Owner shall not be liable to the Contractor for any costs associated with the preparation of proposal associated with the Owner's contemplated changes in the Work.

- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that

should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

#### 10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

#### 10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

#### B. In signing a Change Order, the Owner and Contractor acknowledge and agree that:

1. The stipulated compensation (Contract Price or Contract Time, or both) set forth in the Change Order includes payment for:
  - a. the Cost of the Work covered by the Change Order,
  - b. Contractor's fee for overhead and profit,
  - c. interruption of Progress Schedules,
  - d. delay and impact, including cumulative impact, on other work under the Contract Documents, and

- e. extended home office and jobsite overhead;
2. the Change Order constitutes full mutual accord and satisfaction for the change to the Work;
3. No reservation of rights to pursue subsequent claims on the Change Order will be made by either party; and
4. No subsequent claim or amendment of the Contract Documents will arise out of or as a result of the Change Order.

#### 10.04 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

#### 10.05 *Claims and Disputes*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than ~~30~~10 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with written supporting data shall be delivered to the Engineer and the other party to the Contract within ~~60~~20 days (and monthly thereafter for continuing events) after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part;
  2. approve the Claim; or
  3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

## ARTICLE 11 – COST OF THE WORK; ~~ALLOWANCES~~; UNIT PRICE WORK

### 11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, ~~bonuses~~, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
  - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
    1. Full rental cost for rented, leased, and/or owned equipment shall not exceed the rates listed in the Rental Rate Blue Book published by Equipment Watch, a unit of Primedia, Inc., as adjusted to the regional area of the Project. The most recent published edition in effect at the commencement of the actual equipment use shall be used.

2. Rates shall apply to equipment in good working condition. Equipment not in good condition, or larger than required, may be rejected by Engineer or accepted at reduced rates.

3. Equipment in Use: Actual equipment use time documented by the Engineer shall be the basis that the equipment was on and utilized at the Project site. In addition to the leasing rate above, equipment operational costs shall be paid at the estimated operating cost, payment category (and the table below), and associated rate set forth in the Blue Book if not already included in the lease rate.

The hours of operation shall be based upon actual equipment usage to the nearest full hour, as recorded by the Engineer.

<u>Actual Usage</u>	<u>Blue Book Payment Category</u>
<u>Less than 8 hours</u>	<u>Hourly Rate</u>
<u>8 or more hours but less than 7 days</u>	<u>Daily Rate</u>
<u>7 or more days but less than 30 days</u>	<u>Weekly Rate</u>
<u>30 days or more</u>	<u>Monthly Rate</u>

4. Equipment when idle (Standby): Idle or standby equipment is equipment on-site or in transit to and from the Work site and necessary to perform the Work under the modification but not in actual use. Idle equipment time, as documented by the Engineer, shall be paid at the leasing rate determined in 11.01.A.5.c., excluding operational costs.

5. Where a breakdown occurs on any piece of equipment, payment shall cease for that equipment and any other equipment idled by the breakdown. If any part of the Work is shutdown by the Owner, standby time will be paid during non-operating hours if diversion of equipment to other Work is not practicable. Engineer reserves the right to cease standby time payment when an extended shutdown is anticipated.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to any of the Work that has been completed and accepted by the Owner, not compensated by insurance or otherwise, sustained by Contractor in connection with the

performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D.), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee. If, however, any such loss or damage to the Work that has been accepted by Owner requires reconstruction and Contractor is placed in charge thereof, Contractor shall be paid for services, a fee proportionate to that stated in Paragraph 12.01.c.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.



- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

#### 11.02 ~~Deleted~~*Allowances*

~~A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.~~

#### ~~B. Cash Allowances:~~

~~1. Contractor agrees that:~~

- ~~a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and~~
- ~~b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.~~

#### ~~C. Contingency Allowance:~~

~~1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.~~

~~D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.~~

#### 11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
  - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
  - 2. there is no corresponding adjustment with respect to any other item of Work; and
  - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

## ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

### 12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
  - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
  - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a ~~mutually agreed~~ lump sum value fixed by the Owner or by unit price values fixed by the Owner (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
  - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and ~~agreement to a lump sum is not reached~~ where the methods under Paragraph 12.01.B.2. are not selected by the Owner, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee*: The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
  - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
  - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent based on subcontractor's actual Cost of the Work;
  - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor; except the maximum total allowable cost to Owner shall be the Cost of the Work plus a maximum collective aggregate fee for Contractor and all tiered Subcontractors of 26.8 percent.
  - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
  - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
  - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

#### 12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

#### 12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times ~~will~~ may be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, quarantine restrictions, strikes, freight embargoes, acts of war (declared or not declared), or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor ~~shall~~ may be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

## **ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

### *13.01 Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

### 13.02 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

### 13.03 *Tests and Inspections*

- A. Contractor is responsible for the initial and subsequent inspections of Contractor's Work to ensure that the Work conforms to the requirements of the Contract Documents. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests. Contractor shall establish an inspection program and a testing plan acceptable to the Engineer and shall maintain complete inspection and testing records available to Engineer.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all non-contractor inspections, tests, or approvals required by the Contract Documents except:
  - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
  - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
  - 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

G. Tests required by Contract Documents to be performed by Contractor and that require test certificates to be submitted to Owner or Engineer for acceptance shall be made by an independent testing laboratory or agency licensed or certified in accordance with Laws and Regulations and applicable state and local statutes. In the event state license or certification is not required testing laboratories or agencies shall meet the following applicable requirements:

1. "Recommended Requirements for Independent Laboratory Qualification", published by the American Council of Independent Laboratories.

2. Basic requirements of ASTM E329, "Standard of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction" as applicable.

3. Calibrate testing equipment at reasonable intervals by devices of accuracy traceable to either the National Bureau of Standards or accepted values of natural physical constants.

#### 13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

B. If Owner stops Work under Paragraph 13.05.A. Contractor shall not be entitled to an extension of Contract Time or increase in Contract Price.

#### 13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

C. Contractor shall promptly segregate and remove rejected products from the Site.

D. If rejected products or Work is not removed within 48 hours, the Engineer will have the right and authority to stop the Work immediately and will have the right to arrange for the removal of said rejected products or Work at the cost and expense of the Contractor.

#### 13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as

contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
  2. correct such defective Work; or
  3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

F. Repetitive malfunction of an equipment or product item shall be cause for replacement and an extension of the correction period to a date one year following acceptable replacement. A repetitive malfunction shall be defined as the third failure of an equipment or product item following original acceptance.

#### 13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and



other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

### 13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time as defined by the Engineer after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

## ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

### 14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A and as modified will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer/Owner. Progress payments on account of Unit Price Work will be based on the number of units completed.

### 14.02 *Progress Payments*

#### A. *Applications for Payments:*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated below:in the Agreement.
  - a. Retainage is withheld from progress payments in compliance with O.C.G.A. §13-10-81.
  - b. The Owner shall retain from each progress payment ten percent (10%) of the estimated value of the Work performed until the progress payments, including retainage, total fifty percent (50%) of the Contract price. Thereafter, no further retainage shall be withheld so long as Contractor is making satisfactory progress to insure completion of the Work within the time specified. The Owner may reinstate the ten percent (10%) retainage in the event the Owner and/or Engineer determines that the Contractor is not making satisfactory progress to complete the work within the time specified in this agreement or in the event that the Owner and/or Engineer provides a specific cause for such withholding.

- c. Retainage will be invested in the Georgia Fund 1 at the current market rate. Simple interest will be earned monthly for the retained amount utilizing the previous month's net earning rate.
- d. Upon Substantial Completion of the work and upon application by Contractor and approval by the Owner and Engineer, the Owner may reduce retainage to an amount equal to two hundred percent (200%) of the value of each remaining incomplete minor item as determined by the Owner and Engineer.
- e. The final payment, the remaining retainage and the interest earned will not become due until the Contractor submits the following documents to the Owner and Engineer:
  - 1. An affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work have been paid or otherwise satisfied;
  - 2. The surety's consent to final payment;
  - 3. The Contractor's signed and sealed final change order to close the Contract; and
  - 4. Any other data reasonably required by the Owner and/or Engineer establishing payment or satisfaction of all obligations, including releases, waivers of liens, and documents of satisfaction of debts.
- f. In the event a Subcontractor refuses to furnish a release or waiver as required by the Owner and Engineer, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such loss. In the event any lien or indebtedness remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies the Owner may become compelled to pay in discharging such lien or other indebtedness, including all costs and reasonable attorneys' fees.

**B. Review of Applications:**

- 1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
- 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

- a. the Work has progressed to the point indicated;
  - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
  - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
- a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
  - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
- a. to supervise, direct, or control the Work, or
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
  - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment

recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

*C. Payment Becomes Due:*

1. ~~Ten~~ Thirty days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

*D. Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
  - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
  - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
  - c. there are other items entitling Owner to a set-off against the amount recommended; or
  - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as

determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

4. Items entitling Owner to retain set-offs from the amount recommended, include but are not limited to:

a. Owner compensation to Engineer at an estimated average rate as specified in the Supplementary Conditions per each extra personnel hour for labor plus expenses because of the following Contractor-caused events:

(1) Delays necessitating a time extension for the performance of Engineer's services;

(2) Witnessing retesting of corrected or replaced defective Work;

(3) Return visits to manufacturing facilities to witness factory testing or retesting;

(4) Submittal reviews in excess of three reviews by Engineer for substantially the same Submittal;

(5) Evaluation of proposed substitutes and in making changes to Contract Documents occasioned thereby;

(6) Hours worked by Contractor, in excess of normal work hours as defined by Article 6.02 of the General Conditions, necessitating Engineer to work overtime;

(7) Return visits to the Project by Engineer for Commissioning Activities not performed on the initial visit;

(8) Fines levied against the Owner for Contractor's performance of NPDES Erosion and Sedimentation Control Measures or other permit violations.

(9) The repair, rebuilding or restoration of property improvements or facilities by the Owner as outlined in Paragraph 6.13.

b. Liability for liquidated damages incurred by Contractor as set forth in the Agreement.

E. Prompt Payment Clause

1. Owner and Contractor agree that all partial payments and final payments shall be subject to the Georgia Prompt Pay Act, as originally enacted and amended, and as set forth in O.C.G.A. 13-11-1 through 13-11-11, except as provided below to the extent authorized by law.
2. Interest Rate: For purposes of computing interest on late payments, the rate of interest shall be one-half percent per month or a pro-rata fraction thereof on the unpaid balance as may be due.
3. Payment Periods:
  - a. When Contractor has performed in accordance with the provisions of these Contract Documents, the Owner shall pay Contractor within 30 days of receipt by the Owner or the Owner's representative of any properly completed Application for Payment, based upon work completed or service provided pursuant to the terms of these Contract Documents.
  - b. When a subcontractor has performed in accordance with the provisions of its subcontract and the subcontract conditions precedent to payment have been satisfied, Contractor shall pay to that subcontractor and each subcontractor shall pay to its subcontractor, within ten days of receipt by Contractor or subcontractor of each periodic or final payment, the full amount received for such subcontractors work and materials based on work completed or service provided under the subcontract, less retainage expressed as a percentage, but such retainage shall not exceed that retainage being held by the Owner, provided that the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete its work as contractor in its reasonable discretion may require, including but not limited to a payment and performance bond.
4. Interest on Late Payment: Except otherwise provided in these Contract Documents and/or in O.C.G.A. 13-11-5, if a periodic or final payment to Contractor is delayed by more than the time allotted in Paragraph 14.02.E.3b, or if a periodic or final payment to a subcontractor is delayed more than ten days after receipt of periodic or final payment by Contractor or Subcontractor, the Owner, Contractor, or subcontractor, as the case may be, shall pay interest to its Contractor, or subcontractor beginning on the day following the due dates as provided in Paragraph 14.02.E.3b, at the rate of interest as provided herein. Interest shall be computed per month or a pro-rata fraction thereof on the unpaid balance. There shall be no compounded interest. No interest is due unless the person or entity being charged interest received "Notice" as provided in Paragraph 14.02.E.5. Acceptance or progress payments or final payment shall release all claims for interest on said payments.

5. Notice of Late Payment and Request of Interest: Any person or entity asserting entitlement to interest on any periodic or final payment pursuant to the provisions of this Prompt Payment Clause shall provide “notice” to the person or entity being charged interest of the charging party’s claim to interest on late payment. “Notice” shall be in writing, served by U.S. Certified Mail – Return Receipt Requested at the time the properly completed Application for Payment is received by the Owner or Owner’s representative, and shall set forth the following:
  - a. A short and concise statement that interest is due pursuant to the provisions of the Georgia Prompt Pay Act and this Prompt Payment Clause;
  - b. The principal amount of the periodic or final payment which is allegedly due to the charging party; and
  - c. The first day and date upon which the charging party alleges that said interest will begin to accrue, pursuant to the provisions of the Georgia Prompt Pay Act and this Prompt Payment Clause.
6. These “Notice” provisions are of the essence; therefore, failure to comply with any requirement as set forth in the Prompt Payment Clause precludes the right to interest on any alleged late payment to which said “Notice” would otherwise apply.
7. Integration with the Georgia Prompt Pay Act: Unless otherwise provided in these Contract Documents, the parties hereto agree that these provisions of this Prompt Payment Clause supersede and control all provisions of the Georgia Prompt Pay Act (O.C.G.A. 13-11-1 through 13-11-11 (1994)), as originally enacted and as amended, and that any dispute arising between the parties hereto as to whether or not the provisions of this contract or the Georgia Prompt Pay Act control will be resolved in favor of these Contract Documents and its terms.

#### 14.03 *Contractor’s Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.
- B. No materials or supplies for the Work shall be purchased by Contractor or subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that Contractor has good title to all materials and supplies used by Contractor in the Work, free from all liens, claims or encumbrances.
- C. Contractor shall indemnify and save Owner harmless from all claims growing out of the lawful demands for payment by subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance



of this Contract. Contractor shall, at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then Owner may, after having served written notice on the said Contractor either pay unpaid bills, of which Owner has written notice, direct, or withhold from Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon Owner to either Contractor or to Contractor's Surety. In paying any unpaid bills of Contractor, Owner shall be deemed the agent of Contractor and any payment so made by Owner shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.

#### 14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion. Specific items of Work that must be completed prior to the Engineer's issuance of a certificate of Substantial Completion include, but are not limited to, the following:
1. Correction of all deficient Work items listed by all state, local, and other regulatory agencies or departments.
  2. All submittals must be received and approved by the Engineer, including but not necessarily limited to, the following:
    - a. Record documents.
    - b. Factory test reports, where required.
    - c. Equipment and structure test reports.
    - d. Manufacturer's Certificate of Proper Installation.
    - e. Operating and maintenance information, instructions, manuals, documents, drawings, diagrams, and records.
    - f. Spare parts lists.
  3. All additional warranty or insurance coverage requirements have been provided.
  4. All manufacturer/vendor-provided operator training is complete and documented.
  5. Other items of Work specified elsewhere as being prerequisite for Substantial Completion.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

#### 14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
  - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

#### 14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

#### 14.07 *Final Payment*

##### A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments. Under no circumstances will Contractor's application for final payment be accepted by the Engineer until all Work required by the Contract Documents has been completed.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
  - b. consent of the surety, if any, to final payment;
  - c. a list of all Claims against Owner that Contractor believes are unsettled; and

- d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying all documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, ~~within ten days after receipt of the final Application for Payment,~~ indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. ~~At the same time~~ Thereupon Engineer will ~~also~~ give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment. If the Application for Payment and accompanying documentation are appropriate as to form and substance, Owner will in accordance with the applicable State or local General Law, pay Contractor the amount recommended by Engineer.

C. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

#### 14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
  2. a waiver of all Claims by Contractor against Owner ~~other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.~~

### **ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION**

#### 15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor ~~shall~~ may be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

#### 15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress

Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
  3. Contractor's repeated disregard of the authority of Engineer; ~~or~~
  4. Contractor's violation in any substantial way of any provisions of the Contract Documents;
  5. If Contractor abandons the Work, or sublets this Contract or any part thereof, without the previous written consent of Owner, or if the Contract or any claim thereunder shall be assigned by Contractor otherwise than as herein specified;
  6. Contractor is adjudged bankrupt or insolvent;
  7. Contractor makes a general assignment for the benefit of creditors;
  8. A trustee or receiver is appointed for Contractor or for any of Contractor's property;
  9. Contractor files a petition to take advantage of any debtor's relief act, or to reorganize under the bankruptcy or applicable laws;
  10. Contractor repeatedly fails to supply sufficient skilled workmen, materials or equipment;
  11. Contractor fails to make satisfactory progress toward timely completion of the work; or
  12. Contractor repeatedly fails to make prompt payments to subcontractors or material suppliers for labor, materials or equipment.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor, unless Contractor otherwise cures the deficiency in accordance with Paragraph 15.02.D.
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
  2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
  3. complete the Work as Owner may deem expedient.

- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

G. Any termination by Owner pursuant to Paragraph 15.02 may result in the disqualification of Contractor for bidding on future contracts of Owner.

### 15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate or discontinue, in whole or in part, the Contract. In such case, Contractor shall be paid for (without duplication of any items):
1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, ~~including fair and reasonable sums for overhead and profit on such Work;~~
  2. direct expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, ~~plus fair and reasonable sums for overhead and profit on such expenses;~~

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; ~~and~~
  4. reasonable expenses directly attributable to termination; ~~and-~~
  5. ten percent overhead and profit for those costs agreed to in Paragraphs 15.03.A.1 through 15.03.A.4 above.
- B. Contractor shall submit within 30 calendar days after receipt of notice of termination a written statement setting forth its proposal for an adjustment to the Contract Price to include only the incurred costs described in this clause. Owner shall review, analyze, and verify such proposal and negotiate an equitable amount and the Contract may be modified accordingly.
- C. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

#### 15.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

## ARTICLE 16 – DISPUTE RESOLUTION

### 16.01 Methods and Procedures



- ~~A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.~~
- ~~B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.~~
- ~~C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:~~
- ~~1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or~~
  - ~~2. agrees with the other party to submit the Claim to another dispute resolution process; or~~
  - ~~3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.~~

## ARTICLE 17 – MISCELLANEOUS

### 17.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
  2. delivered at or sent by registered or certified mail, postage prepaid, or by facsimile transmission and followed by written confirmation, to the last business address known to the giver of the notice.
- ~~B. All notices required of Contractor shall be performed in writing to the appropriate entity.~~
- ~~C. Electronic mail and messages will not be recognized as a written notice.~~
- ~~D. If the Contractor does not immediately notify the Owner in writing of the belief that a field order, additional work by other contractors or the Owner, or subsurface, latent, or~~

unusual unknown conditions entitles the Contractor to a Change Order, no consideration for time or money will be given the Contractor.

#### 17.02 *Computation of Times*

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

#### 17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

#### 17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

#### 17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located. Each and every provision of this Agreement shall be construed in accordance with and governed by Georgia law. The parties acknowledge that this Contract is executed in Gwinnett County, Georgia and that the Contract is to be performed in Gwinnett County, Georgia. Each party hereby consents to the Gwinnet Superior Court's sole jurisdiction over any dispute which arises as a result of the execution or performance of this Agreement, and each party hereby waives any and all objections to venue in the Gwinnett County Superior Court.

#### 17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

#### 17.07 *Addresses*

- A. Both the address given in the Bid form upon which this Agreement is founded, and Contractor's office at or near the site of the Work are hereby designated as places to

either of which notices, letters, and other communications to Contractor shall be certified, mailed, or delivered. The delivering at the above named place, or depositing in a postpaid wrapper directed to the first-named place, in any post office box regularly maintained by the post office department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon date of such delivery or mailing. The first-named address may be changed at any time by an instrument in writing, executed by Contractor, and delivered to and acknowledged by the Owner and Engineer. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon Contractor personally.

#### 17.08 Forms and Record

- A. The form of all Submittals, notices, change orders and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by the Engineer.
- B. Contractor shall maintain throughout the term of the Contract, complete and accurate records of all Contractor's costs which relate to the work performed, including the extra work, under the terms of the Contract. The Owner, or its authorized representative, shall have the right at any reasonable time to examine and audit the original records.
- C. Records to be maintained and retained by Contractor shall include, but not be limited to:
1. Payroll records accounting for total time distribution of Contractor's employees working full or part time on the work;
  2. Cancelled payroll checks or signed receipts for payroll payments in cash;
  3. Invoices for purchases, receiving and issuing documents, and all other unit inventory records for Contractor's stores, stock, or capital items;
  4. Paid invoices and cancelled checks for materials purchase, subcontractors, and any other third parties' charges;
  5. Original estimate and change order estimate files and detailed worksheets;
  6. All project-related correspondence; and
  7. Subcontractor and supplier change order files (including detailed documentation covering negotiated settlements).
- D. Owner shall also have the right to audit: any other supporting evidence necessary to substantiate charges related to this agreement (both direct and indirect costs, including overhead allocations as they may apply to costs associated with this agreement); and any records necessary to permit evaluation and verification of Contractor compliance with contract requirements and compliance with provisions for pricing change orders, payments, or claims submitted by Contractor or any payees thereof. Contractor shall also be required to include the right to audit provision in the contracts (including those

of a lump-sum nature) of all subcontractors, insurance agents, or any other business entity providing goods and services.

17.09 Assignment

A. Contractor shall not assign the whole or any part of this Contract or any monies due or to become due hereunder without written consent of the Owner. In case Contractor assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to Contractor shall be subject to prior liens of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for under this Contract.

END OF SECTION

## Supplementary Conditions

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC C-700 (2007 Edition, with Gwinnett County DWR Modifications 06-01-16). All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

The provisions in this Section of the Specifications shall govern in the event of any conflict between this Section and the General Conditions.

### SC-1.01 *Definitions*

SC-1.01. A.16.1 Delete Paragraph 1.01.A.16.1 in its entirety.

SC-1.01. A.29 Add the following sentence to end of paragraph:

The owner designates the Director of the Gwinnett County Department of Water Resources to exercise all Owner authority identified in these contract Documents, except that of approval and execution of change orders.

### SC-4.02 *Subsurface and Physical Conditions*

SC-4.02 Delete Paragraphs 4.02.A and 4.02.B in their entirety and insert the following:

- A. No reports of explorations or tests of subsurface conditions at or contiguous to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to Owner.

### SC-4.06 *Hazardous Environmental Conditions*

SC-4.06 Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not Used.

### SC-5.04 *Contractor's Liability Insurance*

SC-5.04. Delete Paragraph 5.04.C in its entirety and insert the following:

- C. The limits of liability for the insurance required by paragraph 5.04.B.2 of the General Conditions shall provide coverage specified in the Owner's Insurance Requirements, included in these Contract Documents, or greater where required by Laws and Regulations.

### SC-5.06 *Property Insurance*

SC-5.06 Delete Paragraph 5.06.A in its entirety and insert the following in its place:

- A. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. The contractor shall be responsible for any deductible or self-insured retention. This insurance shall be provided as required by the Owner's Insurance Requirements.

SC-6.02 *Labor; Working Hours*

SC-6.02 Add the following subparagraph 6.02.D.1:

1. The following hourly rates or most current rates will apply for the overtime work on behalf of the Owner. This condition is not applicable.

<b>Labor Grade</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Inspector I	\$87.50	\$90.00	\$93.00
Inspector II	\$110.00	\$113.00	\$116.0
Inspector III	\$139.00	\$143.00	\$147.00
Senior Construction Engineer	\$176.00	\$181.00	\$186.50
Principal Construction Engineer	\$237.00	\$244.00	\$251.00
Supervising Construction Engineer	\$253.00	\$260.00	\$268.00

SC-6.06 *Concerning Subcontractors, Suppliers, and Others*

SC-6.06 Add the following subparagraphs 6.06.B.1:

1. Subcontractors, Suppliers, and Others providing the following services are to be submitted to the Owner for review and approval prior to the Effective Date of the Agreement:
  - a. Per the Engineer's and/or Owner's request.

SC-6.08 *Permits*

SC-6.08 Add the following subparagraphs 6.08.B.1:

1. The Owner will provide the following Permits:
  - a. USACE Nationwide Permit
  - b. GAEPD State Stream Buffer Variance
  - c. Gwinnett County Land Disturbing and/or Commercial Development Permit
  - d. Georgia DOT Utility Encroachment Permit

SC-6.13 *Safety and Protection*

SC-6.13 Delete the second sentence of Paragraph 6.13.C.

SC-6.13.H following Paragraph 6.13.G, add the following:

H. Contractor's Plan for Safety Precautions and Programs

1. Before any Work at the site is started, Contractor shall have prepared Contractor's written plan for Project-specific safety precautions and programs, complete with respect to procedures and actions that the Contractor intends Contractor and all others as provided in Paragraphs 6.13.A.1 and 13.02.A, to follow in order for Contractor and all others to comply with all applicable Laws and Regulations. Contractor's plan for safety precautions and programs shall have been approved and endorsed by Contractor's designated safety representative required in Paragraph 6.14.A.
2. Contractor shall revise Contractor's plan for safety precautions and programs at appropriate times to reflect changes in construction conditions, the Work, Contractor's means, methods, techniques, sequences and procedures of construction, and the requirements of paragraph 13.02.A. Contractor shall disseminate the original plan and revisions to all others indicated in Paragraphs 6.13.A and 13.02.A.
3. Contractor's plan for safety precautions and programs will not require more stringent safety requirements, training or other qualifications for all others, including those specified in Paragraph 13.02.A and their employees, than Contractor sets forth for comparable activity and responsibility of Contractor, Subcontractors, and Suppliers and their respective employees.

SC-14-02.A.1 Following this Paragraph add the following:

- a. "Other documentation" shall be accepted only if a written price quote from the vendor is submitted with the Application for Payment and the bill of sale and/or invoice stating that the actual amount paid by the Contractor is submitted within 30 days of the Application for Payment.

SC-14.02.A.3.b Delete 14.02.3.b in its entirety and replace with the following:

- a. The Owner shall retain an amount not exceeding five percent (5%) of the gross value of the completed work as may be provided for in the contract.

SC-14.02.D. *Reduction in Payment:*

SC-14.02.D After paragraph 14.02.D. 4.b, add the following:

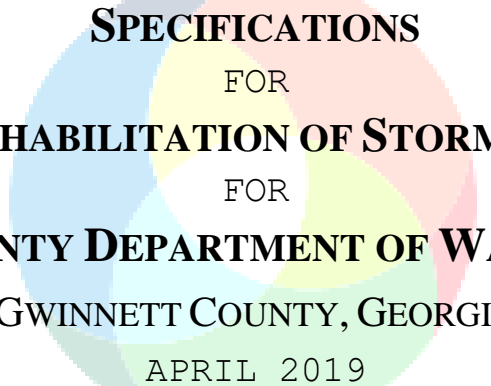
- d. The following rates or most current rates will apply for the additional services performed by the Engineer on behalf of the Owner. This condition is not applicable.

SC-ARTICLE 17 – MISCELLANEOUS

SC-17.09 After 17.09 add the following:

17.10 *Delinquent Contractors*

- A. The Owner shall not pay any claim, debt, demand or account whatsoever to any person firm or corporation who is in arrears to the Owner for taxes. The Owner shall be entitled to a counterclaim and offset for any such debt in the amount of taxes in arrears, and no assignment or transfer of such debt after the taxes become due shall affect the right of the Owner to offset any taxes owed against said debt.



**SPECIFICATIONS**  
FOR  
**TRENCHLESS REHABILITATION OF STORMWATER SYSTEMS**  
FOR  
**GWINNETT COUNTY DEPARTMENT OF WATER RESOURCES**  
GWINNETT COUNTY, GEORGIA  
APRIL 2019

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SECTION 01 00 00

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Definitions
1.4	System Description
1.5	Contract Drawings
1.6	Schedules
1.7	Or Equals
1.8	Submittals
1.1	Access
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1.6	Cleaning Surfaces
1.7	Contractor's Office
1.8	Dimensions and Elevations
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1.25	Ownership of Materials
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1.27	Power
1.28	Protecting Existing Buildings and Structures
1.29	Protection
1.30	Record Drawings

- 1.31 Responsibility for Overflows and Spills
- 1.32 Roadway Right-of-Way, Working Facilities, and Easements
- 1.33 Safety
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- 1.35 Sanitary Measures.
- 1.36 Schedules
- 1.37 Shoring, Formwork, and Temporary Structures
- 1.38 Site Video
- 1.39 Sound Attenuation
- 1.40 Storage
- 1.41 Temporary Heat
- 1.42 Use of Facilities
- 1.43 Use of Streets
- 1.44 Utility Relocations or Modifications
- 1.45 Water Supply
- 1.46 Work in Inclement Weather

## 1.2 REFERENCES

- A. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no bids). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the documents before it was discontinued shall apply.
- B. This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

## 1.3 DEFINITIONS

- A. Whenever the following abbreviations are used, they shall refer to and designate:
  - “AASHTO” – American Association of State Highway and Transportation Officials
  - “ACI” - American Concrete Institute
  - “AISC” - American Institute of Steel Construction
  - “ANSI” - American National Standards Institute
  - “ASME” - American Society of Mechanical Engineers
  - “ASTM” - American Society for Testing and Materials
  - “AWWA” - American Water Works Association
  - “CRSI” – Concrete Reinforcing Steel Institute
  - “GCDOT” – Gwinnett County Department of Transportation
  - “GCDWR” – Gwinnett County Department of Water Resources
  - “GDOT” – Georgia Department of Transportation
  - “MUTCD” – Manual on Uniform Traffic Control Devices

1.4 SYSTEM DESCRIPTION

A. Performance Requirements

The Work shall mean the furnishing of all labor, materials, equipment, superintendence, and other incidentals necessary or convenient to the successful completion of construction of GCDWR infrastructure as identified in the Contract Documents, including but not limited to, safety, removal, replacement, rehabilitation, and installation with any and all appurtenances in accordance with the Contract Documents, complete and fully operational in compliance with federal, state, county, and local codes and regulations, standards, and specifications as applicable at the time of bid unless otherwise directed in writing by GCDWR.

1.5 CONTRACT DRAWINGS

- A. The approved plans, profiles, typical cross sections, working drawings, supplemental drawings, details, sketches, narratives, service request forms, geographic information system (GIS) data, maps, or exact reproductions thereof, which show the location, character, dimensions, and/or details of the Work.
- B. Existing conditions shown on the contract drawings were derived from the best available information at the time and do not purport to be completely correct. The County expressly disclaims any responsibility for the accuracy or completeness of the information given on the Contract Documents and/or Drawings. The Contractor will not be entitled to any extra compensation on account of inaccuracy or incompleteness of such information. The Contractor is therefore directed to perform any and all field surveys that are deemed necessary to satisfy himself/herself to the actual surface and sub-surface conditions.
- C. The Work proposed, its connections, routing, and design intent was based on the available information of the existing conditions. The Contractor shall field verify the nature and extent of the Work proposed prior to ordering any materials. No payment shall be authorized for materials not retained as part of the County's stormwater facilities and its appurtenances.
- D. Additionally, the County reserves the right to require deviations from the Contract during construction where such deviations are deemed necessary. Deviations will be addressed using contract unit prices. If this cannot be accomplished see Article 10 of the General Conditions.
- E. The Contractor shall maintain, on site, one (1) complete set of Project Specific scope of work, Contract Documents, and/or Contract Drawings throughout the course of the Work and make available upon request to the County.

1.6 SCHEDULES

- A. Contractors shall prepare, furnish, distribute, and periodically update the Project Progress Schedule and Schedule of Submittals, as specified herein. Contractor shall also prepare and furnish a Schedule of Values, as specified herein.
- B. Acceptance of the Contractor's Project Progress Schedule, Schedule of Submittals, and Schedule of Values, and revisions thereto, shall in no way relieve Contractor of any

duties and obligations under the Agreement. Such approval is limited to the format of the schedule, and does not in any way indicate approval of, or concurrence with, the Contractor's means, methods, and ability to carry out the Work.

- C. Submit a monthly update of the Project Progress Schedule and Schedule of Submittals with each request for payment.
- D. Failure the Contractor to meet the schedule submission milestones will result in withholding of monthly payments, until deliverables associated with the milestones are received. Payments will be withheld should the Contractor fail to deliver acceptable schedules within thirty (30) days after date of Notice to Proceed.

#### 1.7 OR EQUALS

- A. For the purposes of these Contract Documents, "or equal" item(s) shall be defined as:
  - 1. A product or manufacturer offered as a replacement to a specified product or manufacturer where the term "or equal" is included after the list of acceptable manufacturers in the Specification.
- B. An item which is offered where no specific product, manufacturer, means, methods, technique, sequence, or procedure of construction is specified or shown on the Drawings, shall not be considered a replacement, and shall be at the option of the Contractor, subject to the provisions in the Contract Documents for that item.
- C. For products specified only by a referenced standard, the Contractor may select any product by any manufacturer, which meets the requirements of the Specifications, unless indicated otherwise in the Contract Documents.
- D. If the manufacturer is named on the Drawings, or in the Specifications as an acceptable manufacturer, products of that manufacturer meeting all requirements of the Specifications and Drawings are acceptable.
- E. Whenever the design is based on a specific product of a particular manufacturer, that manufacturer will be shown on the Drawings and/or listed in the list of approved manufacturers in the Specifications. Any Contractor intending to furnish products other than the listed acceptable manufacturer(s) shall:
  - 1. Verify that the item being furnished will fit in the space allowed, perform the same function(s), and have the same capabilities as the item specified,
  - 2. Include in the item price the cost of all accessory items, which may be required by the "or equal" product,
  - 3. Include the cost of any architectural, structural, mechanical, piping, electrical, instrumentation, or other modifications required, and
  - 4. Include the cost of required additional work by GCDWR and/or the Engineer, if any to accommodate the item.
- F. Approval of GCDWR and/or the Engineer and Owner of an "or equal" item as an acceptable manufacturer, is dependent on determination that the product offered:
  - 1. Is maintenance, reliability, service life, availability of local technical support, and other criteria to that on which the design is based, and
  - 2. Will require no major modifications to structures, electrical systems, control

systems, or piping systems.

- G. “Or equal” items will be considered only if the term “or equal” is included after the list of acceptable manufacturers in the Specification.
- H. The Contractor shall submit shop drawings on the “or equal” item for GCDWR and/or the Engineer’s review in accordance with Specification Section 01 33 00 Submittal Procedures.
- I. The cost of GCDWR and/or Engineer’s and Owner’s factory inspection, reference project tour, or mill inspection, required to evaluate the acceptance of the “or equal” product shall be borne by the Contractor.

1.8 SUBMITTALS

- A. Contractor shall be required to prepare each project specific submittal, utilizing the approved bid schedule, and shall include scope of work defined, and for any scope not included in defined bid schedule, shall attach individual cost estimate sheets based on the Additional Work provision
- B. Specified submittals shall be to GCDWR and/or the Engineer, and submitted by the Contractor only, (i.e. NOT subcontractors, vendors, suppliers, etc.)
- C. Each submittal, with variations from the requirements of the Contract Documents, shall make specific mention of such variations. Those declared variations found acceptable by GCDWR shall require the Contractor to take suitable action for the proper installation in accordance with the Contract Documents. Variation not declared or suitable action not taken by the Contractor shall not relieve him/her of the responsibility for executing the Work or error and cost for remedial actions deemed necessary by GCDWR.

PART 2 - PRODUCTS - (NOT

USED) PART 3 - EXECUTION

3.1 ACCESS

- A. The Contractor shall enable and facilitate access to all parts of the Work to GCDWR and/or its authorized representatives.

3.2 AID TO THE INJURED

- A. The Contractor shall furnish, maintain, and make ready and available for immediate use, first aid to the injured with standing arrangements for the immediate removal, transport, and hospital treatment of any personnel who may be injured on the Work, as required by federal, state, county and local laws, codes and regulations.

3.3 BUILDINGS AND SHANTIES

- A. No provision shall be allowed for the housing of men/women employed for the Work on land owned or leased by the County, unless in writing a permit is secured from

GCDWR. Should permission be asked and granted, the Contractor shall comply with all regulations regarding the construction and maintenance of such buildings.

#### 3.4 CLEANING

- A. With completion of the Work, the Contractor shall return the surface conditions of the work area to pre-work status, unless where otherwise specified in the Contract Documents. The finished surface Work shall leave the grounds in a neat and approved condition, including but not limited to, the removal of material, debris, equipment, structures, and the Contractor's office.
- B. Contractor shall terminate utilities as applicable or as required by the Contract Documents. Contractor shall also clean out all drains, pipes, inlets, and miscellaneous and appurtenant structures of debris from his/her operations.

#### 3.5 CLEANING AND CROWNING OF STREETS

- A. As Work progresses and before the Work herein specified is accepted, the Contractor shall, upon notice from GCDWR, thoroughly clean all streets, roads, sidewalks, and lawns free from all debris and dirt accumulating from the construction, shall open all gutters and open channels so that free drainage may be had, and on unpaved streets and roads, shall completely crown the roadway within the limits of the herein specified Work.

#### 3.6 CLEANING SURFACES

- A. Contact surfaces between existing and new Work shall be free from debris, dirt, grease, or foreign matter to the extent of wire brushing and washing, and such surface preparation as recommended by the manufacturer or directed by the County. The cost for cleaning shall be included in the Prices Bid and stipulated for the various items of the bid.

#### 3.7 CONTRACTOR'S OFFICE

- A. Facilities are not required to be on the project site. The Contractor shall be responsible for providing adequate indoor facilities for conducting project meetings. At a minimum, the facilities shall be equipped with power, water, lighting, heating ventilation and air conditioning, a conference room, table and chairs. If in the opinion of GCDWR the location of the facilities are not convenient to project personnel, GCDWR may provide suitable facilities for project meetings.

#### 3.8 DIMENSIONS AND ELEVATIONS

- A. In the Contract Documents, figured dimensions shall take precedence over scaled dimensions; detailed drawings shall take precedence over general drawings, and where elevations are denoted, shall be in accordance with the section titled Survey.

#### 3.9 EMERGENCY RESPONSE

- A. The Contractor shall respond within four (4) hours to any emergency that may arise in connection with the Work on a twenty-four (24) hour per day, seven (7) days per week basis. Should County maintenance forces be called upon by the County to rectify a



problem created by the Contractor, the Contractor shall be responsible for all costs incurred by the County, plus twenty-five (25) percent, with a minimum charge of one hundred (100) dollars per occurrence. This charge is subject to change depending upon the severity of the emergency and will be determined by Gwinnett County.

3.10 ENVIRONMENTAL CONTAMINATION

- A. Precautions against property endangerment and/or damages from water, sewage, seepage, storm, stormwater, and flood flows shall be active during the course of Work. Cost for precautions shall be included in the Prices Bid and stipulated for the items of Work.

3.11 EXISTING IRRIGATION AND SPRINKLER SYSTEMS

- A. The Contractor shall be responsible for restoring the soundness to any portion of an existing irrigation or sprinkler system disturbed and/or damaged by the Work. No compensation shall be made for this Work.

3.12 EXISTING UTILITIES

- A. Before the Work commences, the Contractor shall locate all utilities in the Work area and investigate any potential conflicts between the Work and existing utilities. All provisions of Georgia law relating to notification and protection of utilities shall be met by the Contractor.
- B. Existing utilities shall be maintained, except when a utility or a utility feature requires moving. In such circumstances, the Contractor shall notify the utility before any such Work is started for approval. In the event that the utility grants approval for such movement that results in damage, it shall be repaired by the authorities having control of the same, and the expense of said repairs shall be paid by the Contractor or deducted from the monies which are due or to become due to said Contractor. No underground or overhead facilities encountered shall be disturbed without proper authority and then only in such manner as said owner may prescribe and approve.
- C. Should it become necessary to change the position, or permanently or temporarily remove part of a utility in order to clear the structure being built or to permit the Contractor to use a particular method of construction, the Contractor shall notify GCDWR of the location and circumstances and shall cease work if necessary, until satisfactory arrangements have been made by the Owners of the said utility to properly care for or relocate the same as necessary to permit the Work to proceed as specified. No claims for damages shall be allowed the Contractor on account of any delay occasioned thereby. The entire cost of the changes or temporary or permanent removal of such utilities shall be borne by the Contractor and the cost thereof shall be included in the Prices Bid and stipulated for the various Items of the Bid.
- D. Nothing contained herein shall relieve the Contractor of doing such Work at his cost and expense as is specifically included in the Contract Documents.
- E. Anything contained herein shall not relieve the Contractor of his obligation to support and protect all pipes, conduits, utilities, and other structures which may be encountered during the construction of Work, and to make good all damages done to such pipes, conduits, utilities, and other structures, as provided in this specification. Any such

damages must be repaired without delay and the cost of such repairs must be borne by the Contractor.

- F. No separate payment will be made for the location, protection, support, or maintaining service for any existing utility. Such items shall be considered incidental to the work and no additional compensation will be allowed. The Contractor shall also be responsible for the cost of repairing utilities damaged by the Work.

### 3.13 EXPERIENCE

- A. Contractor shall not make any changes to the personnel, subcontractors, materials, products or rehabilitation systems used on this project without the prior written approval of GCDWR. Additionally, the Contractor shall not use personnel, subcontractors, materials, products or rehabilitation systems on this project other than those the Contractor proposed in their Prequalification Proposal.
- B. Subcontractors shall not make any changes to the personnel, materials, products or rehabilitation systems used on this project without the prior written approval of GCDWR. Additionally, subcontractors shall not use personnel, materials, products or rehabilitation systems on this project other than those the Contractor proposed in their Prequalification Proposal.
- C. GCDWR reserves the right to waive these requirements, at its sole discretion, whenever doing so is deemed to serve the interest of GCDWR.

### 3.14 INSPECTIONS

- A. The Contractor shall schedule a pre-construction meeting with GCDWR a minimum of 2 weeks prior to construction. During construction the GCDWR Inspector shall be the lead person for scheduling, coordination, and overseeing, witness to sampling and work that may be required or determined necessary by GCDWR. Should existing conditions necessitate a change or cost to the Contract Documents, the GCDWR Construction Manager shall be notified for approval prior to proceeding.
- B. The GCDWR Construction Manager shall review and approve unit items installed in the Work by the Contractor prior to his/her submittal for payment to GCDWR. Failure to do so may result in delays in processing payments.
- C. Upon notification by the Contractor, GCDWR shall perform an inspection of the finished surface features and conditions for acceptance of the Work. Should discrepancies exist, the Contractor shall make restorations as directed, until acceptance is granted by GCDWR, upon which final payment shall be made for the Work.
- D. Contractor shall pay for second inspections, if so required by the GCDWR.

### 3.15 INSUFFICIENCY OF SAFETY PRECAUTIONS

- A. If at any time, in the opinion of the County, the Work is not properly instituted or maintained and is not in accordance with federal, state, county and local laws, codes and regulations, the Contractor shall execute immediate measures to bring into compliance unsatisfactory surroundings. In the event that the Contractor is not readily available at the Work to be notified of the insufficiency of safety precautions, then the

County may elect to institute or restore such Work to a state deemed safe. Such actions by the County shall in no way release the Contractor from his/her judiciary duty specified. Costs to correct safety precautions shall be at the Contractor's expense.

3.16 INTOXICATING LIQUORS

- A. The Contractor shall neither permit nor suffer the introduction or use of intoxicating substances, such as but not limited to, alcohol or illegal drugs upon or about the Work jobsite.

3.17 LANDSCAPE PROTECTION

- A. Landscaping, such as but not limited to, ornamental trees, shrubbery, hedges, flower beds, decorative berms, decorative rocks, ponds, timbers, and their appurtenances shall not be removed or disturbed without approval from the County. However, should it be required to remove or disturb such items, the Contractor shall seek approval no later than 2 weeks in advance of conflict. If and when approval is granted by the County, the Contractor shall take the proper precautions to preserve, protect, and reestablish such items along the line of or contiguous to the Work. All landscaping shall be restored to the same or better general conditions as existed prior to commencement of the Work. If deemed damaged by the County, each item damaged shall be replaced with the same type and like size. Cost for removal and relocation shall be considered as having been included in the Prices Bid and stipulated for the various items of Work. Cost for restitution shall be borne by the Contractor.

3.18 LIGHTING

- A. Except for acts of nature, the Work shall be secured by such means to prevent loss to health, limb, and property. Adequate lighting shall be provided and maintained during periods of Overtime Work, from one-half (1/2) hour before sunset to one-half (1/2) hour after sunrise. Contractor shall provide adequate lighting for safety and performance of construction operations and provide the necessary safety and other facilities required for work during normal working hours and for work at night.

3.19 MEANS AND METHODS

- A. Unless otherwise expressly provided in the Contract Documents, the means and methods of construction shall be such as the Contractor may choose. However, the County maintains the right to reject or alter the Contractor's proposed means and methods, which shall not produce finished Work in accordance with the terms of the Contract, or to the County's right as administrator of the construction to direct the Contractor to more stringent means or methods.
- B. If determined by the County that the Contractor's work methods, features, and/or equipment appears to be unsafe, insufficient, or improper, the County may order the Contractor to improve their safety, sufficiency, and/or character, whereby the Contractor shall conform to such orders; but should the County not demand any increase of such safety precautions, insufficiency, inadequacy or any improvement shall not release the Contractor from his obligation to secure the work methods, safety precautions, work features, and/or equipment for the safe conduct and quality of work

specified, and shall not constitute a cause of action for damages.

- C. The Contractor shall have the right to deny access to the Work during construction except to third parties to inspect, certify, or observe when required by law; or to those who require reasonable access to the Work by reason of specific contractual relationship to the Work.

### 3.20 MEASURES AND WEIGHTS

- A. Whenever so requested as deemed necessary by GCDWR, the Contractor shall provide accurate scales, adequate equipment, and the necessary assistance for weighing and/or measuring materials for the installed Work as specified. It is understood and agreed that a “ton” shall mean the short ton of two thousand (2,000) pounds.

### 3.21 MILL AND SHOP TESTS AND INSPECTION

- A. Where the specifications call for mill or shop tests, the Contractor shall furnish triplicate copies of attested certificates signed by a duly authorized representative of the manufacturer, showing details of quality or performance sufficient to demonstrate compliance with the Contract Documents. Inspection of materials shall be made as required by these specifications.

### 3.22 MONUMENTS AND LANDMARKS

- A. Monuments or landmarks shall not be damaged or removed by the Contractor or any of his/her employees without the written consent of GCDWR. Any monument or landmark so removed shall be replaced by the County at the expense of the Contractor. The cost thereof shall be retained from the monies due or to become due the Contractor under this agreement.

### 3.23 OBSTRUCTION ENCOUNTERED

- A. The giving of this information upon the Project specific scope of work and field survey determinations shall not relieve the Contractor of his obligation to support and protect all pipes, conduits, and other structures which may be encountered during the construction of Work, and to make good all damages done to such pipes, conduits, and other structures, as provided in this Specification. Any such damages must be repaired without delay and the costs of such repairs must be borne by the Contractor. The Contractor shall locate obstructions ahead of the Work without cost to GCDWR. Should the Contractor determine that the existing information is not correct and an obstruction shall be encountered, he/she shall immediately contact the GCDWR.

### 3.24 OVERTIME WORK

- A. It is the intent of the contract that the Contractor provide sufficient work force at all times during normal working hours and days of each week to complete the Work without resort to overtime work. The definition of normal working hours and days is an, Monday through Friday, trade recognized legal holidays excepted, during a consecutive period as agreed upon in the area of the Work, not counting the lunch period; and the definition of normal work week is the aggregate of the five (5) consecutive eight (8) hour days, Monday through Friday inclusive, maximum, the

same holidays excepted.

- B. Night work or work on Saturdays, Sundays, or trade recognized legal holidays, requiring the presence of GCDWR personnel or an inspector, shall not be permitted except in case of emergency, and then only to such extent as is absolutely necessary, and with the written permission of GCDWR.
- C. Should the Contractor, for his convenience, request permission to work overtime or to work on Saturdays, Sundays, or trade recognized legal holidays in the area of the Work, the County shall have the right to deduct sufficient sums from the monies due the Contractor to cover payment of additional salaries for the GCDWR personnel and such inspectors as are normally employed on the Work.
- D. Should it become necessary for Work to be accomplished at the direction of GCDWR for the convenience and/or requirement of the GCDWR outside of normal working hours, then full inspection and engineering shall be provided at no additional cost to the Contractor during those hours.
- E. During periods of overtime work, the Contractor shall provide the necessary facilities required for work during normal working hours and for work at night. The Contractor shall be in readiness in time of emergency even nights, Saturdays, Sundays, and holidays at no cost to the County.

### 3.25 OWNERSHIP OF MATERIALS

- A. Existing material removed that shall not be relocated or reused in the Work shall be moved off site within 48 hours after completion of the project, becoming the property of the Contractor. The cost for such Work shall be as stipulated by the Prices Bid, for the various items of the Work.
- B. Existing material recovered that shall be relocated or reused in the Work shall be refurbished or renovated as required, unless otherwise directed by GCDWR.
- C. Existing material removed shall be disposed of in a manner approved by GCDWR at the Contractor's expense.
- D. New material not installed in the Work shall be moved offsite and remain the property of the Contractor. Only material that is installed by the Contractor will be paid for. However, the Contractor may submit pay applications for stored material in accordance with Section 14.02 of the General Conditions.

### 3.26 PAINTING AND COATINGS

- A. It is the intention of these specifications that metal permanently installed in the Work shall be protected by a durable coating of paint, or other approved material, and that all such metal surfaces not buried in the earth or masonry shall be left clean and well painted at the completion of the Contract, and in accordance with detailed requirements as may hereinafter be set forth.

### 3.27 POWER

- A. The Contractor shall make his own arrangements for power. No payment shall be made for cost of obtaining power. The cost for power shall be as stipulated by the Prices Bid, for the various items of the Work.

3.28 PROTECTING EXISTING BUILDINGS AND STRUCTURES

- A. The Contractor shall take the necessary precautions to protect, including but not limited to, buildings, bridges, structures, and substantial walls or fences which may be encountered or endangered in the execution of the Work, not otherwise provided for, shall repair and make good any damages caused by reason of his operations and restore such property to its state before the damages. Existing walls and fences that are removed due to the execution of the Work shall be replaced by the Contractor and, where required or directed by the County.

3.29 PROTECTION

- A. The Contractor shall furnish and maintain satisfactory protection to the Work against injury by weather, flooding, or breakage thereby permitting all Work to be left in a perfect condition at the completion of the Work.

3.30 RECORD DRAWINGS

- A. The Contractor shall be furnished one set of Contract Drawings for the purpose of recording information on the as-installed Work. The information shall be correct and presented on the Drawings and returned to GCDWR for acceptance.
- B. The Contractor shall provide Georgia State Plane GPS coordinates for all fire hydrants, manholes, junction boxes, drainage structures, and valves (new or existing) associated with the work.

3.31 RESPONSIBILITY FOR OVERFLOWS AND SPILLS

- A. It shall be the responsibility of the Contractor to schedule and perform his work so as to result in no overflows or spills from the system. If flows are such that they interfere with the Contractor's ability to perform work, the Contractor shall be responsible for scheduling his work during low flow periods or provide bypass pumping.
- B. In the event of overflows caused by the Contractor's work activities, the Contractor shall immediately take appropriate action in accordance with the County's Emergency Response Plan (ERP), copies of which are available at Gwinnett County Department of Water Resources, to contain and stop the overflow, clean up the spillage, disinfect the area affected by the spill, and notify GCDWR in a timely manner. The Contractor shall prepare his own written Standard Operating Procedure (SOP) for handling and reporting spills, which shall be compatible with the County's ERP.
- C. Contractor will indemnify and hold harmless the County for any fines or third-party claims for personal or property damage arising out of a spill or overflow that is fully or partially the responsibility of the Contractor. Should fines subsequently be imposed as a result of any overflow for which the Contractor is fully or partially responsible, the Contractor shall pay all such fines and all of the County's legal, engineering, and administrative costs in defending such fines and claims associated with the overflow.

3.32 ROADWAY RIGHT-OF-WAY, WORKING FACILITIES, AND EASEMENTS

- A. Work within the limits of private property and rights-of-way, shall be done in

conformity with all applicable permits and agreements with the County and the owners of such private property, easements, or rights-of-way. Whether or not such a condition be part of the agreement, care shall be taken to avoid injury to the premises entered, which premises shall be left in a neat and orderly condition by the removal of rubbish and the grading of surplus materials, and the restoration of said private property to the same or better general conditions as at the time of entry for Work to be performed under this contract. The Contractor shall not enter any easement without first confirming with GCDWR that such easement is fully executed.

- B. The Contractor shall not (except after consent from the proper parties), enter or occupy with men/women, tools, or equipment on any land outside the right-of-way or property of the County.
- C. The Contractor shall be allowed use of the site designated for construction as necessary for the Work. However, existing access to properties shall be maintained or adequate access provided during the course of the Work. Cost for access shall be included in the Prices Bid and stipulated for the various items of the Work to be done under this contract.
- D. Work that shall be performed on private property or easements that requires granted access beyond the established road right-of-ways shall be done in conformity with all permits and agreements between the County and property owners. Should the Contractor desire or require additional space outside the limits of Work, he/she must arrange for such space with property and easement owners at his/her own expense. Legal binding agreements for such additional space must be in writing and a copy filed with the County, prior to accessing such lands. In such agreements, care shall be taken to avoid injury to the premises entered and shall be left in a neat and orderly condition as existed at the time of entry for Work.
- E. When working on easements or property that was acquired by the County through condemnation, the Contractor shall install Tree Save Barriers along all boundaries of the work area, unless otherwise specifically directed by GCDWR, prior to any Work. Work premises shall be left in a neat and orderly condition by the removal of rubbish, debris, and the grading of surplus materials and the restoration of said private property to the same general conditions as existed at the time of entry for Work.

### 3.33 SAFETY

- A. Unless otherwise specified, all federal, state and county regulations shall be maintained during the course of the Work.

### 3.34 SALES TAX

- A. The Contractor shall furnish GCDWR with certified copies of paid invoices or their equivalent proof covering sales tax paid on items which the County is eligible for tax refund; none of which shall be refunded or credited to the Contractor.

### 3.35 SANITARY MEASURES

- A. Sanitary conveniences shall be employed prior to beginning the Work in sufficient number, in such manner and in such places as shall satisfy GCDWR. Such sanitary conveniences shall be operated and maintained in such a manner as to remove harmful

effects to personnel or environment. All persons connected with the Work are obliged to use the conveniences provided and shall in no way violate these provisions. Violations shall result in an immediate dismissal of the employee and removal from the Work. Only upon written consent by GCDWR shall the violator regain access to the Work. Sanitary conveniences shall be maintained during the Work and in compliance with the local Health Department and GCDWR. When possible, sanitary conveniences shall be placed in locations that least impact public view. Upon completion of the Work, the Contractor shall remove sanitary conveniences without deleterious effect.

### 3.36 SCHEDULES

- A. The Project Progress Schedule shall be plotted on a minimum eleven-inch by seventeen-inch (11" x 17") size sheets with the flow of activities from left to right. Printing shall be in color and suitable for half-size reproduction. No lettering or numbering shall be less than one eighth-inch (1/8") in height for capital letters and numbers. The critical path shall be clearly marked and readily identifiable.
- B. The Project Progress Schedule shall be a Critical Path Method (CPM) Network Diagram, and include the following:
  1. Furnish an updated diagram with all activities and restraints. This includes providing an "As-Built" Schedule with completion dates for all key monthly completion and delivery dates,
  2. Provide updated Project Progress Schedule graphics in color showing progress to-date and completion schedule. The critical path shall be clearly identified,
  3. A legend clearly identifying each symbol used,
  4. Be prepared in the form of a time-scaled CPM network,
  5. Group activities by facility and major area of work. The identification number of the individual activities shall be coded such to provide the grouping,
  6. Be prepared in chronological order of the beginning of each item of work,
  7. Have a horizontal time scale based on calendar days and identify the Monday of each week,
  8. Show the order and interdependencies of the activities and the sequence in which the work is to be accomplished as planned by the Contractor. The diagram shall show how the start of a given activity is dependent upon the completion of the preceding activities, and how its completion restricts the start of following activities. Float need not be shown on the network diagram,
  9. Show all activities relating to the construction of the work, and include the following information related to the activities:
    - a. Activity number
    - b. Activity description
    - c. Percent complete
    - d. Estimated duration, in working days, of each activity



- e. Start date
  - f. Finish date
10. Show all planned facility shutdowns, including temporary relocations, temporary bypasses, and transitions from existing to temporary, temporary to new, and the like.
- a. For each anticipated shutdown included in the schedule, submit within thirty (30) days prior to the planned shutdown, a description of the shutdown, duration, anticipated start and completion dates, related preparation work, and related temporary facilities to be provided.
11. Show adverse weather days on the critical path.
- a. The number of adverse weather days per month shown on the critical path of the schedule shall not be per SC-12.03C. of the Supplementary Conditions.
  - b. The total number of adverse weather days shall be monitored and agreed to monthly by Contractor, GCDWR and/or Engineer, and Owner. The Project Progress Schedule shall be updated to reflect the accrual of adverse weather days agreed to and enacted by a Contract Time extension.
12. Show the following for specified submittals of Shop Drawings, product data, samples, and materials:
- a. Submittal date,
  - b. Review period, based on fourteen (14) calendar day review period,
  - c. Fabrication duration,
  - d. Delivery dates.
13. Show the following events and milestones in addition to construction activities:
- a. Notice to Proceed,
  - b. Milestones,
  - c. Schedule of Submittals,
  - d. Operational Testing (including ait testing, chlorination, CCTV, etc.),
  - e. Owner Coordination,
  - f. Notification Periods,
  - g. Coordination with separate contracts/contractors,
  - h. Owner activities impacting the Work.
- C. The Project Progress Schedule update shall coincide with the end of the pay period. The update shall be used to create the monthly payment application request. No monthly payment request will be processed unless the Project Progress Schedule is updated and submitted to GCDWR and/or the Engineer.
- D. The Schedule of Values shall be of the following form:

1. Type schedule on eight and one-half –inch by eleven-inch (8½” x 11”) white paper,
  2. Contractor’s standard forms and automated printouts may be used,
  3. Identify Schedule of Values information with:
    - a. Title of Project
    - b. Project Location
    - c. Purchase Order Number
    - d. Name of Engineering Firm
    - e. Name and Address of Contractor
    - f. Bid Number (BL)
    - g. Date of Submission
- E. The Schedule of Values shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction. Breakdown shall be by utility, then by CSI Format, for ease of field verification.
- F. For Schedule of Values, follow the Bid Form as the format for listing component items. Identify each item with number and title of the respective major section of the Specifications.
- G. For each major line item, list sub values of major products or operations under this item.
- H. For the various portions of the Work:
1. Each item shall include a directly proportional amount of the Contractor’s overhead and profit.
  2. For items on which progress payments will be requested for stored materials, breakdown the value into:
    - a. The delivered and unloaded cost of the materials, with taxes paid. Owner shall require invoices for proof of purchase.
    - b. The total installed value, including Contractor’s overhead and profit, less value of stored material item a. above.

### 3.37 SHORING, FORMWORK, AND TEMPORARY STRUCTURES

- A. The Contractor shall take full responsibility including the hiring of practicing Professional Engineer licensed in the State of Georgia that may be needed for the adequacy and safety throughout erection, use and removal of all temporary Work such as shoring and supports during all phases of the Work, formwork, and supports for concrete, temporary protection, and structures of all kinds.

### 3.38 SITE VIDEO

- A. No sooner than one (1) week prior to commencing the Work and within 48 hours after completing the project once all materials and equipment have been removed, the

Contractor shall perform and supply GCDWR a thoroughly detailed videos of the worksite and its contiguous area. The video shall be of such quality as to view and establish existing conditions in detail and used to render a decision where no other documentation is available. If videos are not maintained by the Contractor, the Contractor shall be liable for any and all accused damages. Site videos made from a moving vehicle will not be accepted.

3.39 SOUND ATTENUATION

- A. The Contractor shall, during the course of the Work, comply with Gwinnett County Noise Ordinance unless GCDWR enforces a stricter standard.
- B. Work operations, machinery, equipment, and material handling shall be performed in such a manner as to avoid and eliminate unnecessary noise. Noise deemed unacceptable by the County shall be immediately terminated.

3.40 STORAGE

- A. Materials, equipment, tools, and machinery required for the Work shall be neatly and compactly piled in such a manner as to cause the least inconvenience to property owners and traffic. Storage shall be in areas approved by GCDWR. Fire hydrants, water and gas shut-off boxes, underground power and telephone line manholes shall, at all times, be kept free and unobstructed, and shall be left uncovered by such materials.
- B. Stringing of pipe may not be used to stockpile pipe. Stringing of pipe on GDOT rights-of-ways must be approved by GDOT. Stringing of pipe on County rights-of-ways must be approved by the County and may be limited to the amount of pipe which will be installed during a work day. Should stringing of pipe be permitted, no pipe may be stored nearer than 10-feet to the edge of pavement.
- C. All materials, equipment, tools, and machinery stored upon public thoroughfares must be provided with sufficient lights at night time to warn traffic of such obstructions.
- D. The Contractor shall be responsible for any loss of or damage to materials, equipment, tools, machinery, public rights-of-way, and/or private property. Storage of materials, equipment, tools, and machinery shall be at no cost to the County.

3.41 TEMPORARY HEAT

- A. The Contractor shall supply temporary heat for such period of time and at such temperature as needed for the proper protection and execution of the Work. No cost shall be paid for temporaryheat.

3.42 USE OF FACILITIES

- A. The County shall have the right or grant permits to connect any conduit, pipe line, or structure with the Work and its appurtenances at any time before the Work is accepted. The Contractor shall not interfere or be granted compensation for such Work.

3.43 USE OF STREETS

- A. Access: During the progress of the Work, the Contractor shall make ample provisions for both vehicular and foot traffic on public roadways except during periods of road

closures approved by the County, and shall indemnify and save harmless the County from any expense whatsoever due to the Work. The Contractor shall provide, but not limited to, free access to all driveways unless temporary closure is specified on the Contract Documents and/or drawings, fire hydrants, water, and gas valves located along the line of Work. Gutters and waterways must be kept open or other provisions made for the removal of stormwater.

Street intersections may not be blocked, except for one-half (1/2) the roadway at any given time, and the Contractor shall lay and maintain temporary driveways, bridges, and crossings, such as in the opinion of GCDWR are necessary to reasonably accommodate the public.

- B. Traffic Control: Adequate signs, barricades, and lights, in accordance with the standards of the GDOT and/or Gwinnett County DOT, necessary to protect the public shall be provided.

Flagmen to direct traffic shall be employed continuously during periods when only one-way traffic can be maintained or when equipment is operated back and forth across the pavement areas.

Roadway disturbances shall not be left unfilled overnight, except in emergencies, and in such cases adequate precautions shall be exercised to protect traffic.

- C. Procedural Rules: Work in roads shall be in accordance with the rules and regulations of the controlling agency.

In the event of the Contractor's failure to comply with these provisions, GCDWR may cause the same to be done, and shall deduct the cost of such Work from any monies due or to become due the Contractor under this agreement, but the performance of such Work by the County or at its instance, shall serve in no way to release the Contractor from his general or particular liability for the safety of the public or of the Work.

#### 3.44 UTILITY RELOCATIONS OR MODIFICATIONS

- A. Should, in the course of the Work, a need arise to relocate or modify a portion of the County's existing piping system, the Contractor shall immediately notify GCDWR for approval to proceed with such Work in accordance with the Contract Documents, or as directed by GCDWR. Removal of the existing piping system shall include, but not be limited to, the removal of its bulkheads, thrust restraints, piping appurtenances, concrete, and/or masonry that was exposed by excavation in part or whole, except for tie-rods beyond the limits of trenching. Without exception, any part of an existing restraint system relevant to the remaining existing piping system shall remain and be supplemented with additional restraint to maintain an unimpaired piping system. The cost for such Work shall be as stipulated by the Prices Bid, for the various items of the Work.

#### 3.45 WATER SUPPLY

- A. In the vicinity of the Work, at no cost to the Contractor, GCDWR shall make available all water required to execute the Work. The Contractor shall be responsible for the retrieval, transport, and delivery of such water with all means to protect and maintain the integrity of GCDWR water system at his/her cost in accordance with all applicable

rules and regulations. When water is required for the Work, the Contractor shall obtain a hydrant water meter from GCDWR Customer Service. The Contractor shall submit a monthly hydrant usage report, not later than the 2<sup>nd</sup> of each month including details of all water usage for tracking purposes.

3.46 WORK IN INCLEMENT WEATHER

- A. The Contractor shall take into account historical weather conditions and potential difficulties that may be encountered for completing the Work demonstrated in the work schedule and provide adequate protection against unfavorable weather to the satisfaction of GCDWR. Weather shall not be grounds for contract extension of available work days, unless such should be most abnormal and then only when reasonable effort was exercised. Use the form (“Weather Delay Monthly Report”) to track monthly weather delays, this form is provided in the Appendix A.

END OF SECTION 01 00 00

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	Work Covered by Contract Documents
1.3	Scheduling and Sequence of Work
1.4	Use of Premises
1.5	Communication

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Stormwater drainage system work to be performed under this Contract is as described in the Notice of Bid Advertisement and shall consist of furnishing all labor, materials, tools, equipment, and incidentals and performing all work required for rehabilitation of stormwater drainage systems in a complete and functioning manner including the following work:

1. Remove, replace, install, and/or rehabilitate stormwater drainage systems as indicated on the Contract Documents and/or Drawings. Provide and install all necessary pipes, pipe liners, structures, and appurtenances to maintain the proposed alignment, or as directed by GCDWR.
2. Cure pipe liners in compliance with the Contract Documents.
3. Provide the necessary bypass pumping or temporary diversion for execution of the Work, while allowing flow to continue through the stormwater system and around the work area.
4. Backfill, compact, and repave all pipe trench cuts within roadways in compliance with the Contract Documents.
5. Clear easements as necessary for removal, repair, rehabilitation, and/or installation of the stormwater drainage system and maintain erosion control measures throughout the duration of the project.
6. Restore all disturbed areas including roadways, driveways, parking areas, curbs, curb and gutter, sidewalks, yards, ornamental plantings, etc.
7. Maintain traffic control throughout the duration of construction.
8. Clean-up the project work area and return the area to its pre-construction conditions.

1.3 SCHEDULING AND SEQUENCE OF WORK

- A. Install and maintain erosion control measures as required by the Contract Documents and/or Drawings.
- B. Positive drainage for existing stormwater conveyance systems must remain in service throughout the duration of the Work. Provide bypass pumping or temporary

- diversion(s) as required.
  - C. Construct the Work as indicated on the Contract Documents and/or Drawings.
  - D. The Contractor shall prepare and submit a detailed plan for setup, operation, monitoring, and shutdown of the bypass system, as outlined in Section 33 01 30.74 Bypass Pumping.
  - E. Remove, replace, install, and/or rehabilitate stormwater drainage systems as indicated on the Contract Documents and/or Drawings.
  - F. Once the Contractor has successfully completed construction, the Work is in service, and all disturbed areas have been restored, then the erosion control measures may be removed.
- 1.4 USE OF PREMISES
- A. Confine operations at the site to areas permitted by law, ordinances, permits, and Contract Documents.
  - B. Do not unreasonably encumber premises with materials and equipment.
  - C. Maintain the premises in clean and safe conditions at all times.
  - D. Maintain access for emergency service personnel and school bus traffic at all times during construction.
  - E. If Contractor operations will block driveway access for residents, the Contractor shall notify the residents in advance to allow for removal of vehicles. The Contractor shall also maintain, on site, suitable steel plates for use in allowing vehicle access across open trenches and place plates as required allowing vehicular traffic to pass.
  - F. Provide access to GCDWR's authorized persons and the police, fire, or other departments having legal jurisdiction to the site at all times and provide cooperation in their work.
- 1.5 COMMUNICATION
- A. All communications shall be in writing. Use prescribed forms as required by GCDWR.
  - B. Designate in writing the individual who will be the Contractor's authorized representative.

END OF SECTION 01 11 00

## SECTION 01 22 15.11 MEASUREMENT AND PAYMENT

### PART 1 – GENERAL

#### 1.1 SUMMARY

- A. This section defines the Pay Items of Work listed on the Bid Form and how payment shall be determined. Payment shall be made for each Pay Item based on the description in this section.
- B. Bid Prices included on the Bid Form shall be full compensation for all materials, labor, equipment, tools, construction equipment and machinery, heat, utilities, mobilization, demobilization, transportation, taxes, overhead, markup, incidentals and services necessary for the execution and completion of the Work in the Contract Documents to be performed under this Contract. For the Work described, the allowance and unit price, actual used and installed quantities of each bid item shall be measured in the field and certified by the Engineer and/or GCDWR upon completion of construction in the manner set forth for each item in this and other sections of the Specifications. Payment for all items listed on the Bid Form will constitute full compensation for all Work shown and specified to be performed.
- C. The Contractor shall assist and fully cooperate with GCDWR to determine proper measurement and payment for each item providing complete and reasonable backup documentation as requested by GCDWR to substantiate payment due.
- D. Any item of work shown on the Contract Documents and/or Drawings or called for in the Specifications but not specifically enumerated for separate measurement and payment in the various project bid items shall be considered incidental to the project. All incidental work shall be included in the various contract bid items as determined by the Contractor.
- E. Any and all work required to complete the Work called for in the Contract Documents shall be included in the various Pay Item whether or not such work is specifically called for. The individual Pay Item descriptions are not exhaustive and do not detail each specific item need to complete the Work of that Pay Item. Any necessary labor, materials, equipment, tools, appurtenances or other items not mentioned but required to complete the Work shall be considered incidental to Contract, and as such, shall be included in the appropriate Pay Item prices.

#### 1.2 BID ITEMS

The following Bid Items 1 through 78, together with any supplemental and/or alternate Bid Items that may also be included, comprise the Bid Total as listed on the Bid Form

- A. ITEM 1, SPECIFICATION SECTION NO. 02 32 19, UNIT PRICE FOR EXPLORATORY EXCAVATIONS:  
MEASUREMENT: The number of units paid shall be measured by the actual number of hours worked as verified by the GCDWR Project Inspector. This item is to only be used when directed by the GCDWR and is not to be used by the Contractor as a method of payment for spotting utilities or locating valves required for the completion of the Work.  
PAYMENT: The Unit Prices Bid under this item shall include all necessary labor, equipment, and materials required to perform exploratory excavations. Any and all backfilling, site restoration, and clean up work shall be included in the unit price unless specifically noted to be included in the work of other items.
- B. ITEM 2, SPECIFICATION SECTION NO. 02 41 13.23, UNIT PRICE FOR REMOVAL OF EXISTING NON- DRAINAGE STRUCTURES:  
MEASUREMENT: The removal of existing non-drainage structures paid for under this item shall be the existing non-drainage structures as shown on the Contract documents and/or drawings or as



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authorized

by GCDWR not incidental to other work to be removed. There will be no additional payment for excavating and backfilling of existing non-drainage structures that are removed.

PAYMENT: The Unit Prices Bid for each existing non-drainage structure removed shall include all necessary tools, equipment, labor and materials to remove, load, handle, haul away, and dispose to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

- C. ITEM 3, SPECIFICATION SECTION NO. 02 41 13.23, UNIT PRICE FOR REMOVAL OF EXISTING DRAINAGE STRUCTURES:  
MEASUREMENT: The removal of existing drainage structures paid for under this item shall be the existing drainage structures as shown on the Contract documents and/or drawings or as authorized by GCDWR to be removed. There will be no additional payment for excavating and backfilling of existing drainage structures that are removed.  
PAYMENT: The Unit Prices Bid for each existing drainage structure removed shall include all necessary tools, equipment, labor and materials to remove, load, handle, haul away, and dispose to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- D. ITEM 4, SPECIFICATION SECTION NO. 02 41 13.23, UNIT PRICE FOR REMOVAL OF EXISTING PIPE SIZE 12" AND GREATER, ALL TYPES:  
MEASUREMENT: The removal of existing pipe, size 12" and greater all types paid for under this item shall be the actual linear feet of pipe, all types and sizes as shown on the Contract documents and/or drawings or as authorized by GCDWR to be removed. There will be no additional payment for excavating and backfilling of existing pipe, all types and sizes that are removed.  
PAYMENT: The Unit Prices Bid for each existing pipe, size 12" and greater all types removed shall include all necessary tools, equipment, labor and materials to remove, load, handle, haul away, and dispose to complete the Work as specified, as indicated on the Contract Documents and/or drawings, or as directed by GCDWR.
- E. ITEM 5, SPECIFICATION SECTION NO. 02 42 11, UNIT PRICE FOR DEBRIS REMOVAL:  
MEASUREMENT: Debris Removal paid for under this item shall be measured per load of debris removed as shown on the Contract documents and/or drawings or as authorized by GCDWR not incidental to other work to be removed. Each Load is defined as 15 CY of material.  
PAYMENT: The Unit Prices Bid per load for debris removal shall include removal, loading, haul away, and disposal of trash, debris, detritus, dumped waste materials, automobiles, and all other tools, equipment, labor, materials, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- F. ITEMS 6-7, SPECIFICATION SECTION NO. 03 33 00, UNIT PRICE FOR CONCRETE STRUCTURES, CLASS A, CAST-IN-PLACE, INCLUDING/WITHOUT REINFORCING STEEL:  
MEASUREMENT: Concrete structures, Class A, cast-in-place shall be measured and paid for per cubic yard of concrete installed, complete-in-place.  
1. Structures with and without steel reinforcing shall be measured and paid for under the appropriate bid item as noted on the Bid Form.  
PAYMENT: The Unit Price Bid for Concrete structures, Class A, cast-in-place shall include excavation, backfill, concrete, reinforcing steel as applicable, materials testing, and all other labor, materials, equipment and other incidentals required to complete the Work as specified, as indicated on the

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Contract documents and/or drawings, or as directed by GCDWR.

G. ITEM 8, SPECIFICATION SECTION NO. 04 21 13, UNIT PRICE FOR BRICK MASONRY: \_

MEASUREMENT: Brick Masonry shall be measured and paid for per cubic yard of brick masonry structure installed, complete in place.

PAYMENT: The Unit Price Bid for Brick Masonry shall include excavation, bedding, and backfill not included in other items, brick masonry, reinforcing as applicable, materials testing, and all other labor, materials, equipment and other incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

H. ITEM 9, SPECIFICATION SECTION NO. 04 43 13, UNIT PRICE FOR RUBBLE MASONRY: \_

MEASUREMENT: Rubble Masonry shall be measured and paid for per cubic yard of brick masonry structure installed, complete in place.

PAYMENT: The Unit Price Bid for Rubble Masonry shall include excavation, bedding, and backfill not included in other items, rubble masonry, reinforcing as applicable, materials testing, and all other labor, materials, equipment and other incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

I. ITEM 10, SPECIFICATION SECTION NO. 31 11 00, UNIT PRICE FOR CLEARING AND GRUBBING:

MEASUREMENT: Clearing and Grubbing shall be measured and paid for per square yard of area cleared and/or grubbed as measured in the horizontal plane.

PAYMENT: The Unit Price Bid for Clearing and Grubbing shall include clearing the work area of trees, stumps, shrubs, undergrowth, grubbing the work area, removal and disposal of all cleared materials from the site, and all other labor, materials, equipment, and other incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

J. ITEMS 11-13, SPECIFICATION SECTION NO. 31 11 00, UNIT PRICE FOR TREE REMOVAL INCLUDING STUMP:

MEASUREMENT: Tree removal including stumps shall be measured per the number of trees actually removed per each size classification as shown on the Contract documents and/or drawings or as authorized by GCDWR to be removed.

PAYMENT: The Unit Price Bid per each for each tree removed shall include clearing the work are of trees per each size classification caliper as measured at the standard breast height, stumps, shrubs, undergrowth, grubbing the work area, removal and disposal of all cleared materials from the sire, and all other labor, materials, equipment, and other incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

K. ITEM 14, SPECIFICATION SECTION NO. 31 23 00, UNIT PRICE FOR ADDITIONAL EXCAVATION COST WHERE DEPTH OF COVER TO TOP OF PIPE (>10.0'):

MEASUREMENT: Additional Excavation Cost Where Depth of Cover to the Top of the Pipe exceeds the value as specified per Bid Item and shall be measured per linear foot as measured along the centerline of the pipe.

PAYMENT: The Unit Price Bid for this item shall include excavating, handling, rehandling, backfilling, compacting, hauling, disposal of materials, and all other labor, materials, equipment, and incidentals at the specified extra depth of cover as measured to the top of the pipe, including all shoring and protective measures required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR. Extra depth must be approved if not indicated on the plan as being required.

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- L. ITEMS 15-17, SPECIFICATION SECTION NO. 31 23 00, UNIT PRICE FOR CHANNEL/ ADDITIONAL/BORROW EXCAVATION:

MEASUREMENT: Channel/Additional/Borrow Excavation shall be measured and paid for per cubic yard

to the limits established in writing by GCDWR upon directing such work.

PAYMENT: The Unit Price Bid shall include excavation, backfill with approved materials, hauling, handling, placement, and compaction, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

M. ITEM 18, SPECIFICATION SECTION NO. 31 23 00, UNIT PRICE FOR SPOIL REMOVAL:

MEASUREMENT: Spoil Removal shall be measured and paid for per cubic yard of material removed from the site and hauled to a non-GCDWR owned site as shown on the Contract documents and/or drawings, or as authorized by GCDWR.

PAYMENT: The Unit Price Bid per cubic yard shall include handling, rehandling, hauling, disposal, disposal fees, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

N. ITEM 19, SPECIFICATION SECTION NO. 31 23 00, UNIT PRICE FOR ROCK EXCAVATION:

MEASUREMENT: Rock Excavation shall be measured and paid for per cubic yard of rock material removed from the site and hauled to a non-GCDWR owned site as shown on the Contract documents and/or drawings, or as authorized by GCDWR.

PAYMENT: The Unit Price Bid per cubic yard shall include excavation, blasting, hoe ramming, ripping, and all other manner of rock excavation methods, backfill not included in other items, handling, hauling, disposal, disposal fees, monitoring, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

O. ITEM 20, SPECIFICATION SECTION NO. 31 23 00, UNIT PRICE FOR CLASSIFIED STONE:

MEASUREMENT: Classified Stone shall be measured and paid for per the actual number of tons of material placed as shown on the Contract documents and/or drawings or as authorized by GCDWR. PAYMENT: The Unit Price Bid per ton of Classified Stone include hauling, handling, placement, compaction, any additional permit fees, maintenance charges and inspection fees required by all road departments and the furnishing of all materials, labor, tools, and appliances necessary to complete the Work as specified, as indicated in the Contract documents and/or drawings, or as directed by GCDWR. Payment will not be made when Classified Stone is used by the Contractor for the Contractor's convenience or when used by the Contractor to simplify compaction.

P. ITEM 21, SPECIFICATION SECTION NO. 31 23 23.23, UNIT PRICE FOR FLOWABLE FILL:

MEASUREMENT: Flowable fill shall be measured and paid for per cubic yard of material placed as shown on the Contract documents and/or drawings or as authorized by GCDWR.

PAYMENT: The Unit Price Bid per cubic yard shall include flowable fill, bulkheads, vent piping, injection piping, reporting, monitoring, handling, rehandling, hauling, waste removal, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated in the Contract documents and/or drawings, or as directed by GCDWR.

Q. ITEM 22, SPECIFICATION SECTION NO. 31 25 00, UNIT PRICE FOR MULCH COMPLETE:

MEASUREMENT: Mulch shall be measured per square yard installed at the coverage rate specified, complete in place, as shown on the Contract documents and/or drawing or as

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authorized by GCDWR. PAYMENT: The Unit Price Bid per square yard shall include all labor, equipment, and materials necessary for furnishing, placing, maintenance, removal, inspection, monitoring, and reporting on the erosion and sedimentation controls required to complete the Work as specified, indicated on the Contract documents and/or drawings, or as directed by GCDWR. No additional payment shall be made for re- application or maintenance of mulch.

- R. ITEM 23, SPECIFICATION SECTION NO. 31 25 00, UNIT PRICE FOR PINE STRAW COMPLETE:  
MEASUREMENT: Pine straw shall be measured per each bale used.  
PAYMENT: The Unit Price Bid shall include all labor, equipment, and materials necessary for furnishing, placing, maintenance, removal, inspection, monitoring, and reporting on the erosion and sedimentation controls. No additional payment shall be made for re-application or maintenance of pine straw.
- S. ITEM 24, SPECIFICATION SECTION NO. 31 25 00, UNIT PRICE FOR SILT FENCE TYPE C, COMPLETE:  
MEASUREMENT: Silt Fence Type C shall be measured per linear foot of each type installed, complete in place, as shown on the Contract documents and/or drawings or as authorized by GCDWR.  
PAYMENT: The Unit Price Bid per linear foot shall include all labor, equipment, and materials necessary for furnishing, placing, maintenance, removal, inspection, monitoring, and reporting on the erosion and sedimentation controls required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR. No additional payment shall be made for maintenance or replacement of Silt Fence Type C.
- T. ITEM 25, SPECIFICATION SECTION NO. 31 25 00, UNIT PRICE FOR HAY BALES:  
MEASUREMENT: Hay bales shall be measured per each installed, complete in place  
PAYMENT: The Unit Price Bid shall include all labor, equipment, and materials necessary for furnishing, placing, maintenance, removal, inspection, monitoring, and reporting on the erosion and sedimentation controls. No additional payment shall be made for maintenance or replacement of hay bales.
- U. ITEM 26, SPECIFICATION SECTION NO. 31 25 00, UNIT PRICE FOR PERMANENT SOIL REINFORCING MAT INSTALLED (GADOT SECTION 710):  
MEASUREMENT: Permanent soil reinforcing mat shall be measured per square yard, complete in place. PAYMENT: The Unit Price Bid shall include all labor, equipment, and materials necessary for furnishing, placing, maintenance, removal, inspection, monitoring, and reporting on the erosion and sedimentation controls. No additional payment shall be made for maintenance or replacement of permanent soil reinforcing mat.
- V. ITEM 27, SPECIFICATION SECTION NO. 31 32 23, UNIT PRICE FOR PRESSURE GROUTING SOIL STABILIZATION:  
MEASUREMENT: Pressure grouting soil stabilization shall be measured and paid for per cubic yard of material placed as directed by GCDWR.  
PAYMENT: The Unit Price Bid shall include furnishing and placing pressure grouting soil stabilization and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- W. ITEM 28, SPECIFICATION SECTION NO. 31 37 00, UNIT PRICE FOR PLASTIC FILTER FABRIC:  
MEASUREMENT: Plastic filter fabric shall be measured per square yard installed as shown on the Contract documents and/or drawings or as authorized by GCDWR. PAYMENT: The Unit Price Bid per square yard shall include all labor, equipment, and materials necessary for furnishing, placing, maintenance, removal, inspection, monitoring, and reporting on the erosion and sedimentation controls required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR. No additional payment shall be made for or



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maintenance or replacement of plastic filter fabric.

- X. ITEMS 29-30, SPECIFICATION SECTION NO. 31 37 00, UNIT PRICE FOR STONE RIP RAP TYPE I/III COMPLETE IN PLACE:

MEASUREMENT: Stone Rip Rap shall be measured and paid for per ton of material placed to the limits as

ordered in writing or as otherwise directed by GCDWR.

PAYMENT: The Unit Price Bid shall include excavation and preparation of ground surface to the correct lines and grades, furnishing and placing rip rap to the specified depth and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

- Y. ITEM 31, SPECIFICATION SECTION NO. 32 12 16, UNIT PRICE FOR ASPHALT PAVING RESURFACING:  
MEASUREMENT: The quantity to be paid for under this item shall be the actual number of tons of roadway or parking area pavement restored as shown on the Contract documents and/or drawings or as directed by GCDWR.  
PAYMENT: The Unit Price Bid per ton for roadway pavements and parking areas shall include permit fees, maintenance charges and inspection fees required by all road departments and the furnishing of all materials, including tack coat, labor, tools, and appliances necessary to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR. Included shall be the costs of additional excavation beyond trench width to provide firm foundation, milling and any costs of furnishing necessary work beyond the limits of measurement as defined under these specifications.
- Z. ITEM 32, SPECIFICATION SECTION NO. 32 16 13, UNIT PRICE FOR CONCRETE SIDEWALK, 4-IN THICK:  
MEASUREMENT: The quantity to be paid for under this item shall be the actual number of square yards of sidewalk restored as shown in the Contract documents and/or drawings or as authorized by GCDWR. PAYMENT: The Unit Price Bid per square yard of sidewalk shall include any additional permit fees, maintenance charges and inspection fees required by all road departments and the furnishing of all materials, labor, tools, and appliances necessary to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR. Included shall be the costs of additional excavation beyond trench width to provide firm foundation and any costs of furnishing necessary work beyond the limits of measurement as defined under these specifications. Removal, handling, hauling, and disposal of existing sidewalk material will be considered incidental to this Pay Item and no additional compensation will be made.
- AA. ITEMS 33-34, SPECIFICATION SECTION NO. 32 16 13, UNIT PRICE FOR CURB AND GUTTER, HIGH BACK OR ROLL BACK  
MEASUREMENT: The quantity to be paid for under these items shall be the actual number of lineal feet of curb and combination curb and gutter restored in accordance with these specifications as shown on the Contract documents and/or drawing or as authorized by GCDWR.  
PAYMENT: The Unit Price Bid per linear foot for curbs/curbs and gutter shall include permit fees, maintenance charges and inspection fees required by all road departments and the furnishing of all materials, labor, tools, and appliances necessary to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR. Included shall be the costs of additional excavation beyond trench width to provide firm foundation and any costs of furnishing necessary work beyond the limits of measurement as defined under these specifications. Removal, handling, hauling, and disposal of existing curb and gutter material will be considered incidental to this bid item and no additional compensation will be made.
- BB. ITEMS 35-36, SPECIFICATION SECTION 32 31 13, UNIT PRICE FOR FENCING, REMOVAL AND REPLACEMENT OR TEMPORARY

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MEASUREMENT: Fencing shall be measured and paid for per linear foot of fence to the limits established in writing or as otherwise directed by GCDWR.

PAYMENT: The Unit Price Bid shall include furnishing and installing poles, fence fabric, cross beams, gates, slates, maintenance during construction, disposal of fencing removed, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the

Contract documents and/or drawings, or as directed by GCDWR. Removal, handling, hauling, and disposal of existing fences will be considered incidental to this bid item and no additional compensation will be made.

- CC. ITEM 37, SPECIFICATION SECTION NO. 32 31 13, UNIT PRICE FOR ORANGE BARRIER FENCE:  
MEASUREMENT: Orange barrier fence shall be measured per linear foot installed, complete in place. PAYMENT: The Unit Price Bid shall include all labor, equipment, and materials necessary for furnishing, placing, maintenance, removal, inspection, monitoring, and reporting on the erosion and sedimentation controls. No additional payment shall be made for maintenance or replacement of Orange Barrier Fence.
- DD. ITEM 38, SPECIFICATION SECTION 32 32 39, UNIT PRICE FOR TIMBER STRUCTURES  
MEASUREMENT: Timber Structures shall be measured and paid for per square foot of face of structure to the limits established in writing or as otherwise directed by GCDWR.  
PAYMENT: The Unit Price Bid shall include timber, spikes, deadmen anchors, excavation, bedding, backfill, compaction, maintenance during construction, any woodworking or cutting and shaping, and all other labor, materials, equipment and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- EE. ITEMS 39-41, SPECIFICATION SECTION 32 92 00, UNIT PRICE FOR SEEDING, PERMANENT AND TEMPORARY, SODDING  
MEASUREMENT: The quantity to be paid for under this item shall be the number of square yards of seeding, permanent and temporary, permanent matting, and sod removal\replacement as shown on the Contract documents and/or drawings or as authorized by GCDWR.  
PAYMENT: The Unit Prices Bid per square yard includes the furnishing of all labor, materials, sanding, topsoil, watering, fertilizing, maintenance, appliances, inspection, monitoring, and reporting on the erosion and sediment controls necessary to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR .
- FF. ITEM 42, SPECIFICATION SECTION 32 92 00, UNIT PRICE FOR TOPSOIL  
MEASUREMENT: The quantity to be paid for under this item shall be the number of cubic yards of topsoil placed as directed GCDWR.  
PAYMENT: The Unit Price Bid per cubic yard includes the furnishing of all labor, materials and appliances necessary to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR. Topsoil removed from the immediate site and reused will not be considered for payment.
- GG. ITEMS 43-50, SPECIFICATION SECTION 32 92 43, UNIT PRICE FOR TREE, SHRUB, AND FLOWER REPLACEMENTS  
MEASUREMENT: The quantity to be paid under this item shall be the number of trees per size classification, shrubs per size classification, and bedding flowers (per flat of 18 flower plants) actually planted by type as shown on the Contract documents and/or drawings or as authorized by GCDWR. PAYMENT: The Unit Price Bid for each type planted includes the furnishing of all labor, materials, tools, and equipment necessary to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- HH. ITEM 51, SPECIFICATION SECTION 33 01 30.16, UNIT PRICE FOR STORM LINE TV INSPECTION  
MEASUREMENT: Storm Line TV Inspection shall be measured by linear foot of pipe line from

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center of the upstream manhole/structure to center of the downstream manhole/structure.

1. No separate payment will be made for television inspection when that inspection is associated with

the installation of rehabilitation systems; the work and materials being considered as incidental to and part of the rehabilitation system. Contractor will be required to submit both a Pre-Lining and Post-Lining inspection, and these inspections must comply with the same technical standards and specifications as all CCTV Condition Assessment surveys as outlined in Section 33 01 30.16.

PAYMENT: The Unit Price Bid shall be full compensation for furnishing all labor, tools, NASSCO PACP/MACP training, preparing and furnishing condition assessment reports meeting NASSCO standards, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

- I. ITEMS 52-96, SPECIFICATION SECTION 33 01 30.51, UNIT PRICE FOR STORM LINE CLEANING, LIGHT, HEAVY, AND SPECIALTY \_
- MEASUREMENT: Storm Line Cleaning shall be measured by linear foot of pipe from center of the upstream manhole/structure to center of the downstream manhole/structure or to face of headwall.
1. Cleaning shall be defined as the removal of all foreign materials, debris, rocks, roots, silt, and sediment from the storm system to 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 pipes during television inspection, or as required pre- cleaning for other specified rehabilitation.
  2. No separate payment will be made for cleaning when that cleaning is associated with the installation of the rehabilitation system, the work and materials being considered as incidental to and part of the rehabilitation system unit bid prices.
  3. Items 53 through 73, Storm System Cleaning, Light shall be defined as the removal of foreign materials as defined above when the existing materials to be removed make up less than 25% of the pipe cross section. Rocks should average less than 3" in diameter.
  4. Bid Items 74 through 94, Storm System Cleaning, Heavy shall be defined as the removal of foreign materials as defined above when the existing materials to be removed make up more than 25% of the pipe cross section. Rocks should average more than 3" in diameter. This level of cleaning requires prior notice to GCDWR and prior approval from GCDWR.
  5. Bid Items 95 through 97, Storm System Cleaning, Specialty shall be defined as cleaning of a pipe that has heavy accumulation of roots, large diameter rocks, concrete and/or debris and requires the use of bucketing, jacking, man-entry and/or rodding methodologies to clean. Specialty Cleaning is paid by the linear foot for the actual length of the pipe cleaned using methods defined as specialty. This level of cleaning requires prior notice to GCDWR and prior approval from GCDWR.
- PAYMENT: Payment will be full compensation for furnishing all labor, materials, tools, equipment, disposal of removed materials, and other incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- JJ. ITEMS 97-101, SPECIFICATION SECTION 33 01 30.71, UNIT PRICE FOR INVERT INSTALLATION, VARIOUS DIAMETERS:
- MEASUREMENT: Invert Installation, various diameters shall be measured and paid for per each structure invert installed, reconstructed, or rehabilitated.
- PAYMENT: The Unit Price Bid shall include cleaning, patching, flow control, plugging/blocking, mortar and/or concrete, and all other labor, materials, equipment, and other incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- KK. ITEM 102, SPECIFICATION SECTION 33 01 30.71, UNIT PRICE FOR INVERT INSTALLATIONS, OTHER CONFIGURATIONS:

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MEASUREMENT: Invert Installation, various diameters shall be measured and paid for per square foot of structure invert installed, reconstructed, or rehabilitated to the limits established in writing or as otherwise directed by GCDWR.

PAYMENT: The Unit Price Bid shall include cleaning, patching, flow control, plugging/blocking, mortar and/or concrete, and all other labor, materials, equipment, and other incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

- LL. ITEM 103, SPECIFICATION SECTION 33 01 30.71, UNIT PRICE FOR DRAINAGE STRUCTURE REHABILITATION  
MEASUREMENT: Drainage Structure Rehabilitation shall be measured and paid for per square foot of structure rehabilitated to the limits established in writing or as otherwise directed by GCDWR. PAYMENT: The Unit Price Bid shall include cleaning, patching, flow control, plugging/blocking, mortar and/or concrete, and all other labor, materials, equipment, and other incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- MM. ITEM 104, SPECIFICATION SECTION 33 01 30.71, UNIT PRICE FOR MORTAR GROUT CRACK/JOINT  
MEASUREMENT: Mortar Grout Crack/Joint Rehabilitation shall be measured and paid for per linear foot of structure joints and/or cracks sealed to the limits established in writing or as otherwise directed by GCDWR.  
PAYMENT: The Unit Price Bid shall include cleaning, patching, flow control, plugging/blocking, mortar and/or concrete, and all other labor, materials, equipment, and other incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- NN. ITEM 105, SPECIFICATION SECTION 33 01 30.72, UNIT PRICE FOR INTERNAL PIPE JOINT REPAIRS  
MEASUREMENT: Internal Pipe Joint Repairs shall be measured and paid for per linear foot of repair made.  
1 Internal Point Repairs are defined as repairs made from the interior of the storm system pipe to facilitate the rehabilitation process. Internal Point repairs require man-entry to perform, and with the inherent dangers associated with man-entry activities, will be limited to a last resort to affect the needed repairs to the pipe.  
PAYMENT: The Unit Price Bid shall include cutting obstructive materials out of the pipe, trimming away protrusions, jacking the deflected pipe back into shape, man entry and associated safe precautions, any other activity that prepares the existing pipe to receive a subsequent rehabilitation process, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- OO. ITEMS 106-107, SPECIFICATION SECTION 33 01 30.72, UNIT PRICE FOR SERVICE LATERAL REINSTATEMENT, REMOTE OR MAN ENTRY  
MEASUREMENT: Service Lateral Reinstatements shall be paid for each as directed by GCDWR.  
PAYMENT: The Unit Price Bid shall include furnishing all materials, labor, tools, testing, field measurements, and equipment necessary to perform all work, including sealing of interface between main pipe and remote connection.
- PP. ITEM 108, SPECIFICATION SECTION 33 01 30.74, UNIT PRICE FOR BYPASS PUMPING SETUP – EQUIPMENT AND HOSE PLACEMENT  
MEASUREMENT: Bypass Pumping Setup – Equipment and Hose Placement shall be measured and paid for per each bypass pumping setup as directed by GCDWR. PAYMENT: The Unit Price Bid shall include transporting bypass pumping equipment and hoses to and from the site, equipment and



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hose setup and layout, discharge piping, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

- QQ. ITEMS 109-113, SPECIFICATION SECTION 33 01 30.74, UNIT PRICE FOR BYPASS PUMPING – PUMPING OPERATION TIME, VARIOUS SIZES  
MEASUREMENT: Bypass Pumping – Pump Operation Time shall be measured and paid for per hour of operational time per pump size for the duration as approved by GCDWR.
1. No separate payment will be made for the stormwater flow control method of plugging/blocking. The work and materials being considered as incidental to and part of other unit bid prices.
  2. No separate measurement or payment will be made for Contractor personnel that maybe required to monitor pump stations, and/or overflow points upstream of any plugging/blocking and/or bypass/diversion pumping; the work, materials and personnel being considered as incidental to plugging/blocking operations and bypass/diversion pumping unit prices.
- PAYMENT: The Unit Price Bid shall include maintenance, fuels, monitoring, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- RR. ITEMS 114-220, SPECIFICATION SECTION 33 41 13, UNIT PRICE FOR REPLACEMENT PIPE, VARIOUS SIZES AND MATERIALS  
MEASUREMENT: Replacement Pipe shall be measured and paid for per linear foot actually installed based on the pipe material and diameter for each detail classification, measured in the horizontal plane after the pipe has been connected. Measurements shall be from center/face of structure to center/face of structure.  
PAYMENT: The Unit Price Bid per linear foot for the various sizes and materials of replacement pipe shall include excavation, shoring, dewatering, bedding material, backfill, compaction, furnishing and placing of pipe, jointing materials, mastic fillers, stoppers, concrete work, testing and inspections and the furnishing of all labor, materials, tools, and appliances necessary to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- SS. ITEMS 221-222, SPECIFICATION SECTION 33 49 13, UNIT PRICE FOR COMPLETE CATCH BASIN, GROUP 1 OR 2 (GDOT 1033/1034)  
MEASUREMENT: The quantity to be paid for under this item shall be the actual number of vertical linear foot installed as measured from the top elevation to the catch basin invert, Group 1 or 2, complete in place, as shown on the Contract documents and/or drawings or as authorized by GCDWR.  
PAYMENT: The Unit Price Bid shall include excavation, backfill, bedding, frames and covers, precast concrete catch basins bases, inverts, wall sections, top slabs, grout, flexible sealers, and all other labor, materials, equipment, and incidentals required to complete the Work as specified including reconstruction of existing catch basins, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- TT. ITEM 223, SPECIFICATION SECTION 33 49 13, UNIT PRICE FOR REPLACEMENT TOP FOR 1033/1034 CATCH BASIN, COMPLETE  
MEASUREMENT: Replacement Tops for 1033/1034 Catch Basins shall be measured and paid for per each installed per each catch basin type, complete in place.  
PAYMENT: The Unit Price Bid shall include excavation, backfill, bedding, frames and covers, precast concrete top slabs, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

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UU. ITEMS 224-225, SPECIFICATION SECTION 33 49 13, UNIT PRICE FOR REPLACE CATCH BASIN THROAT,  
SINGLE OR DOUBLE WING

MEASUREMENT: Replacement catch basin throats shall be measured and paid for per each installed,  
per

each type single or double wing.

PAYMENT: The Unit Price Bid shall include excavation, backfill, bedding, concrete work, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

VV. ITEMS 226-227, SPECIFICATION SECTION 33 49 13, UNIT PRICE FOR COMPLETE MANHOLE, TYPE 1 OR 2 (GDOT 1011A)

MEASUREMENT: The quantity to be paid for under this item shall be the actual number of vertical linear foot installed as measured from top elevation to the manhole invert, Type 1 or 2, complete in place, as shown on the Contract documents and/or drawings or as authorized by GCDWR.

PAYMENT: The Unit Price Bid per vertical linear foot shall include excavation, backfill, bedding, frames and covers, precast drop inlet bases, inverts, wall sections, top slabs, grout, flexible sealers, and all other labor, materials, equipment, and incidentals required to complete the Work as specified including reconstruction of existing manholes, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

WW. ITEMS 228, SPECIFICATION SECTION 33 49 13, UNIT PRICE FOR INSTALL MANHOLE COVERS COMPLETE  
MEASUREMENT: Manhole covers shall be measured and paid for per each installed, complete in place.

1. Payment for manhole covers under this item shall be limited to replacement of frames and covers on existing structures only. Frames and covers on new structures shall be included in the cost of the new structure and shall not be measured or paid for separately.

PAYMENT: The Unit Price Bid shall include furnishing and installing manhole covers, frames, brick work or riser rings required to adjust the rim elevation, grouting, excavation and backfill, concrete, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

XX. ITEMS 229-230, SPECIFICATION SECTION 33 49 13, UNIT PRICE FOR COMPLETE DROP INLET, GROUP 1 OR 2 (GDOT 1019A/9031S, GC P&D 609/610)

MEASUREMENT: The quantity to be paid for under this item shall be the actual number of vertical linear foot installed as measure from the top elevation to the drop inlet invert, Group 1 or 2, complete in place, as shown in the Contract documents and/or drawings or as authorized by GCDWR.

PAYMENT: The Unit Price Bid per vertical linear foot shall include excavation, backfill, bedding, frames and covers, precast drop inlet bases, inverts, wall sections, top slabs, grout, flexible sealers, and all other labor, materials, equipment, and incidentals required to complete the Work as specified including reconstruction of exiting drop inlets, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

YY. ITEMS 231-234, SPECIFICATION SECTION 33 49 13, UNIT PRICE FOR REPLACEMENT TOP FOR DROP INLET, VARIOUS TYPES

MEASUREMENT: Replacement Tops for Drop Inlets (GC P&D Type 609/610 and GDOT Type 1019A/9031S) shall be measured and paid for per each installed per each drop inlet type, complete in place.

PAYMENT: The Unit Price Bid shall include excavation, backfill, bedding, frames and castings, precast concrete top slabs, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as

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directed by GCDWR.

- ZZ. ITEM 235, SPECIFICATION SECTION 33 49 13, UNIT PRICE FOR TIE INTO EXISTING STRUCTURES  
MEASUREMENT: Ties into Existing Structures shall be measured and paid for per each tie-in installed.

Tie-in's of all sizes and configurations shall be paid for at the same price.

PAYMENT: The Unit Price Bid includes excavation, bedding and backfill not included in other Bid Items, coring, drilling, jack hammering, grouting, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

AAA. ITEM 236, SPECIFICATION SECTION 33 49 13, UNIT PRICE FOR ADJUST MANHOLE, CATCH BASIN, AND DROP INLET TO GRADE

MEASUREMENT: The quantity to be paid for under this item shall be the actual number of vertical linear feet installed as measured from top elevation of the existing top slab to the adjusted top elevation of the frame and cover as shown on the drawings or as authorized by GCDWR. Measurement shall be to the nearest one-tenth (0.1) foot.

PAYMENT: The Unit Price Bid per vertical linear foot shall include excavation, backfill, compaction, manhole risers, brick, top slab, grout, flexible sealers, frame and cover, and the furnishing of all labor, materials, tools, and appliances necessary for the proper completion of the Work as specified, as indicated on the drawings, or as directed by GCDWR.

BBB. ITEMS 237-254, SPECIFICATION SECTION 33 49 13, UNIT PRICE FOR HEADWALL, VARIOUS PIPE SIZES

MEASUREMENT: Headwalls shall be measured and paid for per each installed per pipe size.

1. Only pre-cast concrete headwalls shall be paid for under this Bid Item.
2. Cast-in-place concrete, brick masonry, and rubble masonry headwalls shall be measured and paid for under the respective Bid Items for such work.

PAYMENT: The Unit Price Bid shall include excavation, bedding, backfill, installation of the headwall, grouting, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

CCC. ITEMS 255-268, SPECIFICATION SECTION 33 41 13, UNIT PRICE FOR SAFETY FLARED END SECTION, VARIOUS SIZES AND MATERIALS

MEASUREMENT: Safety Flared End Sections shall be measured and paid for per each installed based on the size and type installed.

PAYMENT: The Unit Price Bid shall include excavation, bedding, backfill, furnishing and placing of the safety flared end section, jointing materials, concrete work, grouting, testing, inspections, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

DDD. ITEM 269, SPECIFICATION SECTION 34 41 16.10, UNIT PRICE FOR MAJOR TRAFFIC CONTROL

MEASUREMENT: Traffic Control shall be measured and paid for per each project work order issued to the Contractor on a lump sum basis as Major Traffic Control as defined in Specification Section 34 41 16.10 "Traffic Control".

PAYMENT: The Unit Price Bid shall include furnishing and maintaining traffic control measures to include, but are not limited to, temporary barricades, temporary barriers, warning signals, pilot vehicles, crash trucks, barrels, cones, steel plates, lights, flagmen, watchmen, temporary signs, message boards, maintenance, obtaining traffic permits, off-duty police officers, and all other labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

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EEE. ITEMS 271-274, SPECIFICATION SECTION 34 71 10, UNIT PRICE FOR STREET CUT, DETAILS A-D  
MEASUREMENT: The quantities to be paid for under the appropriate items shall be measured per square

yard of street cut surface area per type as shown on the Contract documents and/or drawings or as authorized by GCDWR. Any damage or replacement beyond the specified limits of these items shall be the responsibility of the Contractor and shall not be measured for payment.

PAYMENT: The Unit Price Bid per square yard for Street Cuts shall include saw cuts, sub-base, graded aggregate base course, asphalt concrete binder course, asphalt surface course pavements, concrete, prime and tack coats, compaction, permit fees, maintenance charges and inspection fees required by all road departments and the furnishing of all materials, labor, tools, and appliances necessary to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR. Included shall be the costs of additional excavation beyond trench width to provide firm foundation, and any costs of furnishing necessary work beyond the limits of measurement as defined under these specifications. Removal, handling, hauling, and disposal of existing roadway material will be considered incidental to this Pay Item and no additional compensation will be made. No additional payment will be made for temporary pavement, and the cost thereof shall be considered as being incidental to the Work of this Contract. No additional payment will be made for resetting highway signs, and the cost thereof shall be considered as being incidental to the Work of this Contract.

FFF. ITEMS 275-276, SPECIFICATION SECTION 34 71 10, UNIT PRICE FOR DRIVEWAY RESTORATION, VARIOUS THICKNESSES

MEASUREMENT: The quantity to be paid for under these items shall be the actual number of square yards of driveway or parking area pavement, by thickness and type, restored as shown on the Contract documents and/or drawings or as authorized by GCDWR.

PAYMENT: The Unit Price Bid per square yard for driveways and parking areas shall include permit fees, maintenance charges and inspection fees required by all road departments and the furnishing of all materials, labor, tools, and appliances necessary to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR. Included shall be the costs of additional excavation beyond trench width to provide firm foundation, crusher run backfill, and any costs of furnishing necessary work beyond the limits of measurement as defined under these specifications. Removal, handling, hauling, and disposal of existing driveway material will be considered incidental to this bid item and no additional compensation will be made.

GGG. ITEM 277, SPECIFICATION SECTION 01 22 15.11, UNIT PRICE FOR FOREMAN

MEASUREMENT: The number of units paid shall be measured by the actual number of hours worked as verified by the GCDWR Project Inspector. This item is to only be used to limits established in writing by GCDWR upon directing such work and is not to be used by the Contractor as a method of payment for any work that is part of the work of another item. The Contractor shall provide payroll records and description of work accomplished for all labor hours paid for under this item.

PAYMENT: The Unit Price Bid shall include all necessary labor, materials, equipment, tools, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

HHH. ITEM 278, SPECIFICATION SECTION 01 22 15.11, UNIT PRICE FOR LABORER

MEASUREMENT: The number of units paid shall be measured by the actual number of hours worked as verified by the GCDWR Project Inspector. This item is to only be used to limits established in writing by GCDWR upon directing such work and is not to be used by the Contractor as a method of payment for any work that is part of the work of another item. The Contractor shall



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provide payroll records and description of work accomplished for all labor hours paid for under this item.

PAYMENT: The Unit Price Bid shall include all necessary labor, materials, equipment, tools, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

- II. ITEM 279, SPECIFICATION SECTION 01 22 15.11, APPROVED FORCE ACCOUNT WORK  
MEASUREMENT: Approved Force Account Units shall be measured and paid for based on the number of force account units where each unit shall equal \$1.00. GCDWR and the Contractor shall negotiate the value of force account work to include certified payroll, equipment fees, subcontractor costs, and/or material costs with a maximum allowable profit of ten (10) percent, and the Contractor shall be paid for the quantity of units required to pay for the Work.  
PAYMENT: The Unit Price Bid shall include all labor, materials, equipment, and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- JJJ. ITEMS 280-300, 322-342, 364-371, 380-387, 396-404, SPECIFICATION SECTION 33 01 30.72, UNIT PRICE FOR CURED IN PLACE PIPE LINER, VARIOUS SIZES, THICKNESSES, AND TYPES  
MEASUREMENT: Cured In Place Pipe (CIPP) Liner per size and type shall be measured by linear foot of main line from center/face of structure to center/face of structure. CIPP wall thicknesses shown in the bid schedule are minimum finished thickness, subject to verification through testing.
1. No separate payment will be made for pre installation and post installation television inspection when that inspection is associated with the installation of a rehabilitation system; the work and materials being considered as incidental to and part of the rehabilitation system unit bid prices.
  2. No separate payment will be made for the installation of thermal barriers or other devices to protect water services or other utilities when that activity is associated with the installation of a rehabilitation system; the work and materials being considered as incidental to and part of the rehabilitation system unit bid prices.
  3. No separate payment will be made for the discharge of water into sanitary sewers or for additional containment methods utilized to achieve this when that activity is associated with the installation of a rehabilitation system; the work and materials being considered as incidental to and part of the rehabilitation system unit bid prices.
- PAYMENT: The Unit Price Bid shall include pre- and post- cleaning and CCTV inspections, installing the CIPP liner, testing, design, and all other, labor, materials, equipment, field measurements and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- KKK. ITEMS 301-321, 343-363, 372-379, 388-395, SPECIFICATION SECTION 33 01 30.72, UNIT PRICE FOR ADDITIONAL COST PER 1.5 MM THICKNESS CIPP, VARIOUS SIZES AND TYPES  
MEASUREMENT: Additional Cost per 1.5mm Thickness CIPP per size and type shall be measured and paid for per linear foot of additional wall thickness to the limits established in writing or as otherwise directed by GCDWR.  
PAYMENT: The Unit Price Bid shall include installing the additional thickness of the CIPP liner, testing, design, and all other, labor, materials, equipment, field measurements and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- LLL. ITEMS 405-413, SPECIFICATION SECTION 33 01 30.72, UNIT PRICE FOR ADDITIONAL COST PER 0.5 MM THICKNESS UV CURED CIPP  
MEASUREMENT: Additional Cost per 0.5mm Thickness UV Cured CIPP shall be measured and paid for per linear foot of additional wall thickness to the limits established in writing or as otherwise directed by GCDWR.  
PAYMENT: The Unit Price Bid shall include installing the additional thickness of the CIPP liner,

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testing, design, and all other, labor, materials, equipment, field measurements and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

- MMM. ITEMS 414-417, SPECIFICATION SECTION 33 01 30.72, UNIT PRICE FOR INVERSION SETUP CHARGE  
MEASUREMENT: Inversion Setup Charge shall be measured and paid for per each setup for all types CIPP under the appropriate bid item based on pipe diameter.  
1. GCDWR will not allow, or pay for, Inversion Setups it considers excessive or unnecessary. When multiple segments are lined through the same inversion, only one (1) setup will be paid.  
PAYMENT: The Unit Price Bid shall include all of the labor, equipment, materials, tools, scaffolds, rental equipment and other appurtenances necessary to affect a safe and productive area for the inversion of the CIPP liner, all types, into the storm system required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR. Protection of overhead and underground utilities shall be included in this pay item.
- NNN. ITEMS 418-433, SPECIFICATION SECTION 33 01 30.72, UNIT PRICE FOR CENTRIFUGALLY CAST PIPE (CPP), VARIOUS SIZES  
MEASUREMENT: Centrifugally Cast Pipe (CPP) shall be measured by linear foot of main line from the center/face of structure to the center/face of structure. CPP wall thicknesses shown in the bid schedule are minimum finished thickness, subject to verification through testing.  
1. No separate payment will be made for pre installation and post installation television inspection when that inspection is associated with the installation of a rehabilitation system; the work and materials being considered as incidental to and part of the rehabilitation system unit bid prices.  
2. No separate payment will be made for setups for CPP installations.  
3. No separate payment will be made for the installation of devices to protect water services or other utilities when that activity is associated with the installation of a rehabilitation system; the work and materials being considered as incidental to and part of the rehabilitation system unit bid prices.  
4. No separate payment will be made for the discharge of water into sanitary sewers when that activity is associated with the installation of a rehabilitation system; the work and materials being considered as incidental to and part of the rehabilitation system unit bid prices.  
PAYMENT: The Unit Price Bid shall include pre- and post- cleaning and CCTV inspections, installing the CPP liner, testing, design, and all other, labor, materials, equipment, field measurements and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- OOO. ITEMS 434-449, SPECIFICATION SECTION 33 01 30.72, UNIT PRICE FOR ADDITIONAL/REDUCTION IN COST PER 0.5" THICKNESS, CCP  
MEASUREMENT: Additional/Reduction in Cost per 0.5" Thickness, CPP shall be measured and paid for per linear foot of additional wall thickness added or deleted to the limits established in writing or as otherwise directed by GCDWR.  
PAYMENT: The Unit Price Bid shall include installing the additional thickness of the CCP liner, testing, design, and all other, labor, materials, equipment, field measurements and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.
- PPP. ITEMS 450-470, SPECIFICATION SECTION 33 01 30.72, UNIT PRICE FOR SLIPLINING OF EXISTING PIPE, VARIOUS DIAMETERS  
MEASUREMENT: Sliplining of existing pipe shall be measured by linear foot of main line from center/face of structure to center/face of structure.  
1. No separate payment will be made for pre installation and post installation television inspection when that inspection is associated with the installation of a rehabilitation system; the work and materials being considered as incidental to and part of the rehabilitation system unit bid prices.  
PAYMENT: The Unit Price Bid shall include pre- and post- cleaning and CCTV inspections, installing the sliplining pipe, testing, design, and all other, labor, materials, equipment, field measurements and incidentals required to complete the Work as specified, as indicated on the Contract documents and/or drawings, or as directed by GCDWR.

END OF SECTION 01 22 15.11

SECTION 01 31

19 PROJECT

MEETINGS

PART 1 - GENERAL

1.1 SCOPE:

- A. Work under this Section includes all scheduling and administering of pre-construction and progress meetings as herein specified and necessary for the proper and complete performance of this Work.
- B. Scheduling and Administration by Owner:
  - 1. Prepare Agenda, with assistance from Engineer
  - 2. Make physical arrangements for the meetings.
  - 3. Preside at meetings.
- C. Scheduling and Administration by Engineer:
  - 1. Assist Owner with Agenda
  - 2. Record minutes and include significant proceedings and decisions.
  - 3. Distribute "Draft" meeting minutes for review/revision
  - 4. Incorporate revisions and distribute Final copies of the minutes to participants.

1.2 PRE-CONSTRUCTION MEETING:

- A. The Owner shall schedule the pre-construction conference prior to the issuance of the Notice to Proceed.
- B. Representatives of the following parties are to be in attendance at the meeting:
  - 1. Owner; including project manager, project inspector, Operations stakeholder(s)
  - 2. Engineer
  - 3. Designer (if different than Engineer)
  - 4. Contractor's project staff including at a minimum: the project manager, site superintendent, quality/safety control coordinator, and subcontractor coordinator
  - 5. Major subcontractors
  - 6. Representative(s) of governmental or regulatory agencies, when appropriate.
  - 7. Materials Testing Firm representative
- C. The agenda for the preconstruction conference shall consist of the following as a minimum:
  - 1. List of attendees, and introduction of each attendee and their respective project role.
  - 2. Project Data to include Bid date, total Bid amount, Notice to Proceed Date, Substantial Completion date, and Final Completion Date.

3. List of project stakeholders and their contact information including email address and cell phone number.
4. Communication procedures and chain of communication for specified project components.
5. Distribute and discuss a list of major subcontractors and a tentative construction schedule, including County Holidays, and adverse weather days.
6. Critical work sequencing.
7. Pay request procedure including format, submittal, pay date, and retainage.
8. Procedures for maintaining record documents.
9. Discuss submittals to include, project schedules, requests for information, shop drawings, product data, samples, and project record drawings.
10. Processing of field decisions and Change Orders.
11. Work Times and Schedule.
12. Inspection of Work, testing, and laboratory work.
13. Safety and first aid procedures.
14. Permits, easements, and their acquisition status.
15. Blasting protocol.
16. Traffic control.
17. Housekeeping notes and procedures.

1.3 PROJECT PROGRESS MEETINGS :

- A. Owner to schedule progress meetings monthly, or more frequently as directed by the Engineer.
- B. Hold called meetings as the progress of the Work dictates.
- C. The meetings shall be held at the location indicated by the Owner.
- D. Representatives of the following parties are to be in attendance at the meetings:
  1. Owner, to include project manager, project inspector, and as conditions dictate, Operations stakeholder(s)
  2. Engineer.
  3. Designer's representative as appropriate
  4. Contractor's project staff including at a minimum the project manager, site superintendent, quality control coordinator, and subcontractor coordinator
  5. Major subcontractors as pertinent to the agenda.
  6. Representatives of governmental or other regulatory agencies, as appropriate.
  7. Materials testing firm representative as pertinent to the agenda
- E. The minimum agenda for progress meetings shall consist of the following:
  1. List of attendees
  2. Review and approve minutes of previous meeting.
  3. Contractor to supply updated Project Progress Schedule.
  4. Review work progress since last meeting.
  5. Review work progress planned for the next period.
  6. Status of Overall Project Schedule, identify problems which impede planned progress.
  7. Review Contractor's corrective measures and procedures to regain plan schedule.

8. Review submittal schedule .
9. Review budget status.
9. Review Request for Information process
10. Review Change Management items and status of individual Change documents.
11. Review Notices, Punch lists, and project coordination issues.
12. Note field observations, problems and decisions.
13. Review testing and quality control measures and associated issues.
14. Complete other current business.

1.4 SHUTDOWN COORDINATION MEETINGS :

- A. One week minimum prior to significant planned shutdowns, Contractor shall arrange with Owner, and Owner shall convene a coordination meeting.
- B. Meeting participants shall include Owner, Engineer, Designer, and Contractor, including involved subcontractors.
- C. Meeting agenda shall include Contractor's review/presentation of detailed work plan and schedule, Owner input regarding facility operations, and all other pertinent coordination topics.

1.5 QUALITY CONTROL AND COORDINATION MEETINGS :

- A. Scheduled by Engineer and coordinated with Owner, on regular basis and as necessary to review test and inspection reports, and other matters relating to quality control of Work and work of other contractors.
- B. Attendees will include:
  1. Owner, including project manager, project inspector, chief inspector, and as it pertains to the Work, Operations stakeholder(s)
  2. Engineer
  3. Designer (if different than Engineer)
  4. Contractor's project staff including at a minimum: the project manager, site superintendent, quality/safety control coordinator, and subcontractor coordinator
  5. Major subcontractors, as it pertains to the Work
  6. Materials Testing Firm representative, as it pertains to the Work.

1.6 PRE-INSTALLATION MEETINGS :

- A. When required in individual Specification Sections, convene at site prior to commencing Work of that section.
- B. Require attendance of entities directly affecting, or affected by, Work of that Section.
- C. Notify Engineer and Owner five (5) days in advance of meeting date.
- D. Provide suggested agenda to Engineer to include reviewing conditions of installation,

preparation and installation or application procedures, and coordination with related Work and work of others.

1.7 FACILITY STARTUP MEETINGS :

- A. Schedule and attend facility startup meetings for each system, facility, or group of facilities, as applicable.
- B. Attendees will include:
  - 1. Contractor's project staff including at a minimum the site superintendent.
  - 2. Subcontractors and equipment manufacturer's representatives whom Contractor deems to be directly involved in facility startup.
  - 3. Engineer's representatives.
  - 4. Owner's inspection personnel.
  - 5. Others as required by Contract Documents.

1.8 OTHER MEETINGS :

- A. In accordance with Contract Documents and as may be required by Owner and Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 31 19



SECTION 01 32 33

PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SCOPE

- A. The Contractor shall furnish all equipment and labor materials required to provide the Owner with digital construction audio/video recordings of the Project.
- B. Photos, electronic files, and audio/video recordings shall become the property of the Owner, and none of which shall be published without express permission of the Owner.

1.2 MEASUREMENT AND PAYMENT

- A. No separate measurement and payment will be made for work under this section. All costs in connection with this work specified herein, is considered to be incidental to the Work.

1.3 PRE AND POST-CONSTRUCTION AUDIO/VIDEO RECORDINGS :

- A. Prior to the beginning of any work, the Contractor shall make audio/video recordings of the work area to record existing conditions.
- B. Following completion of the work, another recording shall be made showing the same areas and features as in the pre-construction recording.
- C. All conditions which might later be subject to a disagreement shall be shown in sufficient detail to provide a basis for decisions.
- D. The recordings shall include the date and time markings on the video. All videos shall be provided with an audio narration, stating a description of what is shown, structure, area, approximate station of the area shown, and street address and property owner where appropriate.
- E. Audio/video recordings shall be made in standard definition DVD format and stored on a DVD optical disc. The quality and content shall be subject to the approval of the Engineer.
- F. The DVD disc shall bear a typed label containing the following information: Project title, date of recording, and project stations shown on the recording.

1.4 DISPUTES AND POTENTIAL CLAIMS

- A. In the event a problem arises or dispute occurs, which may result in a potential Claim, under General Conditions Article 10.05, and the problem or dispute can be illustrated by photographs and video recordings, the Contractor shall provide such photographs and video files.

1.5 SUBMITTALS :

- A. Formats
  - 1. Photo files shall be provided in jpeg format.
  - 2. Audio/Video Recordings shall be provided in DVD format.
- B. Audio/Video Recordings
  - 1. The pre-construction recording shall be submitted prior to the first progress payment request.
  - 2. The post-construction recording shall be submitted with the final payment request.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 32 33

SECTION 01 33 00  
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Contractor's Responsibilities
1.4	Engineer's Responsibilities
1.5	Request for Information (RFI)
1.6	Letter of Transmittal
2.1	General
2.2	Schedules
2.3	Request for Information
2.4	Shop Drawings
2.5	Operation and Maintenance Manuals
2.6	Record Drawing
3.1	General
3.2	Review Procedures
3.3	Schedules
3.4	Request for Information
3.5	Shop Drawings
3.6	Effect of Review of Contractor's Submittals
3.7	Cost for Review of Submittals

- B. All materials and/or equipment provided to GCDWR shall require submittal to, and approval of, Engineer prior to releasing Contractor for ordering. Any items ordered and/or delivered without approved submittals may be rejected by GCDWR.
- C. This section includes information and requirements for the submittal of documents during the course of work for, including but not limited to, schedules, shop drawings, product data, operation and maintenance manuals, requests for information, and record drawings as specified.
- D. Submittals shall include, but not be limited to, manufacturers' information, catalog data, shop drawings, test procedures, test results, samples, calculations of equipment performance, equipment weight, fabrication, erection, mechanical accessories, materials installed, reinforcing steel, piping, details, and Work-related information. The Contractor shall furnish scaled drawings, or drawings of equivalent dimensions to ascertain information deemed necessary by the Engineer, including descriptive data, certificates, samples, tests, and any other instructions specifically required in the Contract Documents

or recommended by the manufacturer to demonstrate that the materials and equipment to be furnished, and the methods of Work, comply with the provisions and intent of the Contract Documents.

## 1.2 REFERENCES

- A. Drawings and general provisions of the Agreement, including General and Supplementary Conditions, and Division 1 Specification Sections, apply to this section.

## 1.3 CONTRACTOR'S RESPONSIBILITIES

- A. Before starting construction, Contractor shall submit to the Engineer for timely review, a Preliminary Progress Schedule, and a Preliminary Schedule of Submittals; and shall submit to GCDWR for timely review, a Schedule of Values for all of the Work, in a format acceptable to GCDWR, per Specification Section 01 00 00 General Requirements.
- B. After starting and during construction, Contractor shall submit to the Engineer for timely review, an updated Progress Schedule, and an updated Schedule of Submittals, per Specification Section 01 00 00 General Requirements.
- C. The Contractor shall be responsible for the accuracy and completeness of information contained in each submittal assuring that the Work shall be done in accordance with the Contract Documents, unless a deviation has been approved. The Contractor shall verify that each feature of every product shall conform to the specified requirements. Submittal documents shall be clearly edited to indicate only those items being submitted in accordance with the Work. All extraneous materials shall be stricken out or removed. The Contractor shall coordinate submittals among his subcontractors and suppliers to meet the specified Work so that the Work shall not be delayed. No extension of time shall be allowed because of failure to properly schedule submittals. The Contractor shall certify on each submittal document that he/she has reviewed the submittal, verified field conditions, and complied with the Contract Documents.
- D. The Contractor may authorize in writing to GCDWR that a material or equipment supplier may deal directly with GCDWR or its authorized representative. These dealings shall be limited to contract interpretations to clarify and expedite the Work.
- E. If the information provided in a submittal indicates any deviation from the Contract requirements, the Contractor shall by written statement accompanying the submittal, advise the Engineer and GCDWR of any deviation and state the reasons for such.
- F. It shall be the Contractor's responsibility to ensure there is no conflict with other submittals and to notify the Engineer and GCDWR in any case where the Contractor's submittal may concern work by another contractor, subcontractor, or GCDWR. The Contractor is solely responsible for the coordination of submittals by his subcontractors and shall verify that his subcontractors' submittals are complete in every way and meet the requirements of the Contract.

## 1.4 ENGINEER'S RESPONSIBILITIES

- A. Submittal reviews shall be returned to the Contractor and copied to GCDWR, marked with one of the following, “No Exceptions Taken”, “Note Markings”, “Revise and Resubmit”, “Rejected – See Remarks”, or “Engineer’s Review Not Required”. Returned submittals marked with “Revise and Resubmit” or “Rejected – See Remarks” shall be re-submitted until an acceptable mark of “No Exceptions Taken” or “Note Markings” is granted. The contractor shall pay for any submittals requiring Engineer to review beyond the second submittal.
- B. The approval of the Contractor’s submittals shall not relieve the Contractor of responsibility for any error, or any obligation for accuracy of dimensions and details, or for agreement with and conformity to the Contract and Contract Documents, or the responsibility to fulfill the Contract as prescribed. Nor shall approval be considered approval of any deviation or conflict unless Engineer and GCDWR have been expressly advised of the same, or Engineer and GCDWR have expressly approved such deviation or conflict.

#### 1.5 REQUEST FOR INFORMATION (RFI)

- A. The Contractor shall submit in writing, a Request for Information (RFI) to the Engineer concerning all proposed substitutions and deviations to the Contract Documents, with the specified or associated parts. Such written requests shall be clearly marked with a numeric designation and should show a corresponding, concise, and lucid justification substantiating the benefits to GCDWR. RFIs are subject to rejection.

#### 1.6 LETTER OF TRANSMITTAL

- A. Transmittals shall be attached to each submittal with the following minimum requirements:
  - 1. Transmittals written in pencil will be returned along with the submitted documents without review.
  - 2. Transmittals shall be used for each submittal.
  - 3. Transmittals shall be typed or written in ink announcing the project particulars, sender’s and receivers’ information, purpose for the submittal, a listing of items contained in the submittal with a detailed explanation attached to the cover of each submittal package.

### PART 2 - SUBMITTALS

#### 2.1 GENERAL

- A. Submittals typically fall into one of five (5) general categories; “Schedules”, “Request For Information (RFI)”, “Shop Drawings”, “Operation and Maintenance Manuals” and “Record Drawings”. Unless otherwise specified, all submittals shall be considered product data.

#### 2.2 SCHEDULES

- A. The Contractor shall submit all requirements sufficiently in advance of construction requirements to allow ample time for the Contractor and Engineer to complete their responsibilities, as specified herein, without claim and or allowance by the Contractor for delays arising from his failure in this respect.
- B. Preliminary and updated Project Progress Schedules shall include construction activities, milestones, and dates for events, including Schedule of Submittals.
- C. The Schedule of Values shall list the installed value of component items of the Work to serve as a basis for computing values for progress payments during construction.

#### 2.3 REQUEST FOR INFORMATION (RFI)

- A. The Contractor shall submit all requirements sufficiently in advance of construction requirements to allow ample time for the Contractor and Engineer to complete their responsibilities, as specified herein, without claim and or allowance by the Contractor for delays arising from his failure in this respect.
- B. Submittals shall include the GCDWR project name and number, and RFI number in numerical order, on the top portion, of the top page of the document(s).

#### 2.4 SHOP DRAWINGS

- A. The Contractor shall submit all requirements sufficiently in advance of construction requirements to allow ample time for the Contractor and Engineer to complete their responsibilities, as specified herein, without claim and or allowance by the Contractor for delays arising from his failure in this respect.
- B. All shop drawings submitted must bear the stamp of approval of and by the Contractor as evidence that the submittal has been thoroughly reviewed and coordinated.
- C. Submittals shall include the GCDWR project name and number, and Shop Drawing Number in numerical order, on the top portion, of the top page of the document(s).

#### 2.5 OPERATION AND MAINTENANCE MANUALS

- A. Operation and Maintenance Manuals submittal documents common to more than one piece of equipment shall be identified with all the appropriate equipment numbers and referenced in the other parts of the manual under that specific equipment or material. Submittals that consist of various items that together constitute a manufacturer's equipment or package, or are so functionally related, must be submitted, reviewed and approved as a whole.

#### 2.6 RECORD DRAWINGS – Refer to Section 01 78 39 “Project Record Documents”

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. As applicable, submittals shall be marked in accordance to following color schemes:

1. **Manufacturer/vendor** comments shall be in '**black**' ink
2. **Contractor** comments shall be in '**green**' ink
3. **Engineer** comments shall be in '**blue**' ink
4. **GCDWR** comments shall be in '**red**' ink

### 3.2 REVIEW PROCEDURES

- A. Submittals are specified for those features and characteristics of materials, equipment, and methods of operation which can be selected based on the Contractor's judgment of their conformance to the specified requirements. Review shall not extend to means, methods, techniques, sequences or procedures of construction, or to verifying quantities, dimensions, weights or gages, or fabrication processes (except where specifically indicated or required by the specifications) or to safety precautions or programs incident thereto.
- B. When the Contract Documents require a submittal by the Contractor, it shall be to the following minimum requirements:
  1. Shop Drawings: Unless otherwise directed by the Engineer, six (6) copies of submitted information shall be transmitted to Engineer for review and comment. After Engineer's review and comments, Engineer shall return two (2) copies to the Contractor.

### 3.3 SCHEDULES

- A. Preliminary Project Progress Schedule:
  1. Contractor shall submit to the Engineer, a Preliminary Project Progress Schedule within ten (10) calendar days after the effective date of the Agreement.
  2. The Engineer will review said Preliminary Project Progress Schedule and return reviewed copy to Contractor within fourteen (14) calendar days.
  3. If required, Contractor will resubmit to Engineer, a revised Preliminary Project Progress Schedule incorporating all revisions, within ten (10) calendar days after receipt of a returned review copy.
- B. Preliminary Schedule of Submittals:
  1. Contractor shall submit to the Engineer, a Preliminary Schedule of Submittals within ten (10) calendar days after the effective date of the Agreement.
  2. The Engineer will review said Preliminary Schedule of Submittals and return reviewed copy to Contractor, within fourteen (14) calendar days.
  3. If required, Contractor will resubmit to Engineer, a revised Preliminary Schedule of Submittals incorporating all revisions, within ten (10) calendar days after receipt of a returned review copy.
- C. Schedule of Values:
  1. Contractor shall submit to the Owner, a Schedule of Values allocated to the various portions of the Work, within ten (10) calendar days after the effective date of the Agreement. The value of each activity shall be a complete and total value, including all taxes, overhead, and profit. The sum of all the values of the activities shall equal the total Agreement Price. The first progress payment will

not be made until the next pay cycle following the Owner's approval of the Contractor's Schedule of Values.

2. The Owner will review said Schedule of Values and return reviewed copy to Contractor, within fourteen (14) calendar days. Upon request of the Owner, support the values with data, which will substantiate their correctness.
3. If required, Contractor will resubmit to Owner, a revised Schedule of Values incorporating all revisions, within ten (10) calendar days after receipt of a returned review copy.
4. The Schedule of Values shall be used only as a basis of the Contractor's Application for Payment.

D. Project Progress Schedule:

1. Contractor shall submit to the Engineer, an updated Project Progress Schedule within thirty (30) calendar days after the effective date of the Agreement.
2. The Engineer will review said Project Progress Schedule and return reviewed copy to Contractor within fourteen (14) calendar days.
3. If required, Contractor will resubmit to Engineer, a revised Project Progress Schedule incorporating all revisions, within ten (10) calendar days after receipt of a returned review copy.

E. Schedule of Submittals:

1. Contractor shall submit to the Engineer, an updated Schedule of Submittals within thirty (30) calendar days after the effective date of the Agreement.
2. The Engineer will review said Schedule of Submittals and return reviewed copy to Contractor, within fourteen (14) calendar days.
3. If required, Contractor will resubmit to Engineer, a revised Schedule of Submittals incorporating all revisions, within ten (10) calendar days after receipt of a returned review copy.

3.4 REQUEST FOR INFORMATION (RFI)

- A. If the Contractor proposes to provide material, equipment, or method of Work which deviates from the project manual, he/she shall indicate so on the transmittal letter accompanying that specific submittal. Each RFI must be clearly marked with a numeric designation having a corresponding detailed explanation to indicate the benefit to GCDWR and/or the project. Submittals which do not identify deviations from the contract shall not be acceptable and shall be returned without review.

3.5 SHOP DRAWINGS

- A. The Engineer shall have fourteen (14) calendar days to review and comment on a submittal after its receipt. The returned submittal shall indicate one of the following actions:
  1. If the review indicates that the submittal complies with the Contract Documents, it shall be marked "No Exceptions Taken". In this event, the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal; no re-submittal is required.



2. If the review indicates limited corrections are required, copies shall be marked “Note Markings”. The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections. No re-submittal shall be required except where the submittal information shall be incorporated into the Project Operation and Maintenance Manuals, and then a corrected copy shall be incorporated.
3. If the review reveals that the submittal is insufficient and or contains incorrect data, copies shall be marked “Revise and Resubmit”. Except at his own risk, the Contractor shall not undertake Work covered by this submittal until it has been revised, resubmitted and returned with a mark of “No Exceptions Taken” or “Note Markings.”
4. If the review reveals that the submittal is unacceptable it shall be marked “Rejected – See Remarks”. The Contractor shall not undertake Work covered by this submittal until it has been revised, resubmitted and returned with a mark of “No Exceptions Taken” or “Note Markings.”

### 3.6 EFFECT OF REVIEW OF CONTRACTOR’S SUBMITTALS

- A. Review of the Contractor’s submittals shall not relieve the Contractor of his responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the County. Also, the Contractor shall have no claim on account of the failure, or partial failure, of the method of Work, material, or equipment so reviewed. A mark of “No Exceptions Taken” or “Note Markings” shall mean that the Owner has no objection to the Contractor, upon his own responsibility, using the plan or method of Work proposed, or providing the materials or equipment proposed, with the exception of incorporating any Notes made by the Engineer.

### 3.7 COST FOR REVIEW OF SUBMITTALS

- A. GCDWR shall pay for the review of each initial submittal and the first re-submittal required for a project. However, if the Engineer requires that shop drawings or product data be submitted for a third or more review, the Contractor shall then be responsible to pay for the Engineer’s time to review the second or more re-submittal, and for each re-submittal of the same thereafter.

END OF SECTION 01 33 00

SECTION 01 41 00  
REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE:

- A. **Permits and Responsibilities:** The Contractor shall, without additional expense to the Owner, be responsible for obtaining all necessary licenses and permits, excluding those listed in Supplementary Conditions SC-6.08, and for complying with any applicable federal, state, county and municipal laws, codes, ordinances and regulations, in connection with the prosecution of the Work. The Contractor shall be responsible for coordinating and scheduling all necessary inspections required by applicable federal, state, county and municipal codes and regulations in relation to licenses and permits, including building permits issued for the project.
- B. The Contractor shall take proper safety and health precautions to protect the Work, the workers, the public and the property of others.
- C. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the Work.
- D. The Contractor is hereby notified that a road may be under the jurisdiction of the Georgia Department of Transportation and the Gwinnett County Department of Transportation, necessitating permits and notification of both entities by the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 41 00

SECTION 01 42 19  
REFERENCE STANDARDS

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Whenever reference is made to conforming to the standards of any technical society, organization, body, code or standard, it shall be construed to mean the latest standard, code, specification or tentative specification adopted and published at the time of advertisement for Bids. This shall include the furnishing of materials, testing of materials, fabrication and installation practices. In those cases where the Contractor's quality standards establish more stringent quality requirements, the more stringent requirement shall prevail. Such standards are made a part hereof to the extent which is indicated or intended.
- B. The inclusion of an organization under one category does not preclude that organization's standards from applying to another category.
- C. In addition, all work shall comply with the applicable requirements of local codes, utilities and other authorities having jurisdiction.
- D. All material and equipment, for which a UL Standard, an AGA or NSF approval or an ASME requirement is established, shall be so approved and labeled or stamped. The label or stamp shall be conspicuous and not covered, painted, or otherwise obscured from visual inspection.
- E. The standards which apply to this Project are not necessarily restricted to those organizations which are listed in Article 1.2.

1.2 STANDARD ORGANIZATIONS :

- A. Piping and Valves:
  - ACPA American Concrete Pipe Association
  - ANSI American National Standards Institute
  - API American Petroleum Institute
  - ASME American Society of Mechanical Engineers
  - AWWA American Water Works Association
  - CISPI Cast Iron Soil Pipe Institute
  - DIPRA Ductile Iron Pipe Research Association
  - FCI Fluid Controls Institute
  - MSS Manufacturers Standardization Society
  - NCPI National Clay Pipe Institute

- NSF        National Sanitation Foundation
- PPI        Plastic Pipe Institute
- Uni-Bell   PVC Pipe Association
  
- B.    Materials:
  - AASHTO   American Association of State Highway and Transportation Officials
  - ALS        American Lumber Standards
  - AMA        Acoustical Materials Association
  - ANSI       American National Standards Institute
  - ASTM      American Society for Testing and Materials
  
- C.    Painting and Surface Preparation:
  - NACE      National Association of Corrosion Engineers
  - SSPC      Society for Protective Coatings
  
- D.    Steel, Concrete, and Asphalt:
  - ACI        American Concrete Institute
  - AI         Asphalt Institute
  - AISC      American Institute of Steel Construction, Inc.
  - AISI      American Iron and Steel Institute
  - CRSI      Concrete Reinforcing Steel Institute
  - NRMA     National Ready-Mix Association
  - PCA       Portland Cement Association
  - PCI        Prestressed Concrete Institute
  
- E.    Welding:
  - ASME     American Society of Mechanical Engineers
  - AWS      American Welding Society
  
- F.    Government and Technical Organizations:
  - AIA        American Institute of Architects
  - APHA     American Public Health Association
  - APWA     American Public Works Association
  - ASA        American Standards Association
  - ASAE     American Society of Agricultural Engineers
  - ASCE     American Society of Civil Engineers
  - ASQC     American Society of Quality Control
  - ASSE     American Society of Sanitary Engineers
  - CFR       Code of Federal Regulations
  - CSI        Construction Specifications Institute
  - EDA       Economic Development Administration
  - EPA        Environmental Protection Agency
  - EPD       Georgia Environmental Protection Division
  - FCC        Federal Communications Commission
  - FmHA     Farmers Home Administration
  - FS         Federal Specifications

GCDWR Gwinnett County Department of Water Resources  
IAI International Association of Identification  
ISEA Industrial Safety Equipment Association  
ISO International Organization for Standardization  
ITE Institute of Traffic Engineers  
NBFU National Board of Fire Underwriters  
(NFPA) National Fluid Power Association  
NBS National Bureau of Standards  
NISO National Information Standards Organization  
OSHA Occupational Safety and Health Administration  
SI Salt Institute  
SPI The Society of the Plastics Industry, Inc.  
USDC United States Department of Commerce  
WEF Water Environment Federation

G. Roadways:

AREA American Railway Engineering Association  
GDOT Georgia Department of Transportation  
GCDOT Gwinnett County Department of Transportation  
SSRBC Standard Specifications for Construction of Transportation Systems,  
Georgia Department of Transportation

H. Plumbing:

AGA American Gas Association  
NSF National Sanitation Foundation  
PDI Plumbing Drainage Institute  
SPC SBCC Standard Plumbing Code

1.3 SYMBOLS :

Symbols and material legends shall be as scheduled on the Drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 42 19

SECTION 01 43 00

QUALITY ASSURANCE

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This section covers Quality Assurance and Quality Control requirements for this contract.
- B. The Contractor is responsible for controlling the quality of work, including work of its subcontractors, and suppliers and for assuring the quality specified in the Technical Specifications is achieved.
- C. Refer to the General Conditions Article 6 - Contractor's Responsibilities, paragraphs 6.01, 6.02, and 6.03.

1.02 SUMMARY :

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and control services required by, including but not limited to, Engineer, Owner, or authorities having jurisdiction, are not limited by provisions of this Section.

C. Related Requirements:

- 1. Divisions 01 through 44 Sections for specific test and inspection requirements.

1.03 REFERENCES :

- A. American Society for Testing and Materials (ASTM):

1. E329: Standard Specification for Agencies Engaged in Construction Inspection and/or Testing

1.04 DEFINITIONS :

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by a Nationally Recognized Testing Laboratory (NRTL), an (National Voluntary Laboratory Accreditation Program (NVLAP), or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five (5) previous projects similar in nature, size,

and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.05 CONFLICTING REQUIREMENTS :

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.06 SUBMITTALS :

- A. Shop Drawings: Provide plans, sections, dimensions, and elevations, indicating materials and size of proposed construction.
  - 1. Indicate manufacturer and model number of individual components.
  - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.
- B. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- C. Qualification Data: For Contractor's quality-control personnel.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.



1.07 CONTRACTOR'S QUALITY-CONTROL PLAN:

- A. **Quality Control Plan, General:** Submit quality-control plan within thirty (30) days of Notice to Proceed. Submit in format acceptable to Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. **Quality-Control Personnel Qualifications:** Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
  - 1. Project quality-control manager may also serve as Project superintendent.
- C. **Submittal Procedure:** Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. **Testing and Inspection:** In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor- elected tests and inspections.
  - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  - 3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. **Continuous Inspection of Workmanship:** Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and accepted mockups.
- F. **Monitoring and Documentation:** Maintain testing and inspection reports including log of accepted and rejected results. Include work Engineer has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.08 REPORTS AND DOCUMENTS :

- A. **Test and Inspection Reports:** Prepare and submit certified written reports specified in other Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.

3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  12. Name and signature of laboratory inspector, as applicable.
  13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.09 QUALITY ASSURANCE :

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
    - 1. Contractor responsibilities include the following:
      - a. Provide test specimens representative of proposed products and construction.
      - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
      - c. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
      - d. When testing is complete, remove test specimens, assemblies; do not reuse products on Project.
    - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Engineer with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  - K. Codes and Standards: Refer to General Conditions Article 3 - Contract Documents: Intent, Amending, Reuse, paragraph 3.02 of the General Conditions.
  - L. Copies of applicable referenced standards are not included in the Contract Documents. Where copies of standards are needed by the Contractor for superintendence and quality control of the work, the Contractor shall obtain a copy or copies directly from the publication source and maintain at the jobsite, available to the Contractor's personnel, subcontractors, and Engineer
  - M. Quality of Materials: Unless otherwise specified, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards and specifications and shall be new, unused, and free from defects and imperfections, when installed or otherwise incorporated in the Work. The Contractor shall not use material and equipment for any purpose other than that intended or specified unless the Engineer authorizes such use.
  - N. Where so specified, products or workmanship shall also conform to the additional performance requirements included within the Contract Documents to establish a higher or more stringent standard or quality than that required by the referenced standard.
- 1.10 OFFSITE INSPECTION:
- A. When the specifications require inspection of materials or equipment during the production, manufacturing, or fabricating process, or before shipment, such services shall be performed by the Owner's independent testing laboratory, or inspection organization acceptable to Engineer in conjunction with or by the Engineer.
  - B. The Contractor shall give appropriate written notice to the Engineer not less than thirty (30) days before offsite inspection services are required, and shall provide for the

producer, manufacturer, or fabricator to furnish safe access and proper facilities and to cooperate with inspecting personnel in the performance of their duties.

1.11 MATERIALS AND EQUIPMENT :

- A. The Contractor shall maintain control over procurement sources to ensure that materials and equipment conform to specified requirements in the Contract Documents.
- B. The Contractor shall comply with manufacturer's printed instructions regarding all facets of materials and/or equipment movement, storage, installation, testing, startup, and operation. Should circumstances occur where the contract documents are more stringent than the manufacturer's printed instructions, the Contractor shall comply with the specifications. In cases where the manufacturer's printed instructions are more stringent than the contract documents, the Contractor shall advise the Engineer of the disparity and conform to the manufacturer's printed instructions. In either case, the Contractor is to apply the more stringent specification or recommendation, unless accepted otherwise by the Engineer.

1.12 QUALITY CONTROL :

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  - 2. The Contractor shall furnish a construction schedule and a minimum of 48 hour notice of readiness for testing and inspection of the work. The Engineer shall determine the exact time and location of field sampling and testing, and may require such additional sampling and testing to determine that materials and equipment conform with data previously furnished by Contractor and with the Contract Documents.
  - 3. The Contractor shall schedule the work to permit adequate time for testing and re-testing should test results not conform to the contract documents. Lack of testing or inspection which is attributable to insufficient notice by the Contractor or failure of the Contractor to cooperate, will be cause for rejection of the work.
  - 4. The Contractor shall deliver materials in sufficient quantities to the Owner's testing agency as may be required. Laboratory testing shall be performed within a reasonable time, consistent with the specified standards.
  - 5. The Contractor shall furnish material samples and cooperate in the field sampling and testing activities, interrupting the work when necessary. The Contractor shall furnish personnel, facilities and access to assist in the sampling and testing activities.

6. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  2. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
  3. Comply with manufacturers' instructions, including each step in sequence.
  4. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
  5. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
  6. Perform Work by persons qualified to produce required and specified quality.
  7. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
  8. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
  9. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  10. Notify testing agencies at least twenty-four (24) hours in advance of time when Work that requires testing or inspecting will be performed.
  11. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  12. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

13. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Tolerances:
1. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
  2. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
  3. Adjust products to appropriate dimensions; position before securing products in place.
- D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections.
- E. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- F. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- G. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform any duties of Contractor.
- H. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as

requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

I. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

J. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, Engineer, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

#### 1.13 SPECIAL TESTS AND INSPECTIONS:

A. Special Tests and Inspections: Owner will engage a qualified agency to conduct special tests and inspections required, as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
2. Notifying Engineer and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Engineer with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.



PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify utility services are available, of correct characteristics, and in correct locations.

3.02 PREPARATION:

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.03 QUALITY CONTROL:

- A. Quality control is the responsibility of the Contractor, and the Contractor shall maintain control over construction and installation processes to assure compliance with specified requirements.
- B. Certifications for personnel, procedures, and equipment associated with special processes (e.g., welding, cable splicing, surveying) shall be maintained by the Contractor, available for inspection by the Engineer. Copies shall be made available to the Engineer upon request.
- C. Means and methods of construction and installation processes are the responsibility of the Contractor, and at no time is it the intent of the Engineer to supersede or void that responsibility.

3.04 TEST AND INSPECTION LOG:

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  - 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. Date test or inspection results were transmitted to Engineer.
  - 4. Identification of testing agency or special inspector conducting test or inspection.

- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer's reference during normal working hours.

3.05 REPAIR AND PROTECTION:

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 29 Cutting and Patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 43 00

SECTION 01 45 29

TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 SCOPE:

- A. This Section includes testing which the Owner may require, beyond that testing required of the manufacturer, to determine if materials provided for the Project meet the requirements of these Specifications.
- B. This work also includes all testing required by the Owner to verify work performed by the Contractor is in accordance with the requirements of these Specifications, i.e., concrete strength, slump testing, soil compaction, etc.
- C. This work does not include materials testing required in various sections of these Specifications to be performed by the manufacturer.
- D. The testing laboratory or laboratories will be selected by the Owner. The testing laboratory or laboratories will work for the Owner.

1.02 PAYMENT FOR TESTING SERVICES :

- A. Testing services provided by the Owner will be paid by the Owner through GCDWR annual material testing contract. Testing services provided by the Contractor will be from the County's approved list, but paid by the Contractor.
- B. The cost of material testing described in various sections of these Specifications or as required in referenced standards to be provided by a material manufacturer, shall be included in the price bid for that item and shall not be paid for by the Owner.
- C. The cost of retesting any item that fails to meet the requirements of these Specifications shall be paid for by the Contractor. Retesting shall be performed by the testing laboratory working for the Owner.

1.03 LABORATORY DUTIES :

- A. Cooperate with the Owner, Engineer and Contractor.
- B. Provide qualified personnel promptly on notice.
- C. Perform specified inspections, sampling and testing of materials.

1. Comply with specified standards, ASTM, other recognized authorities, and as specified.
  2. Ascertain compliance with requirements of the Contract Documents.
- D. Promptly notify the Engineer and Contractor of irregularity or deficiency of work which are observed during performance of services.
- E. Promptly submit three (3) copies of report of inspections and tests in addition to those additional copies required by the Contractor; one (1) copy to the Owner, one (1) copy to the Engineer, and one (1) copy to the Contractor, with the following information included:
1. Date issued
  2. Project title and number
  3. Testing laboratory name and address
  4. Name and signature of inspector
  5. Date of inspection or sampling
  6. Record of temperature and weather
  7. Date of test
  8. Identification of product and Specification section
  9. Location of Project
  10. Type of inspection or test
  11. Results of test
  12. Observations regarding compliance with the Contract Documents
- F. Perform additional services as required.
- G. The laboratory is not authorized to release, revoke, alter or enlarge on requirements of the Contract Documents, or approve or accept any portion of the Work.
- 1.04 CONTRACTOR RESPONSIBILITIES :
- A. Cooperate with laboratory personnel; provide access to Work and/or manufacturer's requirements.
- B. Provide to the laboratory, representative samples, in required quantities, of materials to be tested.
- C. Furnish copies of mill test reports.
- D. Furnish required labor and facilities to:
1. Provide access to Work to be tested;
  2. Obtain and handle samples at the site;
  3. Facilitate inspections and tests;
  4. Provide a clear, level and unobstructed location for placement of concrete curing

box(es) adjacent to the work area as agreed upon with the testing laboratory and the Engineer. Provide power and lighting at the curing box location.

- E. Furnish climatically controlled curing box(es) for field storage of cast concrete cylinders or other samples. Multiple boxes shall be furnished when concrete placement activities are being performed at multiple locations across the project site. Curing box shall be manufactured and marketed for the specific purpose described herein and shall meet standards ASTM C31, C192 and C511. Curing box shall be used to maintain temperature and humidity of the concrete cylinder specimens for 48 hours. Cure box shall feature a digital thermometer, heat/cool indicator lights; temperature set buttons and a capacity of 22 standard 6" x 12" cylinders. Use of field constructed curing boxes will not be acceptable.
- F. Notify the laboratory sufficiently in advance of operation to allow for the assignment of personnel and schedules of tests.
- G. Laboratory Tests: Where such inspection and testing are to be conducted by an independent laboratory agency, the sample(s) shall be selected by such laboratory or agency, or the Engineer, and shipped to the laboratory by the Contractor at Contractor's expense.
- H. Copies of all correspondence between the Contractor and testing agencies shall be provided to the Engineer.

1.05 QUALITY ASSURANCE :

- A. Testing shall be in accordance with all pertinent codes and regulations and with procedures and requirements of the American Society for Testing and Materials (ASTM).

1.06 PRODUCT HANDLING :

- A. Promptly process and distribute all required copies of test reports and related instructions to insure all necessary retesting or replacement of materials with the least possible delay in the progress of the Work.

1.07 FURNISHING MATERIALS :

- A. The Contractor shall be responsible for furnishing all materials necessary for testing.

1.08 CODE COMPLIANCE TESTING :

- A. Inspections and tests required by codes or ordinances or by a plan approval authority, and made by a legally constituted authority, shall be the responsibility of, and shall be paid for by the Contractor, unless otherwise provided in the Contract Documents.

1.09 CONTRACTOR'S CONVENIENCE TESTING:

- A. Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

1.10 SCHEDULES FOR TESTING:

A. Establishing Schedule

1. The Contractor shall, by advance discussion with the testing laboratory selected by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings, and make all arrangements for the testing laboratory to be on site to provide the required testing.
2. Provide all required time within the construction schedule.

- B. When changes of construction schedule are necessary during construction, coordinate all such changes of schedule with the testing laboratory as required.

- C. When the testing laboratory is ready to test according to the determined schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra costs for testing attributable to the delay will be back-charged to the Contractor and shall not be borne by the Owner.

1.11 TAKING SPECIMENS:

- A. Unless otherwise provided in the Contract Documents, all specimens and samples for tests will be taken by the testing laboratory or the Engineer.

1.12 TRANSPORTING SAMPLES:

- A. The Contractor shall be responsible for transporting all samples, except those taken by testing laboratory personnel, to the testing laboratory.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 45 29

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SCOPE:

- A. Temporary facilities required for this work include, but are not necessarily limited to:
  - 1. Temporary utilities such as water and electricity.
  - 2. First aid facilities.
  - 3. Sanitary facilities.
  - 4. Potable water.
  - 5. Temporary enclosures and construction facilities.

1.02 GENERAL :

- A. First aid facilities, sanitary facilities and potable water shall be available on the Project site on the first day that any activities are conducted on site. The other facilities shall be provided as the schedule of the Project warrants.
- B. Maintenance: Use all means necessary to maintain temporary facilities in proper and safe condition throughout progress of the Work. In the event of loss or damage, immediately make all repairs and replacements necessary, at no additional cost to the Owner.
- C. Removal: Remove all such temporary facilities and controls as rapidly as progress of the Work will permit.

1.03 TEMPORARY UTILITIES :

- A. General
  - 1. Provide and pay all costs for all utilities required for the performance of the Work.
  - 2. Pay all costs for temporary utilities until Project completion.
  - 3. Costs for temporary utilities shall include all utilities necessary for the performance of testing as required by the Contract Documents.
- B. Temporary Water: Provide all necessary temporary piping, and upon completion of the Work, remove all such temporary piping.
- C. Temporary Electricity:

1. Provide all necessary wiring for the Contractor's use.
  2. Furnish, locate and install area distribution boxes such that the individual trades may use, their own construction type extension cords to obtain adequate power, and artificial lighting at all points where required for safety.
  3. Provide all temporary electrical services, wire, generators, etc. required for performance of the Work inclusive of maintaining existing facilities in service during required service shutdowns.
  4. Pay all fuel bills for temporary power required for the performance of the Work where required during shutdowns, bypass pumping etc.
- D. Lighting: Provide temporary lighting to meet all applicable safety requirements to allow application or installation of materials and equipment, and observation or inspection of the Work.
- E. Water:
1. Provide temporary facilities and piping required to bring water to point of use, and remove when no longer needed. Install an acceptable metering device for measuring water used.
  2. Provide a means to prevent water used for construction and testing from flowing back into source pipeline. Device(s) shall be as approved by Owner for backflow prevention.

1.04 FIRST AID FACILITIES :

- A. The Contractor shall provide a suitable first aid station, equipped with all facilities and medical supplies necessary to administer emergency first aid treatment. The Contractor shall have standing arrangements for the removal and hospital treatment of any injured person. All first aid facilities and emergency ambulance service shall be made available by the Contractor to the Owner and the Engineer's personnel.

1.05 SANITARY FACILITIES :

- A. Prior to starting the Work, the Contractor shall furnish, for use of Contractor's personnel on the job, subcontractors, and all other on-site personnel, all necessary toilet facilities which shall be secluded from public observation, as much as practical. These facilities shall be chemical toilets. All facilities shall be kept in a clean and sanitary condition and shall comply with the requirements and regulations of the area in which the Work is performed. Adequacy of these facilities will be subject to the Engineer's review and maintenance of same must be satisfactory to the Engineer at all times.
- B. Use of Owner's existing sanitary facilities by construction personnel will not be allowed.

1.06 POTABLE WATER :



- A. The Contractor shall be responsible for furnishing a supply of potable drinking water for employees, subcontractors, inspectors, engineers and the Owner who are associated with the Work.

1.07 ENCLOSURES AND CONSTRUCTION FACILITIES :

- A. Furnish, install and maintain for the duration of construction, all required scaffolds, tarpaulins, canopies, steps, bridges, platforms and other temporary construction necessary for proper completion of the Work in compliance with all pertinent safety and other regulations.

1.08 PARKING FACILITIES :

- A. Parking facilities for the Contractor's and Contractor's subcontractors' personnel shall be the Contractor's responsibility.

PART 2 – PRODUCT (NOT USED)

PART 3 – EXECUTION

3.01 PROTECTION OF WORK AND PROPERTY:

- A. General:
  - 1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.
  - 2. No residence or business shall be cut off from vehicular traffic for a period exceeding 4 hours, unless special arrangements have been made.
  - 3. Maintain in continuous service all existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and all other utilities encountered along line of the Work, unless other arrangements satisfactory to owners of said utilities have been made.
  - 4. Where completion of the Work requires temporary or permanent removal and/or relocation of existing utility, coordinate all activities with owner of said utility and perform all work to their satisfaction.
  - 5. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
  - 6. Keep fire hydrants and water control valves free from obstruction and available

for use at all times.

7. In areas where Contractor's operations are adjacent to or near a utility, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection thereof have been made by Contractor.
8. Utility Interruptions:
  - a. Notify property owners and utility owner offices that may be affected by construction operation at least two (2) days in advance.
  - b. Before exposing a utility, obtain utility owner's permission. Should service of utility be interrupted due to Contractor's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.
9. Do not impair operation of existing sewer systems. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, pump stations, or other sewer structures.
10. Maintain original site drainage wherever possible.

**B. Trees and Plantings:**

1. Protect from damage and preserve trees, shrubs, and other plants outside limits of the Work and within limits of the Work, which are designated on the Drawings to remain undisturbed.
  - a. Where practical, tunnel beneath trees when on or near line of trench.
  - b. Employ hand excavation as necessary to prevent tree injury.
  - c. Do not stockpile materials or permit traffic within drip lines of trees.
  - d. Provide and maintain temporary barricades around trees.
  - e. Water vegetation as necessary to maintain health.
  - f. Cover temporarily exposed roots with wet burlap, and keep burlap moist until soil is replaced around roots.
  - g. No trees, except those specifically shown on Drawings to be removed, shall be removed without written approval of Engineer.
  - h. Dispose of removed trees in a legal manner off the site.
2. In event of damage to bark, trunks, limbs, or roots of plants that are not designated for removal, treat damage by corrective pruning, bark tracing, application of a heavy coating of tree paint, and other accepted horticultural and

tree surgery practices.

3. Replace each plant that dies as a result of construction activities.

- C. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.
- D. Dewatering: Construct, maintain, and operate cofferdams, channels, flume drains, sumps, pumps, or other temporary diversion and protection works. Furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work. Maintain foundations and parts of the Work free from water.

3.02 TEMPORARY CONTROLS :

A. Air Pollution Control:

- 1. Minimize air pollution from construction operations.
- 2. Burning of waste materials, rubbish, or other debris will not be permitted on or adjacent to site.
- 3. Conduct operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust. Give unpaved streets, roads, detours, or haul roads used in construction area a dust-preventive treatment or periodically water to prevent dust. Strictly adhere to applicable environmental regulations for dust prevention.
- 4. Provide and maintain temporary dust-tight partitions, bulkheads, or other protective devices during construction to permit normal operation of existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material. Construct partitions in such a manner that dust and dirt from demolition and cutting will not enter other parts of existing building or facilities. Remove temporary partitions as soon as need no longer exists.

B. Noise Control:

- 1. Provide acoustical barriers so noise emanating from tools or equipment will not exceed legal noise levels.
- 2. Noise Control Ordinance: Gwinnett County Code of Ordinances, Section 42 - 46 through 42 - 48.

C. Water Pollution Control:

- 1. Divert sanitary sewage and nonstorm waste flow interfering with construction and requiring diversion to sanitary sewers. Do not cause or permit action to occur which would cause an overflow to existing waterway.

2. Prior to commencing excavation and construction, obtain Engineer's agreement with detailed plans showing procedures intended to handle and dispose of sewage, groundwater, and stormwater flow, including dewatering pump discharges.
3. Comply with procedures outlined in U.S. Environmental Protection Agency manuals entitled, "Guidelines for Erosion and Sedimentation Control Planning" and "Implementation, Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity," and "Erosion and Sediment Control-Surface Mining in Eastern United States."
4. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and lawful disposal of waste materials, debris, and rubbish.

D. Erosion, Sediment, and Flood Control:

1. Provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period.
2. Install erosion and sediment controls as shown on the Drawings, in accordance with applicable local, state, and federal regulations, and as directed by the Engineer.

3.03 STORAGE YARDS AND BUILDINGS :

- A. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.
- B. Temporary Storage Buildings:
  1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.
  2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
  3. Store combustible materials (paints, solvents, fuels, etc.) in a well-ventilated and remote building meeting safety standards.

3.04 PARKING AREAS :

- A. Control vehicular parking to preclude interference with public traffic or parking, access

by emergency vehicles, Owner's operations, or construction operations.

- B. Provide parking facilities for personnel working on the Project.

END OF SECTION 01 50 00

SECTION 01 60 00  
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SCOPE:

- A. These general product stipulations apply to all equipment and piping. They supplement the detailed product Specifications, but in case of conflict, the detailed product Specifications shall govern.

1.02 COORDINATION:

- A. The Contractor shall assume full responsibility for the coordination of the installation of all equipment, materials and products furnished under these Contract Documents. The Contractor shall be completely responsible for verification that all structures, piping and equipment components furnished by the Contractor and/or subcontractors and suppliers are compatible. The Contractor shall place in service, each pipeline system and shall make all necessary alterations. All such alterations shall be made at the Contractor's expense.

1.03 ADAPTATION AND LOCATION OF EQUIPMENT:

- A. No responsibility for alteration of a planned structure to accommodate other types of equipment will be assumed by the Owner. Equipment which requires alteration of the structures will be considered only if the Contractor assumes all responsibility for making and coordinating all necessary alterations. All such alterations shall be made at the Contractor's expense.
- B. The Contractor shall install the work in such manner that the equipment, piping, vents, conduit, panels, ductwork and appurtenances be as neatly installed with adequate space for maintenance and passage of personnel.

1.04 PATENT ROYALTIES:

- A. All royalties and fees for patents covering materials, articles, apparatus, devices or equipment shall be included in prices bid by the Contractor.

1.05 WARRANTY:

- A. The Contractor shall warrant all work against faulty or inadequate installation, improper assembly or erection, defective materials, breakage or other failure. The warranty period shall be defined in Section 01 78 36 of these Specifications.

1.06 WORKMANSHIP AND MATERIALS :

- A. All products shall be designed, fabricated and assembled in accordance with the most modern engineering and shop practice. Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Products shall be new and shall not have been in service at any time prior to delivery, except as required by tests.
- B. Materials shall be suitable for service conditions. Iron castings shall be tough, close grained, gray iron free from blowholes, flaws or excessive shrinkage and shall conform to ASTM A48, Class 30 minimum. Plugging of defective castings shall not be permitted. Castings shall be annealed to remove internal stresses prior to machining and shall have the mark number and heat number cast on them.
- C. Except where otherwise specified, structural and miscellaneous fabricated steel used in items of equipment shall conform to the Standards of the American Institute of Steel Construction. All structural members shall be considered as subject to shock or vibratory loads.
- F. All products delivered to the Project site shall include detailed installation instructions and a parts list.

1.07 EQUIPMENT SPECIFICATIONS :

- A. The use of singular or plural terminology in the Specifications is not intended to define the number of units required to fulfill Contract requirements. Bidders must consult the Drawings and Specifications to determine how many units of a particular product are required. This does not relieve the Contractor of the responsibility to provide all equipment specified when multiple units are specifically required in the Specifications.

1.08 GROUTING :

- A. A special epoxy, non-shrink, or sand-cement grout shall be used in grouting applications as shown on the Drawings.

1.09 WELDING AND BRAZING :

- A. All welds shall be sound and free from embedded scale and slag. All butt welds shall be continuous, and where exposed to view, shall be ground smooth. All continuous welds shall be gas and liquid-tight. Welds in piping shall have full penetration and shall be smooth on the inside of the pipe. Intermittent welds shall have an effective length of at least two (2) inches and shall be spaced not more than six (6) inches apart.

- B. All welding of steel and aluminum, including materials, welding techniques, general safety practices, appearance and quality of welds, and methods of correcting defective work, shall conform to the latest requirements of AWS Specifications. Structural steel welding shall conform to the requirements of the AWS Structural Welding Code. The general recommendations and requirements of the AWS Structural Welding Code shall also apply to welded aluminum structures. The welding process and welding operators shall meet qualification tests and welding performance tests in accordance with the latest provisions of ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications. Welding process and qualification procedures for welding of pipe shall conform to the latest requirements of ANSI B31.1, Section 327, Welding, and Section 328, Brazing and Soldering. All welding qualification tests shall be witnessed by the Engineer, except as provided herein. All costs associated with the qualification or testing of welders and welding operators shall be borne by the Contractor.
- C. Reports certifying that the welding procedures, welders and welding operators that the Contractor intends to use meet the requirements specified above. These reports shall be submitted to the Engineer prior to beginning the Work. In the case of welder qualifications for shop welding and for carbon steel field welding, welders presenting certified qualification papers validated within the preceding six (6) month period will not be required to take the qualification tests. In the case of field welding of stainless steel or aluminum, all welders shall be required to take the qualification tests regardless of past experience or availability of certified qualification papers.
- D. Field welding practices shall conform to OSHA construction standards, Part 1926, Subpart J, Welding and Cutting. Shop welding practices shall conform to OSHA General Industry Standards, Part 1910, Subpart Q, Welding, Cutting, and Brazing.
- E. Welding electrodes for structural steel shall conform to the standard recommendations of the AISC. Welding electrodes for stainless steel shall conform to applicable AWS Specifications and shall be as recommended by “Welded Austenitic Chromium-Nickel Stainless Steels, Techniques and Properties”, published by the International Nickel Company, New York, New York. Welding electrodes for aluminum shall conform to applicable AWS Specifications.
- F. Each welder and welding operator must identify all welds with welder's assigned symbol.
- G. Welders performing unsatisfactory work shall be removed from the welding process.
- H. The Owner may inspect any weld by radiographic or other means. Welds not in accordance with the requirements specified herein shall be repaired or replaced at the Contractor's expense. Excessive porosity, nonmetallic inclusions, lack of fusion, incomplete penetration and cracking shall constitute grounds for rejection of welds.

1.10 SHOP PRIMING AND PAINTING:



- A. All factory and shop priming and painting, including surface preparation, workmanship and materials, shall be as specified by manufacturer.

1.11 FIELD PRIMING:

- A. All iron and carbon steel surfaces not specified to be galvanized or shop primed and all ferrous or nonferrous surfaces specified to be field primed and painted shall be coated in the field with one or more coats of primer in accordance with the manufacturer's specifications.

1.12 FIELD PAINTING:

- A. Except for interior surfaces of vessels and enclosed equipment not specified to be field painted, all ferrous and nonferrous surfaces of equipment which have received one or more coats of shop or field applied primer shall be field painted after installation in accordance with the manufacturer's specifications.

1.13 GALVANIZING:

- A. All galvanizing shall be done by the hot-dip process after fabrication in conformity with requirements of ASTM A 123, Grade 100; ASTM A 153, ASTM A 384 and ASTM A 385. Articles to be galvanized shall be pickled before galvanizing. Articles to be painted shall not be quenched.
- B. Where galvanized bolts are specified or required by the Drawings, zinc plated bolts will be acceptable provided zinc plating conforms to ASTM B 633, Type II.
- C. Areas of galvanizing damaged at the factory by welding or burning or otherwise damaged shall be thoroughly stripped and cleaned and recoated with zinc to the required thickness by the hot dip process. Areas of galvanizing damaged in the field during transportation, handling or installation shall be stripped, cleaned, and recoated with zinc to the required thickness in accordance with ASTM A 780, Annex A3.
- D. Galvanized articles shall be free from uncoated spots, blisters, flux, black spots, dross, projections and other defects not consistent with acceptable galvanizing practice.
- E. Zinc and cadmium plating shall be subject to visual examination to determine uniformity of coating. The Engineer may require that the coating uniformity be tested in accordance with ASTM A 239 or ASTM E 376.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 60 00

SECTION 01 65 00

PRODUCT DELIVERY REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE:

- A. The Contractor shall provide transportation of all equipment, materials and products furnished under these Contract Documents to the Work site. In addition, the Contractor shall provide preparation for shipment, loading, unloading, handling and preparation for installation and all other work and incidental items necessary or convenient to the Contractor for the satisfactory prosecution and completion of the Work.
- B. All equipment, materials and products damaged during transportation or handling shall be repaired or replaced by the Contractor at no additional cost to the Owner prior to being incorporated into the Work.

1.2 PREPARATION FOR SHIPMENT:

- A. When practical, factory-assemble products. Match mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with a strippable protective coating.
- B. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of Project, and Contractor, product number, and approximate weight. Include complete packing lists and bills of materials with each shipment.
- C. Deliver materials to project site and place at a location determined by Contractor.
- D. Notify Engineer and Owner's Inspector upon arrival.
- E. Protect equipment from exposure to the elements and keep dry and dust-free as far as practical. Protect painted surfaces against impact, abrasion, discoloration, or other damage.
- F. For major items, request a minimum seven (7) day advance notice of shipment from manufacturers. Upon receipt of manufacturer's advance notice of shipment, promptly notify Engineer of anticipated date of equipment arrival.
- G. Factory Test Results: Reviewed and accepted by Engineer before product shipment as required in individual Specification sections.

1.3 TRANSPORTATION:

- A. All products shall be suitably boxed, crated or otherwise protected during transportation.
- B. Where products will be unloaded using cranes, forklifts, or other hoisting equipment, the Contractor shall ensure that the weights of the assembled sections do not exceed the capacity of the hoisting equipment.
- C. Small items and appurtenances such as gauges and valves, which could be damaged during shipment shall be removed from the equipment prior to shipment, packaged and shipped separately. All openings shall be plugged or sealed to prevent the entrance of water or dirt.

1.4 HANDLING :

- A. Handle products in accordance with the manufacturer's written instructions, and in a manner to prevent damage. Store products, upon delivery, in accordance with manufacturer's instructions, with labels intact and legible, in approved storage yards or sheds. Provide manufacturer's recommended maintenance during storage, installation, and until products are accepted for use by Owner.
- B. Lifting and handling drawings and instructions furnished by the manufacturer or supplier shall be strictly followed. Eyebolts or lifting lugs furnished on the equipment shall be used in handling the equipment. Spreader bars or lifting beams shall be used when the distance between lifting points exceeds that permitted by standard industry practice.
- C. Under no circumstances shall equipment or products such as pipe, structural steel, castings, reinforcement, lumber, piles, poles, etc., be thrown or rolled off of trucks onto the ground.
- D. Slings and chains shall be padded as required to prevent damage to protective coatings and finishes.

1.5 OWNER FURNISHED EQUIPMENT :

- A. Owner furnished equipment shall mean any Owner purchased equipment and such being required by these Specifications to be installed by the Contractor.
- B. The Contractor shall off load and store all Owner furnished equipment per this Section of these Specifications.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 65 00

SECTION 01 66 00

PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.01 SCOPE:

- A. The work under this Section includes, but not limited to, the furnishing of all labor, tools and materials necessary to properly store and protect all materials, equipment, products and the like, as necessary for the proper and complete performance of the Work.
- B. The Contractor shall be responsible for selecting and securing a storage site or sites necessary for the construction of this Project.

1.02 STORAGE AND PROTECTION:

A. Storage:

- 1. Maintain ample way for foot traffic at all times, except as otherwise approved by the Engineer. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered but not installed in the Work.
- 2. All property damaged by reason of storing of material shall be properly replaced at no additional cost to the Owner.
- 3. Packaged materials shall be delivered in original unopened containers and so stored until ready for use.
- 4. All materials shall meet the requirements of these Specifications at the time that they are used in the Work.
- 5. Store products in accordance with manufacturer's instructions.

B. Protection:

- 1. Use all means necessary to protect the materials, equipment and products of every section before, during and after installation and to protect the installed work and materials of all other trades.
- 2. All materials shall be delivered, stored and handled to prevent the inclusion of foreign materials and damage by water, breakage, vandalism or other causes.

- C. Replacements: In the event of damage, immediately make all repairs and replacements necessary for the approval of the Engineer and at no additional cost to the Owner.

- D. All equipment shall be boxed, crated or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept clean and dry, as far as practical. All products shall be stored above ground level and adequately supported on wood blocking or other approved support material. Printed storage instructions of the manufacturers shall be strictly adhered to.
- E. Painted, anodized or otherwise coated surfaces shall be protected against impact, abrasion, discoloration and other damage. All coated surfaces which are damaged prior to acceptance of equipment shall be cleaned and coated to the satisfaction of the Engineer with the same or equivalent coating used in the original application.
- F. Individually packaged, unpainted steel parts shall be protected by a wrapping of vapor phase inhibiting or oil-impregnated paper and polyethylene film prior to shipment.
- G. Parts and equipment not requiring periodic inspection or maintenance shall be stored unopened in their original packaging until used.
- H. Flanged openings on equipment shall be covered with suitable solid wooden or metal blanks securely bolted to the flange using a minimum of four bolts and a suitable rubber gasket. Ends of threaded pipe and fittings shall be sealed watertight with metal or plastic caps. Threaded openings shall be sealed watertight with metal or plastic plugs. Other openings shall be sealed with two layers of 6 mil polyethylene securely taped in place with waterproof tape.
- I. Immediately prior to installation, equipment shall be cleaned of any protective coatings used during storage and any rust, dirt, grit or other foreign material shall be removed.
- J. After storage, rubber parts such as valve seats, diaphragms, expansion joints, gaskets, hoses and shaft couplings shall be checked for hardening or cracking. Deteriorated parts shall be replaced prior to placing in service by the Contractor at Contractor's own expense.
- K. Unless otherwise permitted in writing by the Engineer, building products and materials such as cement, grout, plaster, particleboard, finish lumber, wiring, etc., shall be stored indoors in a dry location. Building products such as rough lumber, plywood, concrete block and structural tile may be stored outdoors.
- L. Tarps and other coverings shall be supported above the stored equipment or materials on wooden strips to provide ventilation under the cover and minimize condensation. Tarps and covers shall be arranged to prevent ponding of water.

1.03 OWNER FURNISHED EQUIPMENT:

- A. The Contractor shall provide storage and protection for all Owner furnished equipment and materials, including extended storage as specified above.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 66 00

SECTION 01 71 23.16

CONSTRUCTION SURVEYING

PART 1 - GENERAL

1.1 SCOPE:

- A. Construction surveying shall include all of the surveying work required to layout the Work and control the location of the finished Project. The Contractor shall have the full responsibility for constructing the Project to the correct horizontal and vertical alignment, as shown on the Drawings, as specified, or as directed by the Engineer. The Contractor shall assume all costs associated with rectifying work constructed in the wrong location.
- B. From the information shown on the Drawings and the information to be provided as indicated under Project Conditions below, the Contractor shall:
  - 1. Be responsible for setting reference points and/or offsets, establishment of baselines, and all other layout, staking, and all other surveying required for the construction of the Project.
  - 2. Safeguard all reference points, stakes, grade marks, horizontal and vertical control points, and shall bear the cost of re-establishing same if disturbed.
  - 3. Stake out the permanent and temporary easements or the limits of construction to ensure that the Work is not deviating from the indicated limits.
  - 4. Be responsible for all damage done to reference points, baselines, center lines and temporary bench marks, and shall be responsible for the cost of re-establishment of reference points, baselines, center lines and temporary bench marks as a result of the operations.
- C. Baselines shall be defined as the line to which the location of the Work is referenced, i.e., edge of pavement, road centerline, property line, right-of-way or survey line.
- D. Record Drawing surveys shall be performed in accordance with Section 01 78 39.

1.2 PROJECT CONDITIONS:

- A. The Drawings provide the location and/or coordinates of principal components of the Project. The alignment of some components of the Project may be indicated in the Specifications. The Engineer may order changes to the location of some of the components of the Project or provide clarification to questions regarding the correct alignment.
- B. The location and elevation of benchmarks are shown on Drawings.

- C. Check and establish exact location of existing facilities prior to construction of new facilities and any connections thereto.

1.3 QUALITY ASSURANCE :

- A. The Contractor shall furnish documentation, prepared by a surveyor currently registered in the State of Georgia, confirming that staking is being done to the horizontal and vertical alignment shown in the Contract Documents. This requires that the Contractor hire, at the Contractor's own expense, a currently registered surveyor, acceptable to the Owner, to provide ongoing construction staking or confirmation of such.
- B. Any deviations from the Drawings shall be confirmed by the Engineer prior to construction of that portion of the Project.
- C. Construction Verification Surveying
  - 1. The Engineer may verify the Contractor's reference points, centerlines and work performed. This verification activity in no way relieves the Contractor of the responsibility of installing reference points, centerlines, temporary benchmarks, verifying that the work has been performed accurately, and all other work covered by this Section.

1.4 SITE WORK :

- A. Staking Precision: The precision of construction staking shall match the precision of a component's location indicated on the Drawings. Staking of utilities shall be done in accordance with generally accepted practice for the type of utility.
- B. Written certification, by a licensed surveyor, that structure base grade and structure locations match the locations shown on the Drawings is required prior to beginning construction of the structure.
- C. Paved Surfaces: The Contractor shall establish a reference point for establishing and verifying the paving subgrade and finished grade elevations. Any variance with plan grades shall be identified by the Contractor and confirmed by the Engineer prior to constructing the road base.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 71 23.16



SECTION 01 73 29

CUTTING AND PATCHING

PART 1 – GENERAL

1.1 SCOPE:

- A. The work under this Section includes, but is not necessarily limited to, cutting and patching work as indicated on the Drawings, herein specified and as necessary for proper and complete performance of the Work.
- B. Requirements for cutting and patching may be described in various sections of these Specifications.
- C. Execute cutting, including excavating and filling, or patching of work required to:
  - 1. Make several parts fit properly.
  - 2. Uncover work to provide for installation of ill-timed work.
  - 3. Remove and replace defective work.
  - 4. Remove and replace work not conforming to requirements of the Contract Documents.
  - 5. Remove samples of the installed work as specified for testing.
  - 6. Install specified work in existing construction.
- D. In addition, upon written instruction of the Engineer:
  - 1. Uncover work to provide for the Engineer's observation of covered work.
  - 2. Remove samples of the installed materials for testing.
  - 3. Remove work to provide for alteration of existing work.
- E. Protection of Work:
  - 1. Do not endanger any work by cutting or altering the Work or any part of it.
  - 2. Do not cut or alter the work of another contractor without written consent of the Engineer.

1.2 SUBMITTALS :

- A. Prior to cutting which affects the structural safety of the Project or the work of another contractor, submit a written notice to the Engineer requesting consent to proceed with cutting. The notice shall include:
  - 1. Identification of Project.

2. Description of defective Work.
3. Necessity for cutting.
4. Affect on other work or on the structural integrity of the Project.
5. Description of the proposed work including:
  - a. Scope of cutting and patching
  - b. Subcontractor and trades to execute work
  - c. Products proposed to be used
  - d. Extent of refinishing
6. Alternatives to cutting and patching.
7. Designation of party responsible for the cost of cutting and patching.

B. Cost Estimate: Prior to cutting and patching performed on instruction of the Engineer, submit a cost estimate.

C. Should conditions of the Work or the schedule necessitate alternative materials or methods, submit a written recommendation to the Engineer that includes:

1. Compelling conditions for alternative materials or methods.
2. Recommended alternative materials or methods.
3. Submittals as required for substitutions.

D. Uncovered Work: Submit written notice to the Engineer designating the time the work will be uncovered for the Engineer's observation.

### 1.3 PAYMENT FOR COST:

A. Contractor's Costs: Costs caused by ill-timed or defective work or work not conforming to the Contract Documents, including costs for additional services of the Engineer, shall be paid by the Contractor.

B. Owner's Costs: Cost of work done as the result of the Engineer's/Owner's instructions, which is not shown on the Drawings or specified, other than defective or non-conforming work, will be paid for by the Owner.

## PART 2 – PRODUCTS

### 2.1 MATERIALS:

A. All products and materials shall conform to the requirements of the Specifications for the type of work being performed, except where no products are specified in these Specifications for the item being replaced; then the products and materials shall be of an equivalent type, quality, thickness and width of the item removed.

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Inspect existing conditions of the Work including elements subject to movement or damage during cutting and patching, or excavating and backfilling.
- B. After uncovering work, inspect conditions affecting the installation of new products.

3.2 PREPARATION:

- A. Provide shoring, bracing and support as required to maintain structural integrity of the Project.
- B. Provide protection for other portions of the Project and provide protection from the elements.

3.3 PERFORMANCE:

- A. Execute fitting and adjustments of products to provide finished installation that complies with specified tolerances and finishes.
- B. Execute cutting and demolition by means that will prevent damage to other work and will provide proper surfaces to receive installation of repairs and new work.
- C. Execute excavating and backfilling as specified in Section 31 23 00 Excavation and Fill.
- D. Restore work which has been cut or removed and install new products to provide completed work in accordance with the requirements of the Contract Documents.
- E. Refinish entire surfaces as necessary to provide an even finish. Continuous surfaces shall be refinished to the nearest intersection and assemblies shall be entirely refinished.

END OF SECTION 01 73 29

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section includes administrative and procedural requirements for:
  - 1. Salvaging nonhazardous demolition and construction waste.
  - 2. Recycling nonhazardous demolition and construction waste.
  - 3. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
  - 1. Section 01 50 00 Temporary Facilities and Controls for environmental-protection measures during construction, and location of waste containers at Project site.
  - 2. Section 31 11 00 Clearing and Grubbing for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.02 DEFINITIONS :

- A. Construction Waste: Structure and site improvement materials and other solid waste resulting from construction, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Structure and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycle, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.03 PERFORMANCE REQUIREMENTS :

A. General: Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:

1. Demolition Waste:

- a. Asphalt paving.
- b. Concrete.
- c. Concrete reinforcing steel.
- d. Brick.
- e. Concrete masonry units.
- f. Structural and miscellaneous steel.
- g. Piping.
- h. Supports and hangers.
- i. Valves.
- j. Sprinklers.

2. Construction Waste:

- a. Masonry and CMU.
- b. Lumber.
- c. Wood sheet materials.
- d. Wood trim.
- e. Metals.
- f. Piping.
- g. Electrical conduit.
- h. Packaging: Salvage or recycle 100 percent of the following uncontaminated packaging materials:
  - 1) Paper.
  - 2) Cardboard.
  - 3) Boxes.
  - 4) Plastic sheet and film.
  - 5) Polystyrene packaging.
  - 6) Wood crates.
  - 7) Plastic pails.

1.04 INFORMATIONAL SUBMITTALS :

- A. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.05 QUALITY ASSURANCE :

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Waste Management Conference: Conduct conference at Project site. Review methods and procedures related to waste management including, but not limited to, the following:
  - 1. Review and discuss waste management plan.
  - 2. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  - 3. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.

1.06 WASTE MANAGEMENT PLAN :

- A. Waste Identification: Indicate anticipated types and quantities of demolition site- clearing and construction waste generated by the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION :

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
  - 1. Comply with operation, termination, and removal requirements in Section 01 50 00 Temporary Facilities and Controls.
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

1. Distribute waste management plan to everyone concerned within three (3) days of submittal return.
  2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
  2. Comply with Section 01 50 00 Temporary Facilities and Controls for controlling dust and dirt, environmental protection, and noise control.
- 3.02 SALVAGING DEMOLITION WASTE :
- A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
1. Clean salvaged items.
  2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
  3. Store items in a secure area until installation.
  4. Protect items from damage during transport and storage.
  5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site.
- C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
1. Clean salvaged items.
  2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
  3. Store items in a secure area until delivery to Owner.
  4. Transport items to Owner's storage area designated by Owner.
  5. Protect items from damage during transport and storage.
- 3.03 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL :
- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Receivers and Processors: List below is provided for information only; available recycling receivers and processors include, but are not limited to, the following:

1. Recycling Bank of Gwinnett.
  2. Blaze Recycling.
  3. Snellville Recycling Center.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
    - a. Inspect containers and bins for contamination and remove contaminated materials if found.
  2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
  4. Store components off the ground and protect from the weather.
  5. Remove recyclable waste and transport to recycling receiver or processor.

3.04 RECYCLING DEMOLITION WASTE :

- A. Asphalt Paving: Grind asphalt to maximum 1-1/2-inch (38-mm) size.
1. Crush asphaltic concrete paving.
  2. Break up and transport paving to asphalt-recycling facility.
- B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
1. Pulverize concrete to maximum 1-1/2-inch (38-mm) size.
- C. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
1. Pulverize masonry to maximum 1-1/2-inch (38-mm) size.
  2. Clean and stack undamaged, whole masonry units on wood pallets.



3.05 RECYCLING CONSTRUCTION WASTE :

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
  - a. Comply with requirements in Section 32 92 00 Turf and Grasses for use of clean sawdust as organic mulch.

3.06 DISPOSAL OF WASTE :

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from site and legally dispose of them.

END OF SECTION 01 74 19

SECTION 01 74

23 FINAL

CLEANING

PART 1 - GENERAL

1.1 SCOPE:

- A. This Section covers the general cleaning which the Contractor shall be required to perform both during construction and before final acceptance of the Project unless otherwise shown on the Drawings or specified elsewhere in these Specifications.

1.2 QUALITY ASSURANCE :

- A. Daily, and more often if necessary, conduct inspections verifying that requirements of cleanliness are being met.
- B. In addition to the standards described in this Section, comply with all pertinent requirements of governmental agencies having jurisdiction.

1.3 HAZARDOUS MATERIAL AND WASTE :

- A. The Contractor shall handle hazardous waste and materials in accordance with applicable local, state, and federal regulations. Waste shall also be disposed of in approved landfills as applicable.
- B. The Contractor shall prevent accumulation of wastes which create hazardous conditions.
- C. Burning or burying rubbish and waste materials on the site shall not be allowed.
- D. Disposal of hazardous wastes or materials into sanitary or storm sewers shall not be allowed.

1.4 DISPOSAL OF WASTE :

- A. The definitions contained in Georgia Environmental Protection Division Rules 391-3-4-.01 shall be applicable to this Project. The term waste shall include excess and surplus materials, and shall include liquid and solid wastes.
- B. Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

- C. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on-site.
- D. Remove and transport waste in a manner that will prevent spillage on adjacent surfaces and areas.
- E. Burning: Do not burn waste materials on site.
- F. Waste removed from the Project site shall be disposed of in sites permitted by the Georgia Environmental Protection Division for the acceptance of type of waste being disposed. The acceptable types of permitted disposal facilities are as follows:
  - 1. Inert Waste Landfills
  - 2. Municipal Solid Waste Landfills
  - 3. Municipal Solid Waste Landfills permitted to receive only construction and demolition wastes.
- G. Exceptions to Paragraph F are as follows:
  - 1. Hazardous waste shall be disposed of in accordance with Georgia Environmental Protection Division Rules 391-3-11.
  - 2. Asbestos-containing waste shall also be handled and disposed in accordance with Georgia Environmental Protection Division Rules 391-3-14.
  - 3. Excess earth material and excess excavated rock material may be placed on sites for which the Contractor provides to the Owner a signed affidavit from the property owner that the placement of such material is acceptable to the property owner. The Contractor and property owner shall be responsible for all permitting of such disposal.
- H. No waste shall be placed at a transfer station facility.
- I. The Contractor shall maintain records related to all waste removed from the Project site so as to allow the Owner or the Engineer to readily determine the following:
  - 1. Date waste removed from Project site.
  - 2. Name of hauler (company and driver) transporting such waste.
  - 3. General description of waste transported.
  - 4. "Truck tickets" indicating the waste disposal site and amount of waste disposed therein.
- J. For all wastes hauled to any landfill, the handler of such wastes must be licensed in accordance with Georgia Environmental Protection Division rules.

PART 2 – PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT:

- A. Provide all required personnel, equipment and materials needed to maintain the specified standard of cleanliness.

2.2 COMPATIBILITY :

- A. Use only the methods and equipment which are compatible with the type of waste being removed, as recommended by the manufacturer of the material or as approved by the Engineer.

PART 3 – EXECUTION

3.1 PROGRESS CLEANING:

A. General

1. Do not allow the accumulation of scrap, debris, waste material and other items not required for construction of this Work.
2. At least each week, and more often if necessary, completely remove all scrap, debris and waste material from the job site.
3. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the environment.

B. Site

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris and waste material. Remove all such items to the place designated for their storage.
2. Restack materials stored on site weekly.
3. At all times maintain the site in a neat and orderly condition which meets the approval of the Engineer.

3.2 FINAL CLEANING :

- A. Definitions: Unless otherwise specifically specified, “clean” for the purpose of this Article shall be interpreted as removal of all tools, equipment, surplus materials, scrap, debris, trash, or other waste materials from the site; restoring the site to its pre-construction condition.
- B. General: Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris and waste. Conduct final progress cleaning as described in 3.1 above.
- C. Site: Unless otherwise specifically directed by the Engineer, hose down all paved areas on the site and all public sidewalks directly adjacent to the site; rake clean other surfaces of the grounds. Completely remove all resultant debris.

D. Structures

1. Remove all traces of soil, waste material, splashed material, and other foreign matter to provide a uniform degree of exterior cleanliness. Visually inspect all exterior surfaces and remove all traces of soil, waste material, and other foreign matter. Remove all traces of splashed materials from adjacent surfaces. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure. In the event of stubborn stains not removable with water, the Engineer may require light sandblasting or other cleaning at no additional cost to the Owner.
- E. Post-Construction Cleanup: All evidence of temporary construction facilities, haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other evidence of construction, shall be removed as directed by the Engineer.
- F. Restoration of Landscape Damage: Any landscape feature damaged by the Contractor shall be restored as nearly as possible to its original condition at the Contractor's expense. Restoration shall be performed to the satisfaction of the Engineer.
- G. Timing: Schedule final cleaning as approved by the Engineer to enable the Owner to accept the Project.

END OF SECTION 01 74 23

SECTION 01 78

36 WARRANTIES

PART 1 – GENERAL

1.1 PROJECT MAINTENANCE AND WARRANTY:

- A. Maintain and keep in good repair the Work covered by these Drawings and Specifications until acceptance by the Owner.
- B. Warranty Period: The Contractor shall warrant for a period of one (1) year from the date of Owner's written Final Acceptance of the Project, as defined in the Contract Documents, that the completed Work is free from all defects due to faulty products or workmanship, and the Contractor shall promptly make such corrections as may be necessary by reason of such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect throughout the Warranty Period.
- C. The Contractor shall not be obligated to make replacements which become necessary because of ordinary wear and tear, or as a result of improper operation or maintenance, or as a result of improper work or damage by another Contractor or the Owner, or to perform any work which is normally performed by a maintenance crew during operation.
- D. In the event of multiple failures of major consequences prior to the expiration of the one (1) year warranty described above, the affected work shall be disassembled, inspected and modified or replaced as necessary to prevent further occurrences. All related components which may have been damaged or rendered non-serviceable as a consequence of the failure shall be replaced. A new warranty period equal to the original warranty period shall be provided against defective or deficient design, workmanship, and materials and shall commence on the day that the item is reassembled and placed back into operation. As used herein, multiple failure shall be interpreted to mean two (2) or more successive failures of the same kind in the same item or failures of the same kind in two or more items. Major failures may include, but are not limited to, cracked or broken piping, or vessels, excessive deflections, excessive wear or excessive leakage around seals. Failures which are directly and clearly traceable to operator abuse, such as operations in conflict with published operating procedures or improper maintenance, such as substitution of unauthorized replacement parts, use of incorrect lubricants or chemicals, flagrant over-or under-lubrication and using maintenance procedures not conforming with published maintenance instructions, shall be exempted from the scope of the one (1) year warranty. Should multiple failures occur in a given item, all products of the same size and type shall be inspected, modified or replaced as necessary and rewarranted for the original full Warranty Period.

- E. The Contractor shall, at Contractor's own expense, furnish all labor, materials, tools and equipment required and shall make such repairs and removals and shall perform such work or reconstruction as may be made necessary by any structural or functional defect or failure resulting from neglect, faulty workmanship or faulty materials, in any part of the Work performed by the Contractor. Such repair shall also include refilling of trenches, excavations or embankments which show settlement or erosion after backfilling or placement.
- F. Except as noted on the Drawings or as specified, all structures such as embankments and fences shall be returned to their original condition prior to the completion of the Contract. Any and all damage to any facility not designated for removal, resulting from the Contractor's operations, shall be promptly repaired by the Contractor at no cost to the Owner.
- G. The Contractor shall be responsible for all road and entrance reconstruction and repairs and maintenance of same for a period of one (1) year from the date of final acceptance. In the event the repairs and maintenance are not made immediately and it becomes necessary for the owner of the road to make such repairs, the Contractor shall reimburse the owner of the road for the cost of such repairs.
- H. In the event the Contractor fails to proceed to remedy the defects upon notification within ten (10) days of the date of such notice, the Owner reserves the right to cause the required materials to be procured and the work to be done, as described in the Drawings and Specifications, and to hold the Contractor and the sureties on Contractor's bond liable for the cost and expense thereof.
- I. Notice to Contractor for repairs and reconstruction will be made in the form of a registered letter addressed to the Contractor at Contractor's home office.
- J. Neither the foregoing paragraphs nor any provision in the Contract Documents, nor any special guarantee time limit implies any limitation of the Contractor's liability within the law of the place of construction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 78 36

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
1.1	Qualified Personnel
3.1	Maintenance of Documents and Samples
3.2	Record Drawings
3.3	GPS Coordinates for Water Projects
3.4	GPS Coordinates for Sanitary Sewer Projects
3.5	GPS Coordinates for Stormwater Projects

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall, under this item, furnish all material, tools, labor, and equipment necessary to properly compile, prepare, maintain, record, and submit Project Record Documents as specified herein.
- B. Project Record Documents to be prepared and submitted by the Contractor include, but are not limited to Record Drawings, Specifications, Change Orders and other modifications to the Contract, Engineer field orders or written instructions, Requests for Information (RFI) and Clarification Memorandums, reviewed shop drawings, product data and samples, and test records. Final payment will not be made until all Project Record Documents are submitted and approved by the Engineer and GCDWR.
- C. The Contractor shall maintain on the project site an updated set of Record Drawings. These Drawings must be the latest revision, and match those of GCDWR.

1.4 SUBMITTALS

- A. Submit for approval in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, the following items:
1. Record Drawings.
  2. Specifications.
  3. Change Orders and other Contract modifications.
  4. Engineer/Owner Field Orders.



5. Requests for Information (RFI) and Clarification Memorandums.
  6. Approved shop drawings, product data, and samples.
  7. Test records.
  8. Valve cards providing a 3 point measurement on each valve to a fixed permanent reference point.
  9. GPS Coordinates for all fire hydrants, valves, manholes, and other structures and appurtenances installed.
- B. Contractor shall accompany each submittal with transmittal letter containing date, project title and number, Contractor's name and address, title and number of each record document, and signature of Contractor's authorized representative.

## PART 2 - PRODUCTS

### 2.1 QUALIFIED PERSONNEL

- A. Contractor shall furnish qualified and experienced person, whose duty and responsibility shall be to maintain Project Record Documents.

## PART 3 - EXECUTION

### 3.1 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Maintain secure storage for documents and product samples in the Contractor's field office, or an agreed upon location when field offices are not used, apart from documents used for construction. Example acceptable locations may include lockable tool trailer at the lay down area or superintendent's work vehicle. In any case documents shall be kept neat and secure.
- B. File documents and samples in accordance with format of these specifications.
- C. Maintain documents in a neat, clean, dry, legible condition and in good order. Do not use record documents for construction purposes. Maintain at an agreed upon site for GCDWR, one (1) copy of all Project Record Documents.
- D. Make documents and samples available at all times for inspection by the Engineer, or GCDWR.
- E. Failure to maintain up-to-date Project Record Documents, in a satisfactory manner, may be cause for withholding of a certificate for payment.
- F. Purpose of Project Record Documents is to document factual information regarding aspects of Work, both concealed and visible, to enable future modification of Work to proceed without lengthy and expensive site measurement, investigation, and examination.

### 3.2 RECORD DRAWINGS

- A. The Contractor must maintain an up-to-date Field Record set of drawings by marking changes and other information directly on a clean set of full-size Contract Drawings. The Contractor shall submit for Engineer and GCDWR approval, up-to-date Record Drawings with monthly pay applications. **Approval of monthly pay**

**applications will not occur until the updated record drawings are approved.**

The Engineer and GCDWR will review the record drawings to confirm that the recorded information is current.

- B. Record information concurrently with construction progress. Do not conceal any Work until required information is recorded. Make entries within twenty-four (24) hours after receipt of information that a change in Work has occurred.
- C. Unless otherwise noted, Record Drawings shall provide dimensions, distances, and coordinates to the nearest one tenth foot (0.1’).
- D. Unless otherwise noted, Record Drawings shall provide elevations to the nearest one-hundredth foot (0.01’) for all pertinent items constructed by the Contractor.
- E. Record Drawings shall have a title block indicating that the drawings are Record Drawings, the name of the company preparing the Record Drawings, and the date the Record Drawings were prepared.
- F. Record Drawings shall include details not on original Drawings to accurately depict actual constructed items.
- G. Legibly mark drawings using erasable colored pencils to record actual construction, including:
  - 1. Color Coding: RED – When showing information added to drawings  
GREEN – When showing information deleted from drawings  
BLUE – When showing information notes on drawings
  - 2. Date all entries.
  - 3. Call attention to each entry by drawing a “cloud” around area(s) affected.
  - 4. For water mains, legibly mark to record actual changes made during construction, including but not limited to:
    - a. Depth of valve or meter vaults in relation to finished grade data if not shown, or where depth differs from that indicated on the Drawings. Provide the elevation of piping through the vaults.
    - b. Horizontal and vertical locations of existing and new underground facilities and appurtenances, and other underground structures, equipment, or Work. Reference at least two measurements to permanent surface improvements.
    - c. Location of internal utilities and appurtenances concealed in the construction referenced to visible and accessible features of the structure.
    - d. Locate existing facilities, piping, equipment, and items critical to the interface between existing physical conditions or construction and new construction.
    - e. Changes made by Addenda and Field Orders, Work Change Directive, Change Order, Written Amendment, and Engineer's written interpretation and clarification using consistent symbols for each and showing appropriate document tracking number.
  - 4. For Sewer, legibly mark to record actual changes made during construction, including but not limited to:
    - a. Invert elevations of all pipes entering manholes, junction boxes, etc.
    - b. Top elevations (ring and cover) of all manholes, vaults, etc.
    - c. Horizontal and vertical locations of existing and new underground facilities

and appurtenances, and other underground structures, equipment, or Work. Reference at least two measurements to permanent surface improvements.

- d. Location of internal utilities and appurtenances concealed in the construction referenced to visible and accessible features of the structure.
  - e. Locate existing facilities, piping, equipment, and items critical to the interface between existing physical conditions or construction and new construction.
  - f. Changes made by Addenda and Field Orders, Work Change Directive, Change Order, Written Amendment, and Engineer's written interpretation and clarification using consistent symbols for each and showing appropriate document tracking number.
5. For Stormwater mains, legibly mark to record actual changes made during construction, including but not limited to:
- a. Invert elevations of all pipes entering stormwater structures (Catch Basins, Yard Inlets, Junction Boxes, Headwalls, etc.).
  - b. Top elevations (ring and cover, grate, throat, etc.) of all stormwater structures.
  - c. Locate existing facilities, piping, equipment, and items critical to the construction.
  - d. Changes made by Addenda, Field Orders, Work Change Directive, Change Order, Written Amendment, and Engineer's written interpretation and clarification, using consistent symbols for each and showing appropriate document tracking number.

### 3.3 GPS COORDINATES FOR WATER PROJECTS

- A. At the completion of construction, the Contractor shall provide GPS coordinates for all newly installed and relocated fire hydrants, blow-offs, valves, valve vaults, master meter vaults, and dead ends. Coordinates shall be of survey grade quality (sub foot accuracy minimum) and provided in the Georgia State Plane Coordinates West Zone. Control shall be based on NAD 83 for horizontal and NAVD 88 for vertical. Coordinates shall be submitted in an ESRI shape file format.
- B. As installation of the utility pipeline progresses, the Contractor shall provide offset staking for the centerline of the utility pipe every 100 feet along the pipe. The staking shall identify the distance to the centerline of the pipe and the depth of cover to the top of pipe. At the completion of construction, the Contractor shall provide GPS coordinates for the centerline of the pipe, include depth of bury, based on staked offsets.

### 3.4 GPS COORDINATES FOR SANITARY SEWER PROJECTS

- A. At the completion of construction, the Contractor shall provide GPS coordinates for all newly installed and relocated manholes, valves, and valve vaults. Coordinates shall be of survey grade quality (sub foot accuracy minimum) and provided in the Georgia State Plane Coordinates West Zone. Control shall be based on NAD 83 for horizontal and NAVD 88 for vertical. Coordinates shall be submitted in an ESRI shape file format.

- B. For force mains, as installation of the pipeline progresses, the Contractor shall provide offset staking for the centerline of the utility pipe every 100 feet along the pipe. The staking shall identify the distance to the centerline of the pipe and the depth of cover to the top of pipe. At the completion of construction, the Contractor shall provide GPS coordinates for the centerline of the pipe, include depth of bury, based on the staked offsets.

### 3.5 GPS COORDINATES FOR STORMWATER PROJECTS

- A. At the completion of construction, the Contractor shall provide GPS coordinates for all newly installed and relocated Stormwater structures, (Catch Basins, Yard Inlets, Junction Boxes, etc.). Coordinates shall be of survey grade quality (sub foot accuracy minimum) and provided in the Georgia State Plane Coordinates West Zone. Control shall be based on NAD 83 for horizontal and NAVD 88 for vertical. Coordinates shall be submitted in an ESRI shape file format.

END OF SECTION 01 78 39

SECTION 02 32 19  
EXPLORATORY EXCAVATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
3.1	Exploratory Excavation

B. RELATED SECTIONS

The following listed sections do not purport to be all inclusive, as it is the Contractor's responsibility to do all the Work in accordance with the Contract Documents.

1. Excavation and Fill (31 23 00).
2. Erosion and Sedimentation Controls (31 25 00).

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall, under this item, furnish all material, tools, labor, and equipment necessary to properly conduct excavation at specified locations or as directed by GCDWR.

1.4 SUBMITTALS

- A. Submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES all working drawings and schedules of materials and methods proposed to be followed in the execution of the Work under this item.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 EXPLORATORY EXCAVATION

- A. When directed by GCDWR, the Contractor shall perform field exploratory excavation work to determine the presence of existing underground sanitary sewer, water, and storm drainage, utility piping, and or structures. The information for each said utility

found shall include, but not limited to, type of utility, material dimension, material type, and both vertical and horizontal measurements of its location.

- B. Where necessary, utilize vacuum excavation equipment to minimize the risk of damage to suspected existing utilities.
- C. Follow all federal, state, and local regulations related to excavation work.
- D. For each utility found, provide the following information:
  - 1. Type of utility
  - 2. Material type
  - 3. Material dimension
  - 4. Measurements of the vertical and horizontal location of the utility to permanent reference points
  - 5. Any other information which may help in coordinating work around the utility
- E. Submit documentation of the findings, including a detailed sketch, to the Engineer and GCDWR.

END OF SECTION 02 32 19

SECTION 02 41

13.13 PAVING

REMOVAL

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Equipment
3.1	Trench Paving Removal
3.2	Milling Operation

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.
- B. Gwinnett County Department of Transportation Standard Specifications.

1.3 WORK INCLUDED

- A. The Contractor shall furnish all labor, equipment, and materials necessary to remove, haul-off, and dispose asphalt and/or concrete paving as required for the rehabilitation, replacement, and installation of storm drainage systems and related appurtenances.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. The Contractor shall submit photographs and/or videotape, sufficiently detailed, of existing conditions of project site. These shall be used to evaluate project areas that might be misconstrued as damage caused by debris or construction material removal.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. MILLING EQUIPMENT:

- 1. Use power-driven, self-propelled milling equipment that is the size and shape that allows traffic to pass safely through areas adjacent to the work. Also use equipment

**that is:**



- a. Designed to mill and remove specified depth of existing asphalt and/or concrete paving
- b. Equipped with grade slope controls operating from a string line or ski and based on mechanical or sonic operation
- c. Capable of removing pavement to an accuracy of 1/8 in. (3 mm)
- d. Furnished with lighting system for night work, as necessary
- e. Provided with conveyors capable of side, rear, or front loading to transfer the milled material from the roadway to a truck

B. DUST CONTROL

1. Provide power brooms, vacuum sweepers, power blowers, or other means to remove loose debris or dust. Do not allow dust control to restrict visibility of passing traffic or to disrupt adjacent property owners.

PART 3 - EXECUTION

3.1 TRENCH PAVING REMOVAL

- A. Where trench excavation within a paved surface is required, the Contractor shall saw cut vertical joints for the entire depth of pavement. The saw cut joints shall extend for the entire length of trench on both sides of the trench. Ragged edges shall be trimmed so as to provide a substantially straight line juncture between the old and new surfaces.
- B. The saw cut joints shall be a minimum of 9 inches outside of the maximum width of excavated trench.
- C. Pavement shall be removed in and hauled off site and disposed of in a proper legal manner. Contractor shall be careful not to disturb or damage any pavement that is to remain.

3.2 MILLING OPERATION

- A. Follow the Plans to mill the designated areas and depths, as required. Ensure the following requirements are met:
  1. Schedule the construction operation. Use milling methods that will produce a uniform finished surface and maintain a constant cross slope between extremities in each lane.
  2. Provide positive drainage to prevent water accumulation on the milled pavement, as shown on the Plans or directed by GCDWR and/or the Engineer.
  3. Bevel back the longitudinal vertical edges greater than 2 in (50 mm) that are produced by the removal process and left exposed to traffic. Bevel them back at least 3 in for each 2 in (75 mm for each 50 mm) of material removed. Use an attached mold board or other approved method.
  4. When removing material at ramp areas and ends of milled sections, taper the transverse edges 10 ft (3 m) to avoid creating a traffic hazard and to produce a

smooth surface.

5. Protect with a temporary asphaltic concrete tie-in (paper joint) vertical edges at other areas such as bridge approach slabs, drainage structures, and utility appurtenances greater than 1/2-inch that are left open to transversing vehicles. Place the temporary tie-in at taper rate of at least 6 to 1 horizontal to vertical distance.
  6. Remove dust, residue, and loose milled material from the milled surface. Do not allow traffic on the milled surface and do not place asphaltic concrete on the milled surface until removal is complete.
- B. The reclaimed asphaltic and/or concrete pavement becomes the Contractor's property unless otherwise specified.

END OF SECTION 02 41 13.13

SECTION 02 41 13.23

UTILITY LINE

REMOVAL

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
3.1	Pipe Removal/Abandonment
3.2	Structure Removal/Abandonment
3.3	Valve Abandonment
3.4	Fire Hydrant Removal
3.5	Miscellaneous Structure Removal/Reset

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall furnish all labor, equipment, and materials necessary to remove, salvage, and dispose of, abandon, or reset existing storm drainage, sanitary sewer, water utility lines and appurtenant structures, and/or miscellaneous structures of all types and as required for the installation of proposed storm drainage, sanitary sewer, and/or water utility systems and related appurtenances, including excavation and backfill. Installation of new storm drainage pipe, structures, and appurtenant items will be paid under their respective Pay Items.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. The Contractor shall submit photographs or videotape, sufficiently detailed, of existing conditions of project site. These shall be used to evaluate project areas that may be misconstrued as damage caused by debris, or construction material removal.
- C. The Contractor shall submit for approval by GCDWR details of:
1. Details of all caps, plugs, manifolds, and/or venting pipes to be installed on abandoned piping to remain in the ground.

2. Location of disposal site for all materials removed with documentation from

- site owner stating acceptance of each type of material to be disposed of.
3. Details for restraining all existing water mains to remain in service where a portion of the main has been removed or modified.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 PIPE REMOVAL/ABANDONMENT

- A. The Contractor shall be responsible for removal of any utility pipeline as directed by GCDWR that is to be abandoned that interferes with the installation of the proposed pipelines. Prior to removing any portion of existing pipelines, the Contractor shall obtain approval from GCDWR.
- B. The Contractor shall isolate the portion of the pipeline to be removed using existing isolation valves. Any service connections on the pipeline to be removed shall be transferred to the new pipeline or an existing pipeline which will remain in service, prior to isolation of the pipeline.
- C. The ends of piping to remain in the ground shall be suitably capped or plugged to prevent water or soil from entering the pipe.
- D. Any existing pipelines that have a portion of pipe removed and are to remain in service shall be properly restrained with thrust blocking to prevent movement of the remaining pipe.
- E. The Contractor shall follow all applicable codes and regulations for removal of hazardous materials, such as asbestos cement pipe, and dispose of in a legal and proper manner.
- F. The Contractor shall load, haul away, and dispose of in a satisfactory location any debris, trash, structures, piping, etc. removed from the worksite in accordance with all applicable codes and regulations.

3.2 STRUCTURE REMOVAL/ABANDONMENT

- A. The Contractor shall be responsible for removal of any existing storm drainage structure or sanitary sewer manhole that is to be abandoned that interferes with the installation of the proposed utility system as directed by GCDWR. Prior to removing any structure/manhole, the Contractor shall obtain approval from GCDWR.
- B. Where drainage structures or sanitary sewer manholes are to be removed, the Contractor shall excavate the structure/manhole; remove the structure/manhole and connecting piping, as required, and backfill the void with approved material. If the structure/manhole is located within a road, parking area, driveway or other paved area, the backfill shall be compacted to at least 95% of maximum dry density - Standard Proctor (ASTM D698). If the structure/manhole is located in an unpaved area, the backfill shall be compacted to 90% of maximum dry density - Standard Proctor (ASTM

D698) and slightly mounded to allow for settlement.

- C. Where drainage structures or sanitary sewer manholes are to be abandoned in place, the Contractor shall grout seal the ends of all pipes entering the structure/manhole, fracture the invert of the structure/manhole to allow for drainage, cut the top of the structure/manhole off to a minimum of three feet (3') below finished grade, fill the structure/manhole with #57 stone, and backfill and compact with suitable fill material. If the structure/manhole is located within a road, parking area, driveway or other paved area, the backfill shall be compacted to at least 95% of maximum dry density - Standard Proctor (ASTM D698). If the structure/manhole is located in an unpaved area, the backfill shall be compacted to 90% of maximum dry density - Standard Proctor (ASTM D698), and slightly mounded to allow for settlement.
- D. The Contractor shall load, haul away, and dispose of in a satisfactory location any debris, trash, structures, piping, etc. removed from the worksite in accordance with all applicable codes and regulations.

### 3.3 VALVE ABANDONMENT

- A. Buried valves that are to be abandoned shall be fully closed. The valve box shall be removed and the hole filled with suitable material and compacted. If the valve is within a paved location, the hole shall be capped with matching materials (asphalt, concrete, etc.). If the valve is at the end of a water main that is to remain in service, the valve shall be plugged and restrained to prevent leaks.

### 3.4 FIRE HYDRANT REMOVAL

- A. Fire hydrants to be removed shall be salvaged in accordance with Section 33 12 19.81 entitled "Relocate and Reconnect Hydrants, Valves, and Meters" of these specifications.

### 3.5 MISCELLANEOUS STRUCTURE REMOVAL/RESET

- A. The Contractor shall be responsible for removal of any miscellaneous structure that interferes with the installation of the proposed utility system as indicated on the Contract documents and/or drawings or directed by GCDWR. Prior to removing any structure, the Contractor shall obtain approval from GCDWR.
- B. Where miscellaneous structures are to be removed, the Contractor shall remove the structure, with their attached parts and connections, from supports/foundation, excavate the supports/foundation, and backfill the void with approved material. If the structure is located within a road, parking area, driveway or other paved area, the backfill shall be compacted to at least 95% of maximum dry density - Standard Proctor (ASTM D698). If the structure is located in an unpaved area, the backfill shall be compacted to 90% of maximum dry density - Standard Proctor (ASTM D698) and slightly mounded to allow for settlement.
- C. Where miscellaneous structures are to be reset, the Contractor shall remove the structure, portions of structures, and other materials to be salvaged and reused in construction work, store the structure in a location and manner that protects the structure from damage, dispose portions of the structure not suitable for reuse, replace with

suitable new material, and reset the structure in the location and to the required graded as indicated on the Contract documents and/or drawings or directed by GCDWR,

- D. The Contractor shall load, haul away, and dispose of in a satisfactory location any debris, trash, structures, parts, connections, etc. removed from the worksite in accordance with all applicable codes and regulations.

END OF SECTION 02 41 13.23

SECTION 02 42 11

REMOVAL OF CONSTRUCTION MATERIAL

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
3.1	Workmanship

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall furnish all materials, tools, labor, and equipment, necessary to remove all unwanted construction material and debris, as directed by GCDWR.

1.4 SUBMITTALS

- A. Submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES all working drawings and schedules of materials and methods proposed to be followed in the execution of the Work under this item.
- B. The Contractor shall supply identification and license of company hauling/transporting material from the site.
- C. The Contractor shall submit photographs and/or videotape, sufficiently detailed, of existing conditions of project site. These shall be used to evaluate project areas that might be misconstrued as damage, caused by debris, or construction material removal.

PART 2 - PRODUCTS - (NOT

USED) PART 3 - EXECUTION

3.1 WORKMANSHIP

- A. The Contractor shall follow all federal, state, and local regulations related to removal, hauling, and disposal of trash and debris.



- B. The Contractor shall comply with Gwinnett County Ordinance SWO 2012-002 for hauling and disposal of all solid waste removed from the site for the duration of the Work.
- C. The Contractor shall load, haul away, and dispose of debris, trash, structures, automobiles, etc., that may be pre-existing on the Worksite, to a legally permitted location.
- D. The Contractor shall load, haul away, and dispose of construction material that is generated in execution of the Work, to a legally permitted location; including, but not limited to any debris, trash, structures, piping, etc.
- E. The Contractor shall remove and dispose of all unused construction materials prior to Final Acceptance of the Work by GCDWR and the Engineer.
- F. No additional payment shall be made for excavation or disposal of excavated material required for placement or removal of backfill placed above the foundation of the pavement; or for preparation of subgrade. The cost thereof shall be considered included in the pavement unit prices bid.

END OF SECTION 02 42 11

SECTION 03 30 00

CAST-IN-PLACE

CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Concrete Design
1.5	Submittals
1.6	Defective Work
2.1	Forms
2.2	Steel Reinforcement
2.3	Portland Cement
2.4	Coarse Aggregates
2.5	Fine Aggregates
2.6	Joint Sealants
2.7	Water
3.1	Preparation
3.2	Formwork
3.3	Vapor Retarders
3.4	Steel Reinforcement
3.5	Joints
3.6	Concrete Placement
3.7	Finishing Formed Surfaces
3.8	Finishing Floors and Slabs
3.9	Miscellaneous Concrete Items
3.10	Concrete Protection and Curing
3.11	Removal and Reuse of Forms
3.12	Concrete Surface Repairs
3.13	Field Quality Control

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall, under this item, furnish all the materials for and shall place all cast-in-place concrete, including all reinforcing steel and formwork, in the structures shown on the Contract Documents and/or Drawings, and such other concrete as may be found necessary to fully complete the Work indicated under this Contract or per GCDWR.

#### 1.4 CONCRETE DESIGN

- A. Cast-in-place concrete shall be designed to meet the following requirements (Note – the Classifications shown below match GDOT Standard Specification Section 500):
  - 1. Class AAA:
    - a. Minimum Compressive 28 Day Strength: 5000 psi
    - b. Slump: 2-4 inches
  - 2. Class AA1:
    - a. Minimum Compressive 28 Day Strength: 4500 psi
    - b. Slump: 2-4 inches
  - 3. Class A:
    - a. Minimum Compressive 28 Day Strength: 3000 psi
    - b. Slump: 2-4 inches
  - 4. Class B:
    - a. Minimum Compressive 28 Day Strength: 2200 psi
    - b. Slump: 2-4 inches
- B. Aggregate sizing and proportioning of cement, water, aggregates, air content, and use of admixtures shall be as required to meet the requirements of each class of concrete shown above and as needed to meet the requirements of the Work.
- C. Use of fly ash as a cement substitute is prohibited unless specifically allowed by GCDWR.
- D. Entrained Air: 4-7% Total Air Content, unless otherwise approved by GCDWR.

#### 1.5 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. Submittals shall show, in detail, the type, mix design, reinforcement layout, and location of all cast-in-place concrete and accessories to be used in construction.
- C. Upon GCDWR request, provide certification that all materials used in cast in place concrete meet the material standards specified in this specification.

#### 1.6 DEFECTIVE WORK

- A. Any concrete masonry found to be defective from any cause whatsoever, at any time before the Final Acceptance of the Work, shall be removed and either replaced or repaired at the expense of the Contractor.

### PART 2 - PRODUCTS

#### 2.1 FORMS

- A. All formwork shall conform to the requirements of ACI 347 “Recommended Practice for Concrete Formwork”.
- B. The Contractor shall furnish all labor and materials for all forms required for the

construction of the Work.

- C. Either metal or wood forms may be used.
- D. All forms shall be true to the required shape, clean, of sufficient strength, and well braced so that they shall maintain their proper position during the placing and vibrating of the concrete.

## 2.2 STEEL REINFORCEMENT

- A. Steel reinforcement shall be designed, detailed, fabricated and placed in conformance with all applicable requirements of ACI 318, and the CRSI Manual of Standard Practice.
- B. Steel reinforcing bars shall conform to ASTM A615, Grade 60, unless otherwise specified.
- C. Welded wire fabric shall conform to ASTM A185.
- D. Steel wire shall conform to ASTM A82.
- E. All metal accessories for setting and fastening of reinforcement shall conform to CRSI Manual of Standard Practice.

## 2.3 PORTLAND CEMENT

- A. Portland cement used shall be Type I or II conforming to ASTM C150.

## 2.4 COARSE AGGREGATE

- A. Coarse aggregates shall conform to ASTM C33, size numbers 56, 57, 67, and 68, or as otherwise approved by GCDWR.

## 2.5 FINE AGGREGATE

- A. Fine aggregates shall conform to ASTM C33.

## 2.6 JOINT SEALANTS

- A. Waterstops: PVC conforming to Corp of Engineer Specification CRD-C 572, or as otherwise specified or approved by GCDWR.
- B. Premolded joint filler: Cork or PVC, conforming to ASTM D1752, or as otherwise specified or approved by GCDWR.
- C. Joint sealants: Synthetic rubber that is resistant to acids and alkalis (pH range 3.5 to 8), or as otherwise specified or approved by GCDWR.

## 2.7 WATER

- A. Water used shall be clean, fresh, and free from oils, acids, alkalis, organics, or other deleterious substances. Potable water will fulfill this requirement.

# PART 3 - EXECUTION

## 3.1 PREPARATION

- A. Measurement and Mixing: Measurement and mixing of concrete shall be subject to the review of GCDWR in all respects and shall be performed in accordance with the recommendations of ACI 304, as modified herein.
  - 1. Measuring requirements: Measure cement, fine and coarse aggregates separately by weight by equipment providing accuracy within 1 percent of the net load weighed. Water shall be measured by a suitable device, accurate to within 1 percent of the total amount required for the batch.
  - 2. Measuring equipment: The accuracy of the weighting equipment shall meet the requirements of the United States Bureau of Standards and standard testing weights and other necessary equipment shall be available at all times for testing the equipment.
  - 3. Mixing: Concrete shall be mixed in rotary, batch type mixer of adequate design to produce a thorough mix, homogenous in composition and uniform in color. Each batch of 1 cubic yard or less shall be mixed not less than 1-1/2 minutes after the last of the ingredients have been added to the mixer. The mixing time shall be increased 15 seconds for each additional cubic yard or fraction thereof.
  
- B. Ready-Mixed Concrete:
  - 1. Rate of delivery: The rate of delivery of the mixed concrete shall be such that the interval between placing of fresh concrete in contact with concrete already placed from previous batches shall not exceed 45 minutes. The elapsed time between the introduction of mixing water to the cement and aggregates and depositing concrete in the Work shall not exceed 60 minutes, including mixing and agitating time.
  - 2. Delivery equipment: Delivery of concrete in non-agitating equipment shall not be permitted.
  - 3. Addition of water: No water shall be added to the concrete at the site unless accepted by GCDWR for a specific batch. Acceptance of such addition to one batch shall not be construed as acceptance of additions to subsequent deliveries.

### 3.2 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Construct forms tight enough to prevent loss of concrete mortar.
- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces.
- E. Chamfer exterior corners and edges of permanently exposed concrete.
- F. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- G. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

- H. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- I. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### 3.3 VAPOR RETARDERS

- A. Vapor Retarders: Minimum 6 mil polyethylene sheeting shall be utilized under any concrete slab poured on earth or gravel.
- B. Lap joints 6 inches and seal with manufacturer's recommended tape.

### 3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

### 3.5 JOINTS

- A. Joints, either vertical or horizontal, shall be made only where and as permitted by GCDWR.
- B. Construct joints true to line with faces perpendicular to surface plane of concrete.
- C. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by GCDWR.
  - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated.
  - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
  - 3. Locate joints for beams, and slabs in the middle third of spans.
  - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
  - 5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

### 3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by GCDWR.
- C. Unless permission is granted by the GCDWR Project Inspector, concrete shall not be laid

in water nor shall water be allowed to rise on or flow over freshly placed concrete until the concrete has set for at least twenty-four (24) hours.

- D. Concrete shall not be mixed at any time during freezing, inclement weather, or at night without explicit permission, and then only at the Contractor's risk. If permitted to build concrete structures in freezing weather, the Contractor shall provide and use proper facilities for covering and keeping warm the newly laid concrete.
- E. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
  - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- F. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  - 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
  - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
  - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- G. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  - 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  - 2. Maintain reinforcement in position on chairs during concrete placement.
  - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  - 4. Slope surfaces uniformly to drains where required.
  - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- H. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
  - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

- I. Hot-Weather Placement: Comply with ACI 301 and as follows:
  1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

### 3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  1. Apply to concrete surfaces not exposed to view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  1. Apply to concrete surfaces exposed to view, from inside and out.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

### 3.8 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
  1. Apply float finish to surfaces to receive trowel finish.
- C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
  1. Apply a trowel finish to ground floor slab.
  2. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-foot- long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/4 inch.
- D. Trowel and Fine-Broom Finish: Apply to all pedestrian traffic surfaces other than ground floor slab. Apply a first trowel finish and while concrete is still plastic, slightly scarify surface with a fine broom.
- E. Apply non-slip coating to walking surfaces where called for on the Contract Documents and/or Drawings.



### 3.9 MISCELLANEOUS CONCRETE ITEMS

- A. **Filling In:** Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. **Curbs:** Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. **Equipment Bases and Foundations:** Provide machine and equipment bases and foundations as shown on Contract Documents and/or Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

### 3.10 CONCRETE PROTECTING AND CURING

- A. **General:** Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. **Evaporation Retarder:** Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. **Formed Surfaces:** Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. **Unformed Surfaces:** Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. **Cure concrete according to ACI 308.1, by one or a combination of the following methods:**
  - 1. **Moisture Curing:** Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  - 2. **Moisture-Retaining-Cover Curing:** Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
    - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
    - b. Moisture cure any or all concrete surfaces at Contractor's option.
  - 3. **Curing Compound:** Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to

heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

### 3.11 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
  - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 75 percent of its 28-day design compressive strength. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.
  - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by GCDWR.

### 3.12 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by GCDWR. Remove and replace concrete that cannot be repaired and patched to GCDWR's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
  - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
  - 2. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by GCDWR.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
5. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4- inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
6. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

- E. Perform structural repairs of concrete, subject to GCDWR's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to GCDWR's approval.

### 3.13 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Engage a qualified, 3<sup>rd</sup> party independent testing and inspection agency to perform field tests and inspections and prepare test reports.
- B. No concrete shall be placed until all steel reinforcement to be covered has been inspected in place and approved by GCDWR Project Inspector.
- C. GCDWR reserves the right to conduct additional concrete field testing through the County's materials testing annual services contract.
- D. Inspections:
1. Steel reinforcement placement.
  2. Verification of use of required design mixture.
  3. Concrete placement, including conveying and depositing.
  4. Curing procedures and maintenance of curing temperature.
  5. Review concrete delivery tickets at time of delivery to assure conformance to ACI

- 318.
6. Verification of concrete strength before removal of shores and forms from beams and slabs.
- E. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
    - a. When frequency of testing will provide fewer than five compressive- strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
  3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
  5. Unit Weight: One test for each composite sample.
  6. Compression Test Specimens: ASTM C 31/C 31M.
    - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
  7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
    - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
  8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
  9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
  10. Test results shall be reported in writing to GCDWR, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28- day tests.
  11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by GCDWR but will not be used as sole basis for approval or rejection of concrete.
  12. Additional Tests: Testing and inspecting agency shall make additional tests of

concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by GCDWR. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by GCDWR.

13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

END OF SECTION 03 30 00

SECTION 04 21

13 BRICK

MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Bricks
2.2	Mortar
14.1	Brick
14.2	Laying
14.3	Mortar

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall furnish all labor, equipment, and materials necessary to complete and make operational the Work as directed by GCDWR under this contract.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. Submittals shall show in detail the type, size, and location of all brick masonry and accessories to be used in construction. Submittals shall include material properties data and mortar mix design.

PART 2 - PRODUCTS

2.1 BRICKS

- A. All brick used shall, unless otherwise shown or specified, be of such quality as to meet ASTM Designation C62.
- B. Subject to compliance with requirements, provide the following or an approved equal:
1. Grade SW hard grade, common, building brick of clay or shale 2-1/4 x 3-3/4 x 8

**inches in size.**

## 2.2 MORTAR

- A. Portland Cement: ASTM C150, Type I or II, except Type III may be used for cold- weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C207, Type 'S.'
- C. Aggregate for Mortar: ASTM C144, except for joints less than ¼ inch thick, use aggregate graded with 100 percent passing the No.16 sieve.
  - 1. White-Mortar Aggregates: Natural white sand or ground white stone.

## PART 3 - EXECUTION

### 3.1 BRICK

- A. Should brick be brought upon the site of the Work of which only a portion is of acceptable quality, the Contractor shall at once remove the same and shall not offer that material again for inspection.

### 3.2 LAYING

- A. The brick shall be laid regularly and truly to line with joints not exceeding one-quarter (¼) inch in thickness on the face and with joints completely filled with mortar as each brick is pushed into place and no subsequent filling of said joints shall be allowed. No bats or imperfect bricks shall be permitted to be used.
- B. The exposed faces of the brick masonry shall have all mortar projecting beyond the surface of the brick scraped off and the brickwork shall be thoroughly cleaned, and the joints pointed immediately after placing.
- C. No broken or cut brick shall be allowed to be used except where necessary, as closures, and where cutting of brick's is necessary. Then such faces as are exposed in the same must be accurately trimmed to the contour of the face of the Work in which the bricks are laid.
- D. All brickwork shall be bonded as may be directed and adjoining courses shall break joint one-half (½) a brick as nearly as practicable. The brickwork shall be executed straight and vertical or regularly curved or battered as shown or specified. Whenever brick masonry is left for the night, or is left unfinished for any reason, the masonry shall be racked off or toothed as directed and mortar removed from the exposed surfaces of the bricks. When new Work is joined to Work previously laid, the old brickwork must first be thoroughly scraped free from adhering mortar or earth, and thoroughly washed with water.

### 3.3 MORTAR

- A. The brick shall be laid in mortar consisting of one (1) part by volume of Portland Cement and two (2) parts of volume of clean, coarse, screened sand, thoroughly mixed dry, with sufficient water afterwards added slowly to give proper consistency. Twenty (20) pounds of lime per sack of cement may be added.



END OF SECTION 04 21 13

SECTION 04 43

13 RUBBLE

MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Rubble Masonry
2.2	Mortar
3.1	Shaping the Stone
3.2	Laying
3.3	Mortar

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. This work includes constructing rubble masonry from classes such as coursed, random, and random range work, from roughly squared and dressed stone laid with or without mortar as specified on the Plans.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. Submittals shall show in detail the type, size, and location of all rubble masonry and accessories to be used in construction. Submittals shall include material properties data and mortar mix design.

PART 2 - PRODUCTS

14.4 RUBBLE MASONRY

- A. Stone for masonry shall meet the requirements of GDOT Standard Specification 834.

2.2 MORTAR

- A. Portland Cement: ASTM C150, Type I or II, except Type III may be used for cold-

weather construction. Provide natural color or white cement as required to produce mortar color indicated.

- B. Hydrated Lime: ASTM C207, Type 'S.'
- C. Aggregate for Mortar: ASTM C144, except for joints less than ¼ inch thick, use aggregate graded with 100 percent passing the No.16 sieve.
  - 1. White-Mortar Aggregates: Natural white sand or ground white stone.

### PART 3 - EXECUTION

#### 3.1 SHAPING THE STONE

- A. Roughly square the stones on joints, beds, and faces. At angles and ends of walls, use selected stone roughly squared and pitched to line. If specified, finish the corners or angles in exterior surfaces with a chisel draft.

#### 3.2 LAYING

- A. Decrease the stone thickness from the bottom to the top of wall.
- B. Ensure that the headers in the heart of the wall are the same size as shown in the face and extend at least 12 in (300 mm) into the core or backing.
- C. Ensure that headers in walls 2 ft (600 mm) or less in thickness extend entirely through the wall. The headers shall occupy at least 20 percent of the face of the wall.
- D. Lay the masonry to line and in roughly leveled courses. Ensure that the bottom of the foundation is large, selected stones.
- E. Lay the courses with leaning beds parallel to the natural bed of the material.
- F. Regularly diminish the thicknesses of the courses, if varied, from the bottom to the top of the wall. Keep a surplus supply of stones at the site to select from.
- G. When mortar masonry is specified:
  - 1. Clean each stone and saturate it with water before setting it. Clean and moisten the bed that will receive it.
  - 2. Bed the stones in freshly made mortar with full joints. Carefully settle the stones in place before the mortar sets.
  - 3. Do not permit spalls in the beds. Ensure that the joints and beds have an average thickness of not more than 1 in. (25 mm).
  - 4. Ensure that the vertical joints in each course break with the adjoining courses at least 6 in. (150 mm).
  - 5. **Do not place vertical joints directly above or below a header joint. If a stone is moved or if the joint is broken after the mortar has set, take the stone up and thoroughly clean the mortar from the bed and joints. Reset the stone in fresh mortar. NOTE: Do not lay the masonry in freezing weather or when the stone contains frost, except with permission.**
  - 6. Whenever possible, properly point the face joints before the mortar sets. If joints cannot be pointed, rake them out to a depth of 1 in (25 mm) before the mortar sets.

Do not smear the stone face surfaces with the mortar forced out of the joints or the mortar used in pointing.

7. Thoroughly wet the joints pointed after the stone is laid with clean water and fill with mortar.
8. Drive the mortar into the joints and finish with an approved pointing tool.
9. Keep the wall wet while pointing. In hot or dry weather, protect the pointed masonry from the sun and keep it wet for at least three days after the pointing is finished.
10. Do not perform pointing in freezing weather or when the stone contains frost.
11. After the pointing is completed and the mortar is set, thoroughly clean the walls and leave them in a neat condition.

H. When laying dry rubble masonry:

1. Take care that each stone takes a firm bearing no less than in three separate points upon the underlying course.
2. Ensure that face joints are no greater than 1 in (25 mm) wide.
3. Chink the open front and rear joints with spalls fitted to take firm bearing upon the top and bottom surfaces throughout the length of the stone.
4. Fill the interstices in the heart of the wall with spalls. When specified, thoroughly slush the open joint on the rear surfaces with mortar to prevent water from seeping through the joints.

I. Weep Holes: Provide adequate drainage for retaining walls with weep holes as shown on the Plans or required by GCDWR and/or the Engineer. When backfilling at weep holes, build chimneys and french drains extending through the parts of the fill to be drained. The cost of chimneys, weep holes, and french drains is included in the Contract Price for rubble masonry.

J. Copings: Use copings, bridge seats, and back walls made from the materials shown on the Plans. If not otherwise specified, they shall be Class A concrete. Make concrete copings in sections at least 12 in (300 mm) thick and from 5 to 10 ft (1.5 to 3 m) long, extending the full width of the wall. Cast the sections in place or precast and set them in place in free mortar beds.

### 3.3 MORTAR

A. Rubble Masonry shall be laid in mortar consisting of one (1) part by volume of Portland Cement and two (2) parts of volume of clean, coarse, screened sand, thoroughly mixed dry, with sufficient water afterwards added slowly to give proper consistency. Twenty (20) pounds of lime per sack of cement may be added.

END OF SECTION 04 43 13

SECTION 31 11 00  
CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
3.1	Clearing and Grubbing
3.2	Workmanship

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall furnish all labor, equipment, and materials necessary to clear woodland areas.
- B. All clearing and grubbing shall be incidental to the Contract Work.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. Photographs and/or videotape sufficiently detailed of existing conditions within the limits of construction and of trees and plantings, construction, and site improvements of the adjoining area that might be misconstrued as damage caused by site clearing.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

- A. The term clearing and grubbing as used herein shall mean removal of trees less than 12-inch caliper as measured at the standard breast height and brush. Trees 12-inch and greater caliper as measured at the standard breast height shall be considered as select tree removal.

- B. The sites of all excavation and grading shall be first cleared of all paving, trees, walls, fences, sidewalks, stumps, brush, rubbish, and crops, which shall be removed or disposed of in a satisfactory manner.
- C. Remove trees and brush as authorized by GCDWR to permit Work to be completed.
  - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated. When it is necessary to cut tree roots on the surface of the ground, the ends shall be cut off smooth, without splitting or shattering and scars greater than one inch in diameter shall be sealed with an approved sealer asphalted tree paint. The trunks of the trees shall be carefully protected from damage, and if unavoidable damage occurs, the injured portions shall be neatly trimmed and covered with an application of tree paint. Excavating machinery, cranes, etc., shall be handled with care to prevent damage to shade trees, particularly to overhanging branches, and branches shall not be cut off except by permission of GCDWR.
  - 2. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed sub-grade.
  - 3. Use only hand methods for grubbing within tree protection zone.
  - 4. Chip removed tree branches and stockpile in areas or dispose of offsite, as directed and approved by GCDWR.
- D. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
- E. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.
- F. All Contractors should be aware that the Georgia Environmental Protection Division has issued a burning ban for thirteen (13) Metro Atlanta Counties, including Gwinnett. The ban went into effect in 1996 and shall continue each year from May 1 through September 30. This ban should be considered when bidding projects that require clearing and debris removal. It is the Contractor's responsibility to remove all construction debris from the jobsite. Any costs incurred as a result of the burning ban are the sole responsibility of the Contractor.

### 3.2 WORKMANSHIP

- A. The Contractor shall remove all brush, trees and stumps. All cleared debris shall be hauled offsite. There shall be no additional payment for removal of materials considered as being removed, loaded, hauled away, and disposed under other Pay Items. No material other than rock may be buried onsite.

END OF SECTION 31 11 00

SECTION 31 13 11

TEMPORARY FENCING

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
1.5	Payment
2.1	Tree Save Barrier
2.2	Chain Link Fencing
3.1	Orange Barrier Tree Save Fencing
3.2	Temporary Fencing
3.3	Permanent Fencing

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor is responsible to install and maintain Temporary Fencing as indicated on the plans or as directed by the GCDWR Project Inspector.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to be followed in the execution of the Work under this item.

1.5 PAYMENT

- A. Removal and disposal of existing fencing shall be included in the unit cost of any fence installations.

PART 2 - PRODUCTS

2.1 ORANGE TREE SAVE BARRIER

- A. Must have the following characteristics:



1. High visibility
2. Lightweight and easy to handle
3. UV stabilized fabric
4. 48" height
5. 100' prefabricated rolls or 300' fabric rolls
6. 60" heavy duty oak stakes

## 2.2 TEMPORARY FENCING

- A. Temporary fencing shall be commercial chain link fencing.
  1. Posts, tubes, rails, bracing, fence fabric, shall be galvanized steel.
  2. Fence fabric shall be 2-inch mesh.
  3. The Contractor may embed fence posts in the earth as needed, or use temporary portable bases.
  4. Upon GCDWR approval, alternative materials and types of temporary fencing may be used to meet project specific needs where such alternatives would be more appropriate than chain link fencing. Such alternatives shall be measured and paid for at the same unit of measurement and price as temporary chain link fencing.

## PART 3 - EXECUTION

### 3.1 ORANGE TREE SAVE BARRIER

- A. The Contractor shall install orange tree save barrier as necessary to exclude the entry of equipment onto designated areas. Said barrier is to be installed at the earliest possible opportunity. Contractor shall be responsible for maintaining fence for its intended purpose until directed to remove fence by GCDWR. No work shall be allowed on private property and/or within GCDWR granted easements until tree save barrier has been installed by the Contractor and inspected/confirmed by the Engineer and/or GCDWR Inspector. Where necessary, the Contractor shall obtain the services of a land surveyor, registered in the State of Georgia, to stake easement lines, right-of-way lines, and property lines to designate the limits of construction.

### 3.2 TEMPORARY FENCING

- A. The Contractor shall install temporary chain link fencing as necessary or directed by GCDWR to exclude ingress or egress of designated areas. Fencing shall be maintained in good condition during construction operations, and shall be removed when no longer needed and approved by GCDWR.

### 3.3 PERMANENT FENCING

- A. When permanent fencing is disturbed during construction, the Contractor shall either remove and store, or remove and dispose of disturbed fencing as applicable. At the completion of construction, the Contractor shall restore all disturbed fencing sections to pre-construction conditions to the extent possible. All disturbed sections shall be restored with pre-existing stored materials or in like and kind with new materials, or as otherwise negotiated with the fence/property owner.

END OF SECTION 31 13 11

SECTION 31 23 00  
EXCAVATION AND FILL

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Bedding
2.2	Backfill
2.3	Select Structural Fill
2.4	Classified Stone
3.1	Additional Excavation
3.2	Backfilling
3.3	Borrow
3.4	Channel Excavation
3.5	Clearing and Care of Surface Materials
3.6	Disposal of Material
3.7	Embankment Over Pipes
3.8	Excavation Methods
3.9	Length of Trench to Be Opened
3.10	Protection of Trees and Shrubbery
3.11	Removal of Water
3.12	Sheeting, Shoring, and Bracing
3.13	Spoil Removal
3.14	Storage of Materials
3.15	Trench Excavation
3.16	Rock Excavation
3.17	Blasting
3.18	Unauthorized Excavation
3.19	Access By Owner's Materials Testing Firm

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall make all foundation and pavement cuts, make all earth excavations required for various pipelines, to the lines and grades as indicated on the Contract Documents and/or Drawings, or as directed, and shall dispose of all excess excavated materials in making fills or as otherwise specified herein.

- B. Under section titled Borrow, the Contractor shall furnish, haul, and place all borrowed material as required for proper backfilling of excavations when, in the opinion of GCDWR or their representative, the original material is unsuitable for use as backfill as it fails to meet the requirements set forth in the section titled Backfilling. This item shall also include borrowed material required for embankments over sewers, pipes, and elsewhere when suitable material excavated under this Contract is not available in sufficient quantity or fails to meet the requirements of the section titled Embankment Over Pipes.
- C. The term "earth excavation" as used herein shall mean excavation of materials including earth, hardpan, all rock excavation, masonry, plain concrete, reinforced concrete, pavement, pavement foundation, ashes, rubbish, muck, rock etc.
- D. Earth excavation shall include the removal, handling, re-handling, filling, and disposal of any and all materials encountered in performing the Work and shall include all groundwater and surface water control (pumping, bailing, and draining, etc.), protection of excavation and adjacent utilities and structures (sheeting, and shoring, etc); the support of sewers, conduits, roadways, foundations, and other piping within the limits of the trench or adjacent thereto; prevention of damage to structures; all backfill, refill, borrow, additional bedding, rolling, tamping, and protection therefore; and all incidental Work. Moreover, the Contractor must assume all responsibility for any obstacles or conditions, foreseen or unforeseen, encountered, or manifest during the prosecution of the Work.
- E. Contract Documents and/or Drawings will be furnished indicating elevations of the existing ground and the approximate elevations of the finished grades of the fills around structures prior to construction of the various portions of the Work. The elevations of the present ground are believed to be reasonably correct, but do not purport to be absolutely so, and, together with any schedule of quantities are presented only as an approximation. The Contractor shall satisfy himself/herself, however, by actual examination of the site of the Work, as to the existing elevations and the amount of work required under these items.
- F. The Contractor shall, under this item, furnish all the materials for and shall properly place pipe bedding material, which may be deemed necessary by GCDWR and which may be required for proper completion of the Work included under this Contract.

#### 1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to be followed in the execution of the Work under this item.

### PART 2 - PRODUCTS

#### 2.1 BEDDING

- A. Unless otherwise specified, bedding materials for storm drainage systems shall be

Foundation Backfill, Type II meeting the requirements of Georgia DOT Specifications Section 812.

## 2.2 BACKFILL

- A. Unless otherwise specified, backfill materials for storm drainage systems shall be Foundation Backfill, Type I or Type II meeting the requirements of Georgia DOT Specification Section 812.
  - i. Backfill within all street rights-of-way & all other paved areas shall be compacted to 95% maximum density, tested using the AASHTO Method T-99 or ASTM D- 698.
  - ii. Backfill in all other areas shall be compacted to 90% maximum density, tested using the AASHTO Method T-99 or ASTM D-698.

## 2.3 SELECT STRUCTURAL FILL

- A. Select structural fill soils may be used as backfill provided they have been tested by GCDWR's testing contractor/agent representative and assessed to be of composition and moisture content compatible with achieving the specified degree of compaction. Cost of the testing laboratory, fieldwork, and analysis will not be paid for as a separate item. All cost associated with compaction testing will be paid for by GCDWR through the Demand Service Contract. The cost of additional testing due to the failure of initial compaction to meet the requirements of the Contract Documents shall be the responsibility of the Contractor.

## 2.4 CLASSIFIED STONE

- A. Classified stone shall meet the requirements of Georgia DOT Specification Section 800. Stone size shall be between No. 4 and No. 57, inclusive, crusher run, or Georgia DOT Foundation Backfill Material Type II.

# PART 3 - EXECUTION

## 3.1 ADDITIONAL EXCAVATION

- A. It is expected that satisfactory foundations will be found at the elevations indicated on the Contract Documents and/or Drawings. However, should GCDWR determine it necessary to go to additional depth, the excavation shall be carried to an additional depth as authorized and directed by GCDWR. Replacement will be with Foundation Backfill Material Type II or Classified Stone as directed by GCDWR to the bottom of the standard bedding. The cost of removing, handling, and disposal of unsuitable material excavation shall be included in the price per cubic yard. No additional payment shall be made for removal of materials considered as being removed, loaded, hauled away, and disposed under other Pay Items.

## 3.2 BACKFILLING

- A. Backfilling shall include initial and final backfilling; re-grading of grounds; restoration

of surface and sub-surface materials and structures, including resurfacing of paved areas damaged by the Contractor.

- B. Bottom of trenches in earth must be shaped or molded and compacted to the contour of the outside of the pipe, using bedding materials when required, as indicated on the Contract Documents and/or Drawings, to give a full support to the lower segment of the pipe and so that the pipe is firmly supported in the excavation throughout its entire length, in such manner as to prevent any subsequent settlement of the pipe. Boulders or loose rocks, which might bear against the pipe, will not be permitted in the trench bottom or in the backfill to a depth of eighteen (18) inches above the pipe. Bottoms of excavations which are of loose granular soils shall be compacted prior to placing bedding or pipe.
- C. Except as otherwise specified or directed, all forms, bracing, and lumber shall be removed before backfilling.
- D. Initial backfill in trenches where pipe has been laid shall be placed very carefully in layers not exceeding six (6) inches in thickness and carefully and thoroughly consolidated by tamping simultaneously under the haunches and on both sides of the pipe to a height of twelve (12) inches above the top of the pipe. Initial backfill material shall be free of rocks larger than four (4) inches in the largest dimension. Initial backfilling must be done properly and before any fill is deposited in large quantities from a machine bucket or other vehicle. During initial backfill, dumping from a bucket must not be allowed to fall from a height of more than one foot upon a pipe, and in all cases the bucket must be lowered so that the shock of the falling earth will not injure the pipe or structure. Only after the initial backfill has been placed to a point twelve (12) inches above the top of the pipe, may Work proceed in placing the remaining backfill, which must be carefully placed and compacted by tamping. In streets, other surfaced areas, or where directed, this backfill shall be placed in layers not to exceed eight (8) inches in thickness. All precautions must be taken to avoid future settlement in these areas. Tamping shall be done by approved mechanical tampers.
- E. Material under roadways and other paved areas shall be placed and compacted to a density of not less than 95 percent as determined by a standard Proctor test ASTM D698 Current Edition. Areas outside of roadways or paved areas (non- structural) shall be compacted as directed by GCDWR to meet existing or proposed uses of the area. The GCDWR Project Inspector may, at his/her option, direct tests to be made to determine the density of the compacted material. The location and number of tests shall be designated by GCDWR as work progresses, but should not be less than one test per 100 to 150 linear feet of trench backfill placement for each 2 vertical feet of fill placed.
- F. Materials used for backfilling shall be free from all perishable and objectionable materials; no stones larger than four (4) inches in the longest dimension shall be placed directly above the pipe.
- G. Select compactable material (soil or well graded crushed stone) shall be used in pipe trenches under roadways and other paved areas. When required on the plans, or required by GCDWR, graded aggregate base backfill shall be used in pipe trenches under roadways.
- H. Backfilling shall not be done in freezing weather (below 32 degrees F) except by

permission of the GCDWR Project Inspector, and shall not be done with frozen material or upon frozen materials.

- I. All backfilling shall be left with smooth, even surfaces, free of rock on the surface and properly graded, and shall be maintained in this condition until final completion and acceptance of the Work. Where directed by GCDWR, the backfill shall be mounded slightly above the adjacent ground to allow for settlement. In case of settlement after backfill, the Contractor shall correct the cause of the settlement and supply sufficient material satisfactory to the GCDWR Project Inspector to make up for the deficiency. Contractor must provide to GCDWR, when asked, any independent material testing reports performed on behalf of the contractor.

### 3.3 BORROW

- A. When excess excavated material is not available from other parts of the project, and it is necessary to borrow material to complete required fill and embankments, the Contractor shall obtain necessary material at locations off the site of the Work designated on the plans or by GCDWR. If no such locations are designated, the Contractor shall find his/her own source of supply for the material.
- B. All material to be used as borrow shall be approved by the GCDWR Project Inspector before being hauled to the site and subject to testing at the discretion of the Inspector. No excavation for this purpose shall be made in the bed of any existing or projected public highway, unless permitted by the GCDWR Project Inspector. Material obtained from the excess material available from other parts of the Work shall not be paid as Borrow.

### 3.4 CHANNEL EXCAVATION

- A. This work includes excavating, shaping, compacting, handling, hauling, and properly disposing of material encountered when excavating, changing, cleaning, or widening waterway channels as indicated on the Contract documents, drawings and/or as directed by GCDWR. The cost of removing, handling, and disposal of channel excavation material shall be included in the price per cubic yard. No additional payment shall be made for removal of materials considered as being removed, loaded, hauled away, and disposed under other Pay Items.

### 3.5 CLEARING AND CARE OF SURFACE MATERIALS

- A. Topsoil shall be removed to its entire depth from all areas to be excavated or graded. The topsoil shall be piled in designated or approved locations where it will not interfere with construction operations. Topsoil as stored, shall be reasonably free of subsoil, debris, and stones larger than (2) two inches in diameter. The stored topsoil shall be used for finished grading.
- B. The removal of existing pavement shall be done in accordance with the requirements of the authority within whose jurisdiction such pavement is located. The Contractor's attention is directed to the section of the General Conditions pertaining to permits for the required Work.

- C. Whenever the removal of pavements (other than gravel or surface treated types) is required, the Contractor shall outline the area to be removed by making saw cuts, providing vertical cuts in straight lines in order to permit removal in a straight line. Should pavement breakage occur beyond the original saw cut, the Contractor will be required to make a new straight saw cut beyond the furthest point of breakage. Payment for restoration of pavement will be made as specified under the item titled Roadway Construction.

### 3.6 DISPOSAL OF MATERIAL

- A. The Contractor will be required to remove from the site of the Work, all earth in excess of that required to backfill the excavation and to create necessary fills. This shall be done immediately after the backfill is completed to the satisfaction of the GCDWR Project Inspector. All materials removed shall become the property of the Contractor, and he/she shall make his/her own arrangements satisfactory to GCDWR for their disposition.
- B. All surplus material, and such other materials the GCDWR Project Inspector may deem unfit for use as backfill, shall be disposed of by the Contractor so as to give a minimum of inconvenience to the public.
- C. Any material, which may spill or drip from vehicles while being transported on public streets, drives, or other paved surfaces, shall be immediately removed and cleaned by the Contractor, to the satisfaction of the GCDWR Project Inspector, or the proper officials of the municipality in which the hauling or work is being done.
- D. The surface of all graded and spoil areas shall be left in a smooth and level or evenly sloped condition, free from stones, rubbish, or other debris.
- E. Disturbed areas shall be left in a neat and finished appearance and either temporarily stabilized with mulch only or temporary grassing and mulch, or permanently stabilized with grassing and mulch, and must meet the requirements in the section titled Erosion and Sedimentation Controls.

### 3.7 EMBANKMENT OVER PIPES

- A. Where the crown of a pipe comes close to or extends above the surface of the ground, it shall be covered and protected by an embankment. Unless otherwise ordered or indicated on the Contract Documents and/or Drawings, this embankment shall be at least two (2) feet deep over the top of the pipe, at least four (4) feet wide at the top, and with side slopes of not less than two (2) horizontal to one vertical extending to the surface of the ground. Provision shall be made for surface drainage.
- B. The materials of which the embankments are to be constructed shall be the same as those permitted for backfill, and shall be free from objectionable materials as defined in the section Backfilling.
- C. The earth shall be placed in layers not exceeding eight (8) inches in thickness, which shall be compacted by hand tamping or by other methods approved or directed by GCDWR. The embankments shall not be built during freezing weather or with frozen materials. The surface shall be brought to the true lines and grades as specified or



indicated on the Contract Documents and/or Drawings, and shall be raked smooth and left free from rubbish, stones, or gravel. Placing of fill or embankment over and around structures shall be done evenly on all sides to avoid unbalanced loading or overturning action.

### 3.8 EXCAVATION METHODS

- A. All excavation shall be in open-cut unless otherwise indicated on the Contract Documents and/or Drawings or approved by GCDWR and shall be in accordance with the Georgia Department of Transportation Standard Specifications for Road and Bridge Construction, Section 800, latest edition. In general, topsoil may be removed by machine methods. Excavation below topsoil may also be performed by machine, but shall be supplemented by such hand dressing or leveling as may be required to conform to lines and grades as given by GCDWR. Material so removed shall be used in backfill, making embankments, filling low areas, or as otherwise directed.
- B. Hand tool excavation shall be used where necessary to protect existing utilities and structures.
- C. All slopes shall be carefully cut or graded by hand, to the grades as detailed on the contract documents, drawings, and/or as required by GCDWR, and shall be tamped or otherwise compacted to maintain the material in position.
- D. It is the Contractor's responsibility to have all excavation conform to local and OSHA safety requirements.
- E. Unless otherwise shown on the plans, the minimum travel widths shall be sufficiently wide to allow achieving the specified compaction beside the pipe and beneath the pipe's haunches.

### 3.9 LENGTH OF TRENCH TO BE OPENED

- A. The length of trench to be opened or the areas of the surface to be disturbed or un-restored at any one time shall be limited by GCDWR with regard both to expeditious construction and to the convenience, safety, and comfort of citizens directly and indirectly affected by the Work. The Contractor shall not have more than 500 feet of trench open at one time. New trenching will not be permitted to be excavated, if there are previously excavated trenches that require backfilling or surface areas that require restoration. **Clean up and grassing shall follow a maximum of 500 feet behind pipe installation.** In any event, no additional Work of any kind will be permitted if there are existing streets or roadways that require attention to return them to a safe and proper condition. In general, no trench shall be opened more than 150 feet ahead of pipe laying. For safety, no trenches will be allowed to be left opened at night or on weekends unless approved by the GCDWR Project Inspector. All required permits shall be obtained before trenching begins.

### 3.10 PROTECTION OF TREES AND SHRUBBERY

- A. The Contractor shall be responsible for the protection of tops, trunks, and roots of existing trees that are to remain on the project site or in parks, lawns, or other improved areas. All trees shall remain and receive protection, if necessary, in areas where there is no excavation or embankment. Existing trees, which may be subject to construction

damage, shall be boxed, fenced, or otherwise protected before any work is started. The boxing shall be removed when directed or at the completion of the project. Heavy equipment or stockpiles will not be permitted within branch spread. Interfering branches shall be removed without injury to trunks and the scars shall be covered with tree paints.

- B. No tree shall be removed unless absolutely necessary for construction, as approved by GCDWR. In areas beyond construction, right-of-way, or easements, no trees or shrubbery shall be removed without the written consent of the property owner and approval of GCDWR.
- C. In open or improved lawn areas, excavation is to be done, if possible, utilizing a tractor mounted backhoe and extreme care shall be taken to avoid any damage to adjoining lawn areas. In areas not readily accessible by machinery and where excavation is required near existing trees and shrubberies, which may be damaged by excavation equipment, the trench shall be excavated with hand tools except as provided is in this section.

### 3.11 REMOVAL OF WATER

- A. Provide and maintain at all times during construction ample means and devices with which to promptly remove and properly dispose of all water from any source entering the excavations or other parts of the work. Accomplish dewatering by methods which will ensure a dry excavation and preservation of the final lines and grades of the bottoms of excavations. Methods of dewatering may include sump pumps, well points, deep wells, or other suitable methods which do not damage or weaken structures, foundations, or subgrades. Shallow excavations may be dewatered using open ditches provided such ditches are kept open and fre draining at all times.
- B. All necessary precautions shall be taken to prevent disturbance and to properly drain the areas upon which concrete is to be poured and upon which pipe is to be laid.
- C. Provide and maintain standby pumping equipment on the job site. Make available a minimum of one standby unit (a minimum of one for each ten in the event well points are used) for immediate installation should any pumping unit fail. Design and install well points or deep wells suitable for the accomplishment of the work and in compliance with all local codes. The flow in sewers, drains, gutters, or water courses encountered in the Work shall be adequately accounted for by the Contractor at his/her own expense to ensure these flows do not interfere with prosecution of any and all of the Work, and shall be maintained in such a manner as to ensure continuity of flow at all times.
- D. Unless specifically authorized by GCDWR and/or the Engineer, do not place concrete or mortar in water nor allow water to rise over newly-placed concrete or mortar for at least 24 hours after placement. Do not expose concrete structures to unequal hydrostatic forces until the concrete has reached its specified 28-day strength. Unless otherwise permitted, ground water encountered within the limits of excavation shall be depressed to an elevation not less than three (3) feet below the bottom of such excavation before pipe laying or concreting is started and shall be maintained until concrete and joint materials have attained initial set. Exercise care to prevent damage to pipelines or structures resulting from flotation, undermining, or scour. Commence dewatering operations when ground or surface water is first encountered and continue until such

times as water can safely be allowed to rise in accordance with the provisions of this section. Protect excavations from the entrance of surface water to the extent possible by the use of dikes and/or covers.

- E. If foundation soils are disturbed or loosened by the upward seepage of water or an uncontrolled flow of water, excavate and replace the affected areas with crushed rock at no cost to the GCDWR.
- F. Dispose of the water from the work in a suitable manner without damage to adjacent property. Do not allow conveyance of the water to interfere with traffic flow or treatment facilities operation. No water shall be drained into work built or under construction without approval from GCDWR or the engineer. The Contractor will be held responsible for the condition of any pipe or conduit which he may use for drainage purposes, and all such pipes or conduits shall be left clean and free of sediment.
- G. Provide sedimentation control measures as necessary to prevent the entrance of excessive or injurious amounts of sand and silt from surface runoff or dewatering operations into storm drains or receiving waters.
- H. Dispose of water in such a manner as not to be a menace to the public health and in accordance with applicable Environmental Protection Agency, Corps of Engineers, and State Environmental Protection Division standards and permits.
- I. Should sewage or any other odorous liquids be encountered during the Work, GCDWR shall be notified immediately. GCDWR will promptly notify appropriate regulatory agencies, if necessary. In addition, GCDWR will instruct Contractor as to any actions the Contractor can and cannot perform prior to any directives, which may be issued by the regulatory agencies. Any sewage will be pumped and hauled to an in-service manhole, pump station, or water reclamation facility, as directed by GCDWR. Any other liquids will be disposed of properly, as directed by GCDWR and/or any regulatory agencies having jurisdiction. GCDWR will then determine if actions taken by Contractor have caused the source of the odorous liquid to leak, and if so, Contractor shall be responsible for any fines and/or penalties levied by regulatory agencies having jurisdiction.

### 3.12 SHEETING, SHORING, AND BRACING

- A. Contractor shall sufficiently sheet, shore, and brace the sides of all excavations, as necessary, to prevent slides, cave-ins, settlement or movement of the banks, to maintain the excavation clear of all obstructions, and to provide safe working conditions. Use wood or steel sheeting of approved design and type in wet, saturated or flowing ground. Design all sheeting, shoring, and bracing with sufficient strength and rigidity to withstand the pressure exerted and to maintain shape and position under all circumstances.
- B. It is the Contractor's responsibility for correctly assessing the need for sheeting and analyzing the stresses induced. Since GCDWR and/or the Engineer does not dictate or determine the Contractor's sequence or limits of excavation, GCDWR and/or the Engineer assumes no responsibility for sheeting and shoring. The Contractor must employ or otherwise provide for a professional engineer to assess the need for sheeting and shoring and design same. Contract Documents and/or Drawings and design

computations shall be signed and sealed by a professional engineer registered in the State of Georgia. The Contract documents and/or drawings and design computations shall be submitted to GCDWR or the Engineer.

- C. Adequately sheet, shore, or brace excavations adjacent to existing or proposed buildings and structures, or in paved streets or alleys to prevent undermining beneath or subsequent settlement of such structures or pavements. Repair any damage to structures or pavements occurring through settlements, water or earth pressures, slides, caves, or other causes; due to failure or lack of sheeting or bracing, or due to improper bracing; or occurring through negligence or fault of the Contractor in any other manner at his own expense.
- D. Where in the opinion of GCDWR the removal of sheeting would endanger the Work built under this Contract or any adjoining improvements, such sheeting will be ordered to be left in place and the tops cut off as directed. In removing sheeting, the Work shall be done in such a manner as to prevent injurious caving of the sides. All voids left by sheeting along trenches shall be carefully refilled and rammed with suitable tools. Any timber directed to be left in place will not be paid for as supplemental price. No additional payment will be made for sheeting when directed to be left in place.
- E. Do not leave sheeting, shoring, or bracing materials in place unless otherwise specified or shown on the Contract Documents and/or Drawings or ordered by GCDWR and/or the Engineer in writing. Remove such materials in such manner that no danger or damage will occur to new or existing structures or property, public or private, and so that cave-ins or slides will not take place. Leave trench sheeting in place until backfill has been brought to a level 12 inches above the top of the pipe. Then cut off and remove the upper portion. Leave sheeting for structures in place until backfill has been brought to a level of 12 inches above the top of the bottom footing. Then cut off and remove the upper portion.
- F. In quicksand or soft ground, sheeting shall be driven to such depth below bottom of the trench to prevent upheaval, or as directed.
- G. Fill and thoroughly compact all holes and voids left in the work by the removal of sheeting, shoring, or bracing.
- H. Failure or refusal of GCDWR to order sheeting, or timbering to be left in place shall in no way relieve the Contractor of responsibility placed upon him under any provisions of the Specifications or other Contract Documents.
- I. The need and adequacy of sheeting, shoring, bracing, or other provisions to protect men/women and equipment in a trench or other excavation, and to meet local and OSHA safety requirements, shall be the sole and exclusive responsibility of the Contractor.

### 3.13 SPOIL REMOVAL

- A. The term Spoil Removal as used herein shall mean handling, hauling, and properly disposing of all surplus excavated earth material from the standard trench as defined in the Contract Documents and/or Drawings from the bottom of the bedding to finished grade as directed by GCDWR. The cost of removing, handling, and disposal of Spoil Removal shall be included in the price per cubic yard. No additional payment shall be made for removal

of materials considered as being removed, loaded, hauled away, and disposed under other Pay Items

3.14 STORAGE OF MATERIALS

- A. All salvageable materials, which may be removed from the site, together with all materials taken from the trenches, shall be stored in an approved, suitable place or as directed by GCDWR. The Contractor shall be responsible for any loss of or damage to salvageable materials through careless removal, neglectful or wasteful storage disposal, or use of such material.
- B. In the storing of excavated material, which is to be used as a backfill, the Contractor shall exercise care so as to avoid inconveniencing the public. If, in the opinion of GCDWR, it is necessary to remove this excavated material from the streets or lots, the Contractor will be required to do so at no cost to the County.
- C. Stored materials shall be left in a neat, drainable condition and, if left for more than seven (7) days or in an anticipated rainfall event, the areas shall be temporarily stabilized with mulch only or with temporary grassing and mulch, and must meet the requirements in the section titled Erosion and Sedimentation Controls.

3.15 TRENCH EXCAVATION

- A. For storm drainage and utility pipelines, the maximum width of trench from an elevation twelve (12) inches above the top of the pipe to the bottom of the trench shall be that indicated on the detail drawings.
- B. Excavation of pipe trenches with side sloping to the bottom will not be permitted.
- C. Should trenches be excavated with more than the specified maximum widths, the GCDWR Project Inspector may require the Contractor to furnish additional bedding, concrete cradle, or concrete encasement for the pipe at his/her own expense. Pavement replacement beyond the limits specified under the item titled Roadway Construction shall also be at the Contractor's expense.

3.16 ROCK EXCAVATION

- A. Rock is defined as stone in original ledge or mass and boulders over one-half (1/2) cubic yard in volume which cannot be excavated with a backhoe having a bucket curling force rated at not less than 26,000 pounds. Material which can be loosened with a pick, frozen materials, partially weathered rock, which for convenience or economy is loosened by drilling and blasting or by drilling coupled with wedging and material which is exterior to the limits of measurement allowed shall not be measured or classified as rock excavation.
- B. Rock excavation by blasting shall be at least 75 feet in advance of pipe laying. Rock shall be removed to a depth of at least 6 inches below the bottom of the pipe and this area shall be backfilled crushed stone and lightly consolidated before placing the pipe in the trench.
- C. In removing, special care shall be taken to excavate it as closely as possible to the required shape and with no projection into the trench. Only rock actually removed shall

be paid for and in no case will allowance be made for rock removed outside the specified pay limits unless such rock has been taken out at the direction of the GCDWR Inspector in writing.

### 3.17 BLASTING

#### A. Requirements

1. Furnish all labor, equipment and materials required to drill, blast, loosen, excavate, and dispose material to complete the work shown on the Contract Documents and/or Drawings and specified herein.
2. The work shall include, but not be limited to:
  - a. Blast round design.
  - b. Planning and execution of appropriate site-specific safety measures to be employed during all blasting operations, and the safe handling and storage of high explosives and blasting agents.
  - c. Drilling blast holes, loading blast holes with explosives, and wiring and safe detonation of blast rounds.
  - d. Removal from the site of all excess excavated soil, debris, and rock as indicated in the contract Documents, or as directed by GCDWR and/or the Engineer, and disposal of excess materials at a permitted disposal site.
  - e. Dewatering and maintenance of groundwater and surface water in all excavations.
  - f. Performance of all surveys necessary to establish and verify the lines and grades and to determine the amount of material removed.
  - g. Implementation of monitoring program to monitor condition of existing structures and utilities in vicinity of proposed blasting operations to insure existing features remain undamaged by blasting procedures.
3. All excavations shall be in conformity with the lines, grades, and cross sections on the Contract Documents and/or Drawings or established by GCDWR and/or the Engineer. Where rock exists at planned invert elevation, blasting should ensure removal of 6 inches of rock below the bottom of pipe. All over-blast should be removed and the resulting over- excavation backfilled with compacted structural fill soil or compacted crushed stone.
4. All blasting operations, including transporting and storing of explosives shall be in compliance with the Georgia State Fire Commissioner's Rules and Regulations for Explosives and Blasting Agents, latest edition and all applicable local codes.

#### B. Submittals

1. In accordance with the procedures and requirements set forth in Section 013300 – Submittal Procedures, the Contractor shall submit the following at least 30 working days prior to beginning any blasting operations:
  - a. Names, addresses, telephone numbers, and qualifications of the blasting subcontractor(s) and explosives supplier(s) that will be used, include the designated Blaster-In-Charge.
  - b. Copies of Training Certificates for the designated Blaster-In-Charge, blasting foreman and any other key personnel that will be responsible for the work, showing that they have received specialized training in the proper

- handling of explosives.
  - c. A Blasting Plan, indicating the methods, materials and equipment to be used. The Blasting Plan should indicate the types of explosives to be used, drilling patterns, and a general layout and schedule for executing the work in accordance with state regulations.
  - d. A ground vibration and air blast monitoring plan, indicating structures that will be monitored, monitoring equipment that will be used, and personnel that will perform the monitoring.
2. At least 24 hours before each blast round, Contractor shall submit a detailed blast round design plan to GCDWR and/or the Engineer's on-site representative. The blasting plan submitted is for quality control and record keeping purposes. Review by GCDWR and/or the Engineer shall not relieve the Contractor of his responsibilities as provided herein. The blast round design submittals shall include:
- a. Location (state grid coordinates) and limits of the shot.
  - b. Number, diameter, and depth of blast holes to be detonated in the round, and a plan showing the drill hole pattern, spacing and distance to the free face.
  - c. Depth of overburden.
  - d. Total weight of explosives in the round and the types of explosives to be used.
  - e. Loading diagram showing the location of explosives, primers, and initiators; and location, depth, and type of stemming to be used in each hole.
  - f. Initiation sequence, including delay timer and delay system, total weight of explosive to be detonated on each delay, and a list of the timing of the delays.
  - g. Manufacturer's data sheet for all explosives, primers, and initiators to be used.
  - h. Planned seismic monitoring positions, distances from the blast round, and seismograph types to be used to monitor vibrations and air blast overpressures.
  - i. Type and amount of blasting mats and/or depth of soil cover to be used over the top surface of the shot.
  - j. Any other information required by applicable state and federal regulations.
3. Within 24 hours after each blast round, Contractor shall submit a blasting report to GCDWR and/or the Engineer. The blasting report shall include:
- a. Date and time of shot.
  - b. Foreman's name.
  - c. Number and depth of holes detonated.
  - d. Weather conditions at the time of detonation.
  - e. Type of explosives and detonators used.
  - f. Peak particle velocity of ground motion and primary frequency for all ground vibration monitoring stations.
  - g. Peak air blast overpressure measured.
  - h. Distance from the blast round to each monitoring station for vibrations

and air blast.

- i. Amount of explosive used in each hole, and maximum weight of explosive detonated on any single delay in the blast round.

C. Pre-Blast Survey

1. The pre-blast survey shall be conducted by the approved vibration consultant on the residences and facilities adjacent to the proposed rock blasting in accordance with the submitted survey and monitoring plan. The survey shall include, but not be limited to the following:
  - a. A site plan or drawing of the structure to be examined showing the structure in relationship to the proposed rock blasting area and a full description of the structure including type of materials and construction.
  - b. Structure (interior and exterior surfaces) shall be examined by experienced and qualified personnel noting any visible structural and aesthetic flaws of structure. Existing cracks and flaws shall be noted, significant cracks measured, and all cracks and flaws photographed.
  - c. Upon completion of the examination, the structure's owner shall be asked to review the report, note any corrections or omissions, and sign a statement that to the best of his knowledge, the examination report reflects the conditions of the structure prior to any rock blasting. If the structure's owner refuses to sign said report, it should be noted in the report by the examiner.
  - d. Nothing contained herein shall relieve the Contractor of responsibility for claims arising from his construction operations. Failure to inspect any structure, whether or not required by these Contract Documents or inadequacy of the inspections shall not relieve the Contractor of his responsibility. The Contractor shall indemnify the County from such claim.
  - e. In the event that any property owner denies access for the survey of structures and facilities, the Contractor shall notify such property owner, by certified mail, stating that this is final notification. Submit to GCDWR and/or the Engineer, copies of all correspondence between the Contractor and the property owner(s). GCDWR and/or the Engineer, upon review of the submitted correspondence may waive requirements set forth above. However, the Contractor is fully responsible for claims and damage arising from his construction operations regardless of property location.
  - f. Two (2) sets of copies of the examination reports shall be submitted to GCDWR and/or the Engineer for their records.

D. Use of Explosives

1. When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property. The Contractor shall be responsible for any and all damage or injury to persons or property resulting from the use of explosives.
2. All explosives shall be stored in a secure manner, in compliance with all laws, and all such storage places shall be marked clearly "DANGEROUS EXPLOSIVES".
3. The Contractor shall notify any public utility company having facilities in close proximity to the site of the work of his intention to use explosives. This notice shall be given sufficiently in advance to enable the utility companies to take whatever



steps they may consider necessary to protect their property from injury. The Contractor shall also give GCDWR and/or the Engineer, all occupants of adjacent property, and all other Contractors working in or near the Project, notice of his intention to use explosives.

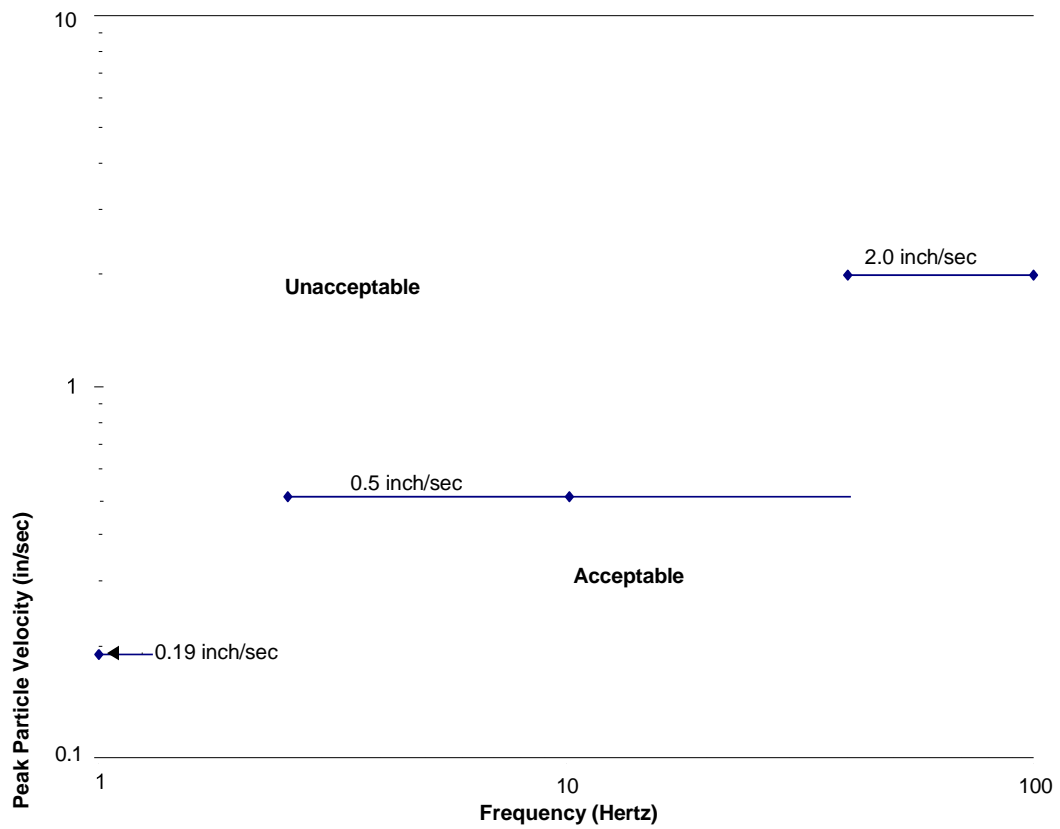
4. Only non-electric type initiators may be used.

E. Blasting Operations

1. Explosives shall be of such quantity and power and shall be used in such locations as will neither open seams nor otherwise disturb the material outside the prescribed limits of excavation. As the excavation approaches its final limits, the depth of holes for blasting and the amount of explosives used for each hole shall be reduced so that the underlying or adjacent rock will not be disturbed or shattered.
2. Blasting shall not be performed within 100 feet of newly placed concrete that has cured less than 7 days. No blasting shall be permitted within 50 feet of any existing structure or any new structure in progress.

F. Blast Monitoring

1. The Contractor shall exercise the utmost care not to damage property on-site and off-site. The Contractor shall notify each adjoining property owner within 1500 feet of the site of the anticipated ground vibrations and noise which will occur due to his blasting operations. This notice shall be given 7 days in advance to enable the adjacent property owners to take whatever precautions they may consider necessary. The Contractor shall limit his operations to minimize any disturbance to the adjacent property owners. Motorists on adjacent roadways shall be notified in accordance with state regulations. The Contractor shall be responsible for any damage to any structure or utility line, pipes, etc., on-site and off-site as a result of his operations.
2. For each blast round, Contractor shall monitor and record noise and air blast overpressures at the site perimeter nearest the blast location and at the on-site or off-site structure located nearest to the round. Peak air blast overpressure shall not exceed 140 dbL, measured at the site perimeter. The velocity/shock wave shall not exceed 2" PPV at 40 Hz or greater. At lower frequencies use the established limits in the vibration criteria as presented in the U.S. Bureau of Mines RI 8507.
3. The site of every blast round shall be sufficiently covered with blasting mats or other devices to prevent any flying debris. The number and type of blasting mats must be satisfactory to GCDWR and/or the Engineer. The Contractor will be fully responsible for any damage caused by flying debris, both to on-site and off-site properties.
4. Whenever blasting is to be performed within 750 feet of any structure, the Contractor shall use a seismograph to measure the peak particle velocities of ground vibration resulting from each blast at the closest structure. Vibrations shall be monitored utilizing a seismograph capable of providing a record of particle velocity and frequency along three mutually perpendicular axes utilizing internal calibration. Measured peak particle velocity of ground motion at the monitored structure shall not exceed the values shown in the following graph:



G. Notification

1. Give twenty-four hours notice to GCDWR and/or the Engineer and adjacent residences and/or businesses prior to each blast.

H. Complaints

1. Submit notice of blasting complaints to GCDWR and/or the Engineer in writing

within twenty- four hours of receipt thereof. The notice shall identify the origin of complaint and shall contain a brief description of alleged damages or other circumstances upon which the complaint is predicated. Contractor shall assign a number to each complaint consecutively in the order of receipt. Each complaint shall be assigned a separate number and show in each letter complaint all previous complaint numbers registered by the same complainant. In addition, Contractor shall make a summary report each month to GCDWR and/or the Engineer. The summary report shall indicate date, time and name of person investigating the complaint and amount of damages (or an estimate thereof), if any.

I. Post Blast Survey

1. The post-blast survey shall be conducted by the same vibration consultant who performed the pre-blast survey. The consultant shall examine all structures from which a complaint has originated after the blast. The survey shall include, but not be limited to the following:
  - a. A full description of the alleged damage caused by the blast. Where appropriate, a sketch shall be included to more fully describe the location and type of damage. Cracks should be measured and compared to any original measurements which may have been taken in the Pre-Blast Survey.
  - b. Colored photographs shall be taken of any alleged damage.
  - c. Two (2) copies of the Post Blast Survey report shall be submitted to the GCDWR and/or the Engineer. The report shall include the consultant's assessment of the alleged damage and an opinion as to its likely cause.

3.18 UNAUTHORIZED EXCAVATION

- A. All excavations carried outside of the lines and grades given or specified, together with the disposal of such material and all excavations, and other work resulting from slides, cave-ins, swellings, or upheavals shall be at the Contractor's own cost and expense. All spaces beneath foundations resulting from unauthorized excavations, slides, or cave-ins shall be refilled at the Contractor's expense, with bedding materials or concrete, as directed. This is to include all landscaping outside of the lines and grades given or specified.

3.19 ACCESS BY OWNER'S MATERIAL TESTING FIRM

- A. Contractor shall allow and accommodate both scheduled and unscheduled sampling or testing of excavation materials and trench backfill which may include, but is not limited to excavating and setting aside directed materials for sampling, providing description, properties, moisture content, dry density, sieve analysis, Atterburg limits, compaction testing, permeability, etc. The Contractor shall give the Owner's material testing firm a minimum of 24 hours notice when scheduling testing and/or evaluations.

END OF SECTION 31 23 00

SECTION 31 23

23.33 FLOWABLE

FILL

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Materials
2.2	Mix Design
3.1	Mixing
3.2	Construction
3.3	Freezing and Inclement Weather
3.4	Quality Assurance and Acceptance

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.
- B. ASTM C495, Standard Test Method for Compressive Strength of Lightweight Insulating Concrete.

1.3 WORK INCLUDED

- A. The Contractor shall, under this Specification, furnish all the materials for and shall place all Flowable Fill, as required by the Contract Documents or where otherwise directed by GCDWR. Applications include, but are not limited to, beddings, encasements, plugging or filling abandoned utilities and structures, general backfill for trenches and abutments, and any other incidences where such work is requested by GCDWR.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item:
  - 1. Mix Design: Submit to GCDWR and/or the Engineer, no later than 30 days prior to commencing flowable fill operations, the design for each proposed flowable fill mix, including:
    - a. Proposed flowable fill mix design(s), including weights of all materials, wa-

**ter, and admixtures, expressed in terms of quantity per cubic yard.**

- b. Description, and source of all materials and water.
  - c. Material certificates for each mix constituent, including certificates for admixtures indicating that they comply with specified requirements.
  - d. Unit weight, and compressive strength tests results for proposed mix design.
2. Daily flowable fill installation reports: Prepare flowable fill installation records on a per-shift basis, and submit to GCDWR and/or the Engineer within 24-hours of installing flowable fill. Develop and use a standard shift or daily report format. Include:
- a. Batch/delivery tickets.
  - b. Volume of flowable fill placed.
  - c. Location and depth of filling.
  - d. Injection locations, pressures, and time of placement.
  - e. Unit weight and testing results, and summary of samples prepared.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Fine aggregate shall meet the requirements of GDOT Standard Specification 801.2.02.
- B. Cement shall be Type I Portland Cement meeting the requirements of GDOT Standard Specification 830.2.01.
- C. Air-entrainment admixtures shall meet the requirements of GDOT Standard Specification 831.2.01.
- D. Fly ash is prohibited unless specifically approved by GCDWR.
- E. Clean, potable water shall be used in mixing Flowable Fill.

2.2 MIX DESIGN

- A. Mix designs shall meet the following requirements:

Table 1 – Mix Designs for Flowable Fill		
	Excavatable	Non-Excavatable
Cement, Type I	75-100 lbs/yd <sup>3</sup>	75-100 lbs/yd <sup>3</sup>
Water	See Note 1 below	See Note 1 below
Air	15 to 35%	5-15%
28-day Compressive Strength	Maximum 100 psi	Minimum 125 psi
Unit Weight	90-100 lbs/ft <sup>3</sup>	100-125 lbs/ft <sup>3</sup>

Notes: 1. Mix designs shall produce a consistency that will result in a flowable self-leveling product at the time of placement.

- B. Alternative mix designs to that shown above may be accepted by GCDWR for either ready mix or volumetric on site mixing designs at the discretion of GCDWR.

PART 3 - EXECUTION

3.1 MIXING

- A. Ensure volumetric mixed flowable fill is manufactured through the use of volumetric mixers according to Subsection 500.3.02 of the Specifications or other methods approved by the Engineer.

3.2 CONSTRUCTION

- A. When using as backfill for pipe, where flotation or misalignment may occur, assure correct alignment of the pipe by using straps, soil anchors, or other approved means of restraint.
- B. Protect flowable fill from freezing for 36 hours after placement. All exposed surfaces of finished concrete shall be kept constantly wet in an approved manner for a minimum period of ten (10) days.

3.3 FREEZING AND INCLEMENT WEATHER

- A. Flowable Fill shall not be mixed at any time during freezing, inclement weather, or at night without explicit permission, and then only at the Contractor's risk.

3.4 QUALITY ASSURANCE AND ACCEPTANCE

- A. Acceptance of Flowable Fill is based on documentation as outline in GDOT Standard Specification 500.1.03 and a minimum temperature of Flowable Fill at the point of delivery of 50 degrees F (10 degrees C).

END OF SECTION 31 23 23.33

SECTION 31 25 00

EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

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B. RELATED SECTIONS

The following listed sections do not purport to be all inclusive, as it is the Contractor's responsibility to do all the Work in accordance with the Contract Documents.

- 1. Exploratory Excavation (02 32 19).
- 2. Clearing and Grubbing (31 11 00).
- 3. Excavation and Fill (31 23 00).
- 4. Riprap (31 37 00).
- 5. Wetlands Protection (32 73 00).
- 6. Turf and Grasses (32 92 00).

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.
- B. Contractor shall be familiar with the following referenced documents and keep them at the construction site at all times. These documents must be complied with as applicable.
  - 1. NPDES General Permit No. GAR100002 State of Georgia Department of Natural Resources Environmental Protection Division Authorization To Discharge Under The National Pollutant Discharge Elimination System Storm Water Discharges Associated With Construction Activity For Infrastructure Construction Projects (the NPDES permit), effective September 24, 2013 to July 31, 2018.
  - 2. 2016 Manual for Erosion and Sediment Control in Georgia (the "Green Book").
  - 3. State of Georgia Department of Transportation Standard Specifications, Construction of Roads and Bridges, (GDOT specifications), latest edition.
  - 4. National Stone Association, Aggregate Classification (NSA Classification).
  - 5. Gwinnett County, or local issuing authority Soil Erosion and Sediment Control Ordinance, latest edition.
  - 6. Approved and permitted Erosion, Sedimentation, and Pollution Control Plan (ES&PC Plan) utilizing Best Management Practices (BMP), as required by Georgia Erosion and Sedimentation Act and NPDES General Permit.

7. Comprehensive Monitoring Program (the CMP) as required by the NPDES General Permit.

### 1.3 DEFINITIONS

- A. Designer: For the purpose of this item, the term “Designer” means the person who has designed and stamped the Erosion Sedimentation and Pollution Control Plan, as used in language of permits, laws, rules, regulations, ordinances, and other soil erosion and sediment control references. This person has successfully obtained Georgia professional registration, met certain education requirements, and been certified as Level II Certified Design Professional, as prescribed by the Georgia Soil and Water Conservation Commission in consultation with the Georgia EPD and the Stakeholder Advisory Board.
- B. Contractor: For the purposes of this item, the term “Contractor” is synonymous with Contractor, General Contractor, Discharger, Operator, and Primary Permittee, as used in language of permits, laws, rules, regulations, ordinances, and other soil erosion and sediment control references.
- C. Qualified Person: For the purposes of this item, the term “Qualified Person” means a person, as used in language of permits, laws, rules, regulations, ordinances, and other soil erosion and sediment control references, who has successfully met certain education requirements and been certified as Level 1A, as prescribed by the Georgia Soil and Water Conservation Commission in consultation with the Georgia EPD and the Stakeholder Advisory Board.
- D. Other Definitions: Definitions as listed in the NPDES General Permit GAR 100002, Part I.B. shall apply in this section.

### 1.4 WORK INCLUDED

- A. The Contractor shall furnish all labor, equipment, and materials necessary for implementing best management practices (BMPs) to prevent and minimize erosion and resultant sedimentation in all disturbed areas (cleared and grubbed) during and after construction. This item covers the Work necessary for the installation of structures and measures for the prevention and control of soil erosion and sedimentation. The Contractor shall furnish all material, labor, and equipment necessary for the proper installation, maintenance, inspection, monitoring, reporting, and removal (where applicable) of erosion and sediment control measures, and to cause compliance with the  

“NPDES General Permit No. GAR100002 State of Georgia Department of Natural Resources Environmental Protection Division Authorization To Discharge Under The National Pollutant Discharge Elimination System Storm Water Discharges Associated With Construction Activity For Infrastructure Construction Projects, effective September 24, 2013 to July 31, 2018”, under this item.
- B. The Work covered under this item shall include the furnishing, placement, maintenance, and removal of BMPs to include, but not limited to: check dams, construction exits, diversion dikes and ditches, temporary sediment barriers, inlet sediment traps, storm

drain outlet protection, surface roughening, buffer zone, dust control; providing information for, and signing Notice of Intent and Notice of Termination; all monitoring and recording per the Comprehensive Monitoring Program (the CMP); and all temporary and permanent vegetative and non-vegetative ground cover; and all labor, materials, and equipment necessary to complete the Work as specified, as indicated on the Drawings, or as directed by GCDWR.

- C. The Designer, Engineer, or GCDWR, may at any time during the project, direct the Contractor to provide additional erosion and sediment control measures, as necessary, to adequately control erosion and sedimentation in order to comply with all permits.

#### 1.5 SUBMITTALS

- A. Submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES all working drawings and schedules of materials and methods proposed to be followed in the execution of the Work under this item.
- B. Contractor shall submit to Engineer the proposed schedule for installation, maintenance, and removal of all temporary, permanent erosion, and sediment control measures. The schedule shall reflect the requirements of the section titled, Sequence of Construction of Temporary Sediment Control Measures, and must show the anticipated starting and completion date for all land disturbance activities including:
  - 1. Installation of temporary and permanent erosion and sediment control structures.
  - 2. Stormwater management facilities, if any.
  - 3. Timber salvage operations, Clearing, Grubbing, Demolition.
  - 4. Utility pipe installation.
  - 5. Rough and finished grading.
  - 6. Paving
  - 7. Landscaping, including all temporary mulching and seeding.
  - 8. Cleanup and restoration
  - 9. Landscaping, including all permanent seeding and sodding.
  - 10. Removal of temporary erosion and sediment control structures.

#### 1.6 REGULATORY COMPLIANCE

- A. Land disturbance activities are not authorized to begin until after all required erosion and sediment control permits are obtained from the United States, the State of Georgia, and/or the local issuing authority, *and* fourteen (14) calendar days have passed since the Notice of Intent (NOI) has been properly filed with Georgia EPD. Contractor is the Primary Permittee and Operator under the provisions of the NPDES General Permit. As such, Contractor shall be required to sign certain certifications as described in the NPDES General Permit. Contractor shall comply with requirements specified in the Contract Documents, or as directed by the Engineer. Contractor shall also comply with all other laws, rules, regulations, ordinances, and requirements concerning soil erosion and sediment control established in the United States, the State of Georgia, and/or the

local issuing authority. The following documents and the documents referenced therein define the regulatory requirements for this item:

1. NPDES GENERAL PERMIT: NPDES General Permit No. GAR100002, State of Georgia Department of Natural Resources Environmental Protection Division Authorization To Discharge Under The National Pollutant Discharge Elimination System Storm Water Discharges Associated With Construction Activity For Infrastructure Construction Projects, effective September 24, 2013 to July 31, 2018. Governs land disturbance construction activities of one (1.0) acre or more. On applicable sites, Contractor is responsible for complying with terms and conditions of this Permit.
2. MANUAL FOR EROSION AND SEDIMENT CONTROL: Contractor shall follow Practices and Standards of the Georgia Soil and Water Conservation Commission **2016 Manual for Erosion and Sediment Control in Georgia**, latest edition.
3. SWP3: When a Stormwater Pollution Prevention Plan (SWP3) is provided in the Contract Documents, the Contractor shall follow the practices described in the SWP3.

## PART 2 - PRODUCTS

### 2.1 CHECK DAM – STONE (Cd)

- A. Geotextile plastic filter fabric underliner shall meet the requirements of the Georgia Department of Transportation, Standard Specifications, Construction of Road and Bridges, Section 881, latest edition.

### 2.2 CONSTRUCTION EXITS (Co)

- A. Geotextile underliner shall conform to AASHTO M288-96, Section 7.3, and shall be used in all instances to separate soil base and graded stone aggregate. Stone aggregate size shall conform to the National Stone Association's (NSA) R-2 Classification (1½" to 3½") stone.

### 2.3 TEMPORARY INTERCEPTOR, DIVERSION, AND PERIMETER DIKES (Di)

- A. A ridge of compacted soil, constructed above, across, or below a slope.

### 2.4 TEMPORARY INTERCEPTOR, DIVERSION, AND PERIMETER DITCHES (Di)

- A. A channel depression in soil, above, across, or below a slope.

### 2.5 SEDIMENT BARRIER - TEMPORARY SILT FENCE (Sd1-NS, Sd1-S)

- A. Non-Sensitive Areas (Type 'A'): Filter fabric shall be thirty-six inch (36") wide, woven fabric slit tape yarns allowed in one direction only, and must meet the requirements set forth in Section 171- Temporary Silt Fence, of the GDOT Standard Specifications,

Construction of Roads and Bridges, latest edition. Contractor shall submit to Engineer copies of delivery invoices, certifications, or other documentation that the filter fabric complies with these specifications. Posts shall be a minimum of four feet (4') long and made of either wood or steel. Wood posts shall be 1½" x 1½" hardwood and made from Ash, Hickory, or Oak. Fabric shall be fastened to wood posts with at least 5 wire staples per post. Staples shall be 17 gauge minimum and shall have a crown at least ¾ inch wide and legs at least ½ inch long. Steel posts shall be "U", "T", or "C" shaped with a minimum weight of 1.3 pounds per foot, and have projections for fastening the filter fabric to the posts.

- B. Sensitive Areas (Type 'C'): Filter fabric shall be thirty-six inch (36") wide, non-calendered woven fabric constructed with monofilament yarns only, and must meet the requirements set forth in Section 171- Temporary Silt Fence, of the GDOT Standard Specifications, Construction of Roads and Bridges. Contractor shall submit to Engineer copies of delivery invoices, certifications, or other documentation that the filter fabric complies with these specifications. Wire fence fabric shall be at least thirty-two inch (32") high and shall have at least six (6) horizontal wires. Vertical wires shall have a maximum spacing of twelve inches (12"). Top and bottom wires shall be at least 10 gauge and all other wires shall be at least 12½ gauge. Posts shall be steel and have a minimum length of five feet (5'). Steel posts shall be "U", "T", or "C" shaped with a minimum weight of 1.3 pounds per foot, and have projections for fastening the woven wire and filter fabric to the posts.

#### 2.6 SEDIMENT BARRIER - HAY BALES (Sd1)

- A. Hay bales may be made of hay or wheat straw and shall be wire or nylon bound and of rectangular shape.

#### 2.7 INLET SEDIMENT TRAP (Sd2)

- A. Filter fabric used on constructing inlet sediment traps shall conform to the requirements listed above in paragraph 2.5.A. SEDIMENT BARRIER - TEMPORARY SILT FENCE (Sd1-A). For gravel drop inlet filters, stone shall conform to NSA's R-3 Specification (3 to 6 inch stone). Baffle Box Inlet Filters shall be constructed of 2 inch x 4 inch posts and 2 inch x 4 inch boards.

#### 2.8 STORM DRAIN OUTLET PROTECTION - RIPRAP (St)

- A. Unless otherwise specified, stone furnished for riprap shall meet the requirements of the Georgia Department of Transportation, Standard Specifications, Construction of Road and Bridges, Sections 603 and 805, latest edition.
- B. Rock from onsite excavation may be used as stone riprap, provided it meets all of the following requirements:
1. The rock meets GDOT specifications as noted above in paragraph 2.8.A.,
  2. GCDWR construction material testing representative certifies the rock as suitable for the use intended,

3. GCDWR approves the use of onsite materials.

- B. Plastic filter fabric underliner shall meet the requirements of the Georgia Department of Transportation, Standard Specifications, Construction of Road and Bridges, Section 881, latest edition.

2.9 SURFACE ROUGHENING (Su)

- A. Soil slope steeper than 3:1.

2.10 BUFFER ZONE (Bf)

- A. A strip of undisturbed, original vegetated area bordering streams, ponds, wetlands, and lakes.

2.11 DISTURBED AREA STABILIZATION – MULCHING ONLY (Ds1)

- A. Dry straw shall be applied to a depth of 2 to 4 inches, at a rate of two tons per acre (2T/Ac.).
- B. Dry hay shall be applied to a depth of 2 to 4 inches, at a rate of two and one-half tons per acre (2½ T/Ac.).
- C. Wood waste (chips, sawdust, or bark) shall be applied to a depth of 2 to 3 inches.

2.12 DISTURBED AREA STABILIZATION – TEMPORARY SEEDING (Ds2)

- A. Seed shall be clean, delivered in original, unopened packages and bearing an analysis of contents. Guaranteed 95 percent pure with minimum germination rate of 85 percent. Summer seed mix shall be 40 percent by weight Fawn Fescue, 30 percent by weight Perennial Ryegrass, 15 percent by weight Orchard Grass, and 15 percent by weight Dutch White Clover. Winter seed mix shall be 35 percent by weight Fawn Fescue, 30 percent by weight Perennial Ryegrass, 30 percent by weight Hairy Vetch, and 5 percent by weight Dutch White Clover. Alternative mixes may be approved by the Engineer. Fertilizer shall be used as specified, and/or indicated on the Drawings. Fertilizer shall be commercial, chemical type, uniform in composition, free-flowing, conforming to state and federal laws, and suitable for application with equipment designed for that purpose. Fertilizer shall have a minimum percentage of plant food by weight for the following: Summer mix shall be 10 percent nitrogen, 10 percent phosphoric acid, and 6 percent potash. Straw mulch shall be threshed straw of oats, wheat, or rye free from obnoxious weeds and seeds, or shall be clean hay. Average stalk length shall be 6 inches. Wood waste or erosion control matting, such as jute or excelsior, is appropriate alternatives to hay or straw mulch for temporary stabilization.

2.13 DISTURBED AREA STABILIZATION – PERMANENT VEGETATION (Ds3)

- A. Seed shall be labeled in accordance with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act. All seeds shall be furnished in original, unopened, sealed standard containers. The minimum percentage by weight of pure live seed in each lot of seed shall be as follows:

1.	<u>Seed Type</u>	<u>Percent</u>
	K31 Fescue	95
	Material other than grass seed	
		<u>5</u>
	Total	100

- B. The aggregate percent of material other than grass seed shall include all non-viable seed, chaff, bulbs, live seed of crop plants other than those specified above, harmless inert matter, and weed seed not exceeding 1.0% by weight of pure live seed and other material in the mixture.
- C. Commercial fertilizer shall be composed of a formula of 20-12-10 and shall conform to applicable Georgia fertilizer laws. It shall be uniform in composition, dry, and free flowing and shall be delivered to the site in the original unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer, which becomes caked or otherwise damaged making it unsuitable for use, shall not be accepted.
- D. Agricultural limestone shall be an acceptable grade of ground limestone, ground dolomite, or a mixture of limestone and dolomite meeting the following physical and chemical requirements:

1.	Gradation	
	<u>Standard</u>	<u>Maximum Percent</u>
	<u>Sieve Size</u>	<u>(%) Retained</u>
	No. 8, maximum	10
	No. 100, maximum	75

- E. The vegetative mulch shall be the cereal straw from stalks of oats, rye, wheat, or barley. The straw shall be free of prohibited weed seeds and shall be relatively free of all other noxious and undesirable seeds. The straw shall be clean and bright, relatively free of foreign material and be dry enough to spread properly.
- F. Topsoil: ASTM D 5268, pH range of 5.5 to 7.4 percent organic material minimum, free of stones 1 inch or larger in any dimension, and other extraneous materials harmful to plant growth.
1. Topsoil Source: Reuse surface soil stockpiled on the site. Verify suitability of surface soil to produce topsoil meeting requirements and amend when necessary. Supplement with imported topsoil when quantities are insufficient. Clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.
  2. The Contractor shall furnish topsoil free from objectionable materials such as hard clods, stiff clay, sods, hardpan, partially disintegrated stone, plant stumps, large roots, litter, or other materials that are not integrally a natural component of

good agricultural soils and which are harmful to or unnecessary for successful plant growth.

2.14 DISTURBED AREA STABILIZATION – SODDING (Ds4)

- A. Turfgrass Sod: Complying with “Specifications for Turfgrass Sod Materials” in TPI’s “Guideline Specifications to Turfgrass Sodding.” Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.
- B. Turfgrass Species: Bermudagrass, Carpetgrass, Axonopus, Centipedegrass, St. Augustinegrass, and Zoysiagrass.
- C. Turfgrass Species: Sod of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
  - 1. Full sun: Kentucky bluegrass, a minimum of three cultivars.
  - 2. Sun and partial shade: Proportioned by weight as follows:
    - a. 50 percent Kentucky bluegrass.
    - b. 30 percent Chewings Red Fescue.
    - c. 10 percent Perennial Ryegrass.
    - d. 10 percent Redtop.
  - 3. Shade: Proportioned by weight as follows:
    - a. 50 percent Chewings Red Fescue.
    - b. 35 percent Rough Bluegrass.
    - c. 15 percent Redtop.
- D. Topsoil: ASTM D 5268, pH range of 5.5 to 7.4 percent organic material minimum, free of stones 1 inch or larger in any dimension, and other extraneous materials harmful to plant growth.
  - 1. Topsoil Source: Reuse surface soil stockpiled on the site. Verify suitability of surface soil to produce topsoil meeting requirements and amend when necessary. Supplement with imported topsoil when quantities are insufficient. Clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.
  - 2. The Contractor shall furnish topsoil free from objectionable materials such as hard clods, stiff clay, sods, hardpan, partially disintegrated stone, plant stumps, large roots, litter, or other materials that are not integrally a natural component of good agricultural soils and which are harmful to or unnecessary for successful plant growth.

2.15 DUST CONTROL (Du)

- A. Dry straw shall be applied to a depth of 2 to 4 inches, at a rate of two tons per acre (2T/Ac.).
- B. Irrigation provided by use of a water truck to wet down the disturbed area.



- C. Asphalt emulsion shall be SS-1, SS-1h, CSS-1 or CSS-1h conforming to the requirements of AASHTO M140-70 or AASHTO M208-72.

2.16 PERMANENT SLOPE STABILIZATION (Ss)

- A. All matting and blanket materials shall be listed on the Georgia Department of Transportation Qualified Products List (QPL #49 for matting, and QPL #62 for blankets).

2.17 ANIONIC POLYACRYLAMIDE (Pm)

- A. Anionic Polyacrylamide shall be non-toxic and can be water-soluble chemical or log form. All Anionic Polyacrylamide products, whether in Powder, Liquid/Emulsion, or log form, shall meet the USEPA Grade 2 classification, "Generally Regarded as Safe (GRAS)". The Contractor shall submit Safety Data Sheets (SDS) to Engineer for approval of Anionic Polyacrylamide. Handling and application of the product shall adhere to the SDS requirements and recommendations.
- B. Liquid/Emulsion form of Anionic Polyacrylamide shall be Applied Polymer Systems, Series 600, or approved equal. Powder form of Anionic Polyacrylamide shall be Applied Polymer Systems, Series 700, or approved equal. Specific polymer type used shall be as per manufacturer's recommendation for Gwinnett County soil classifications.

PART 3 - EXECUTION

3.1 CHECK DAM – STONE (Cd-S)

- A. Install stone check dams as specified, indicated on the Drawings, or as directed by Designer, Engineer, or GCDWR.
- B. Installation: Install check dams in all ditches, channels, or swales draining disturbed areas of up to two (2) acres, and which are not installed with permanent, non-erodible lining or a vegetative cover as specified in paragraphs 2.13 and 2.14 of these specifications.. The specifications for the design criteria, material, installation, and maintenance of check dams are dependent on the upslope drainage area and are described below. A check dam shall not drain a disturbed area greater than two (2) acres.
  1. Construct check dam with graded size 5 to 10 inch stone. Hand placement may be required to ensure complete coverage of the entire width of ditch.
  2. The center of the check dam must be at least nine inches (9") lower than the edges. Dam height shall be a maximum of two feet (2'), as measured at center of check dam.
  3. Side slopes shall be 2:1 or flatter.
  4. Two (2) or more check dams placed in series shall be used for drainage areas greater than one (1) acre. Maximum spacing between dams shall be such that the

toe of the upstream dam is at the same elevation as the top of the downstream dam.

5. A geotextile underliner meeting the requirements of paragraph 2.1.A. shall be used as a separator between the graded stone and the soil base.

- C. Maintenance: In accordance with paragraph 3.19 titled Inspections and Maintenance, all check dams shall be inspected and maintenance performed, if needed, within 24 hours of inspection. Inspection shall occur at least once every seven (7) calendar days and within 24 hours of a rainfall event that has precipitation of ½ inch or greater. Dress dams with appropriate sized stone, as necessary, to maintain check dams in accordance with these specifications. At the earlier of: 1) Every fourteen (14) calendar days, or 2) when sediment reaches a depth of one-half (½) the original check dam height; all soil, silt, sediment and other material captured by the dam should be removed and returned upgrade on the construction site.

### 3.2 CONSTRUCTION EXITS (Co)

- A. Install construction exits as specified, as indicated on the Drawings, or as directed by the Designer, Engineer, or GCDWR.
- B. Installation: Construction exits shall be installed at all points where traffic shall be leaving the construction site onto a public or private right of way, street, alley, or parking area. All construction exits must be fully installed prior to the commencement of timber salvage, clearing, grubbing, grading, or other land disturbance construction operations.
  1. The stone pad thickness shall be a minimum of six (6) inches.
  2. The stone pad width shall equal the full width of all points of vehicular egress, but not less than twenty (20) feet wide.
  3. If the stone pad does not sufficiently remove the mud from tires prior to entering onto public right-of-way, washing is required. Washing shall be performed on a stabilized area, and the sediment-laden runoff shall be directed into an approved sediment trap.
- C. Maintenance: In accordance with paragraph 3.19 titled Inspections and Maintenance, all construction exits shall be inspected and maintenance performed, if needed, within 24 hours of inspection, once every seven (7) calendar days and within 24 hours of rainfall an event that has precipitation of ½ inch or greater. At the earlier of: 1) fourteen (14) calendar days since construction exit was installed or last maintained, or 2) geotextile underliner is visible, or 3) if construction exit does not conform to specifications established in this section. Construction exit pad shall be top dressed with NSA's R-2 (1 ½ inch to 3 ½ inch stone) such that underliner is no longer visible and exit pad conforms to specifications.

### 3.3 TEMPORARY INTERCEPTOR, DIVERSION, AND PERIMETER DIKES (Di)

- A. Install temporary interceptor, diversion, and perimeter dikes as specified, as indicated on the Drawings, or as directed by the Designer, Engineer, or GCDWR, to intercept and prevent stormwater runoff from entering disturbed areas from any other upgrade

area regardless of whether area is onsite or offsite. Dikes must divert runoff to a drainage ditch, sediment basin, temporary or permanent channel. Dikes shall remain in place until the disturbed area is permanently stabilized. Construct dikes of earth fill free from all perishable matter and refuse, such as scrap forms, wire, brush, rocks larger than six (6) inches or any foreign materials. Ashes, large stones, muck, or other soft materials shall not be used. Compact all dikes using construction equipment. Dikes shall be stabilized immediately after construction with temporary seeding to prevent sediment transport to downstream areas.

### 3.4 TEMPORARY INTERCEPTOR, DIVERSION, AND PERIMETER DITCHES (Di)

- A. Install temporary interceptor, diversion, and perimeter ditches as specified, indicated on the Drawings, or as directed by the Designer, Engineer, or GCDWR. In general, temporary ditches shall be installed parallel and contiguous to, and upgrade of temporary dikes. Construct ditches to the lines and cross section indicated on the Drawings, provided that ditches have a minimum depth of one foot and side slopes have a slope of 2H:1V or flatter. Ditches shall be free of bank projections, trees, brush, stumps, or other objectionable materials or irregularities that shall impede normal flows. Downstream outlets of temporary ditches shall be constructed and stabilized prior to construction of the ditch. The outlet must discharge in such a manner as to not cause an erosion problem.

### 3.5 TEMPORARY SEDIMENT BARRIERS - SILT FENCE (Sd1-NS, Sd1-S)

- A. Install silt fence as specified, as indicated on the Drawings or as directed by the Designer, Engineer, or GCDWR.
- B. Installation: In general, silt fencing shall be installed on the downgrade side of all areas to be disturbed as well as the perimeter of the project site. All posts used to install silt fence shall comply with the specifications of paragraph 2.5. Posts must be placed at least 18 inches in the ground and spacing cannot be more than four (4) feet center-to-center for Type 'C' fencing, and six (6) feet center-to-center for Type 'A' fencing. Fence fabric must be inserted below ground in a six (6) inch trench, and fence fabric must be fastened to posts according to the specifications of paragraph 2.5. Contractor shall install Type 'A' or Type 'C' silt fence, as specified, as indicated on the Drawings, or when directed by the Designer, Engineer, or GCDWR.
- C. Maintenance: In accordance with paragraph 3.19 titled Inspections and Maintenance, all silt fencing shall be inspected and maintenance performed, if needed, within 24 hours of inspection and once every seven (7) calendar days, and within 24 hours of a rainfall event that had precipitation of ½ inch or greater. All silt fencing materials, including fabric, post and fasteners must be replaced six (6) months after installation. At the earlier of: 1) every fourteen (14) calendar days, or 2) when sediment reaches a depth of one half the installed fence height; all soil, silt, sediment and other material captured by the silt fence should be removed and returned upgrade on the construction site. The silt fence shall be maintained such that it minimizes sediment transport as designed.

### 3.6 SEDIMENT BARRIER - HAY BALES (Sd1)

- A. Install hay or straw bales as specified, as indicated on the Drawings, or as directed by the Designer, Engineer, or GCDWR.
- B. Installation: Place bales in a row with ends tightly abutting the adjacent bales. Corner abutment is not acceptable. Embed bales in the soil a minimum of 4 inches below grade. Build up backfilled soil a minimum of 4 inches above grade on the uphill side of the barrier and conform to grade on the downhill side of the barrier. Anchor each bale in place with 2" by 2" inch wood stakes or No. 3 reinforcing bars. The first stakes shall be driven toward the previously laid bale to force the bales together. Stakes shall be thirty six (36) inches long and shall be driven a minimum of eighteen (18) inches into the ground.
- C. Maintenance: In accordance with paragraph 3.19 titled Inspections and Maintenance, all hay bales shall be inspected and maintenance performed, if needed, within 24 hours of inspection once every seven (7) calendar days, and within 24 hours of a rainfall event that has precipitation of ½ inch or greater. Hay bales must be replaced thirty (30) calendar days after installation. At the earlier of: 1) every fourteen (14) calendar days, or 2) when sediment and other material captured by the hay bales reaches ½ the height of the original bales, such sediment should be removed and returned upgrade on the construction site. The hay bales shall be maintained such that they minimize sediment transport as designed.

### 3.7 INLET SEDIMENT TRAP (Sd2)

- A. Install inlet sediment traps as specified, as indicated on the Drawings, or as directed by the Designer, Engineer or GCDWR.
- B. Installation: Install in accordance with Chapter Six (6) of the 2016 Manual for Erosion and Sediment Control in Georgia. Excavation may only be used in combination with a filtering device such as stone or silt fence. All sediment traps should provide a minimum of 1.5 feet of sediment storage. Sediment traps must be self-draining.
- C. Maintenance: In accordance with paragraph 3.19 titled Inspections and Maintenance, all inlet sediment traps shall be inspected and maintenance performed, if needed, within 24 hours of inspection, once every seven (7) calendar days, and within 24 hours of a rainfall event that has precipitation of ½ inch or greater. Clean and repair traps such that traps meet the specifications of this section and minimize sediment transport. At the earlier of: 1): Every fourteen (14) calendar days, or 2): when sediment reaches a depth of one-half (½) the original check dam height; all soil, silt, sediment and other material captured by the dam should be removed and returned upgrade on the construction site.

### 3.8 STORM DRAIN OUTLET PROTECTION – RIPRAP (St)

- A. Install storm drain outlet protection as specified, as indicated on the Drawings, or as directed by the Designer, Engineer or GCDWR.
- B. Installation: Prepare the ground surface where riprap will be placed to conform with lines and grades as specified, as indicated on the Drawings, or as directed by the Designer, Engineer, or GCDWR. Ground surface shall be smooth and free from obstructions, depressions, or debris. Place woven plastic filter fabric underliner on the prepared ground surface under all riprap. Place riprap to a uniform thickness as

specified, as indicated on the Drawings, or as directed by the Designer, Engineer, or GCDWR. If no thickness is specified, place riprap to a minimum thickness of eighteen (18) inches.

- C. Maintenance: In accordance with paragraph 3.19 titled Inspections and Maintenance, all storm drain outlets shall be inspected and maintenance performed, if needed, within 24 hours of inspection, once every seven (7) calendar days, and within 24 hours of a rainfall event that has precipitation of ½ inch or greater. Repair storm drain outlet protection such that riprap meets the specifications of this section and minimizes sediment transport.

### 3.9 SURFACE ROUGHENING (Su)

- A. Perform surface roughening as specified, as indicated on the Drawings, or as directed by the Designer, Engineer, or GCDWR.
- B. Roughening is best used on cut and fill slopes steeper than 3H:1V, which will not be mowed. In those areas use the method of *grooving*, this consists of using machinery to create a series of ridges and depressions, and shall run perpendicular to the slope.
- C. Using a bulldozer tread for *tracking* as a method of roughening is discouraged, unless no alternatives are available. This causes undue compaction of surface soils and is counter – productive to establishing vegetative growth. When using *tracking* as a technique, use as few passes of the machinery as possible to minimize compaction of the ground surface.
- D. Roughened areas shall be vegetated (mulch, seed, sod, etc.) as specified, indicated on the Drawings, or as directed by the Designer, Engineer, or GCDWR, as soon as possible to obtain optimum growth.

### 3.10 BUFFER ZONE (Bf)

- A. Construction within a buffer zone of a body of water designated as Waters of the United States must meet the requirements listed below in this specification paragraph.
- B. Definition: The buffer zone is officially defined as the distance, in feet, from the edge of the normal high water line (or for wetlands, the distance from the boundary of the wetland). For the purpose of Work in Gwinnett County, the buffer zone for small streams (as determined by the Engineer) shall start at the top of the bank and the buffer zone for larger streams (as determined by the Engineer) and rivers shall start at the edge of the vegetation. Buffer zones are specified in the table below.

C. <u>Type of Waters of the United States</u>	<u>Buffer</u>
Chattahoochee River	100 feet
Tributaries Within 2000 Feet of Chattahoochee River	35 feet
Big Haynes Creek	50 feet
Other Waters of the United States	25 feet

- D. Construction Activity: Construction activity within the buffer zone must be approved by a variance granted by Georgia EPD. Any encroachments must immediately be mulched and/or seeded in accordance with the requirements of paragraph 2.12. titled Disturbed Area Stabilization – Temporary Seeding. All construction within a buffer zone must be complete as soon as possible, and within 24 hours when possible of initial land disturbance within the buffer.

### 3.11 DISTURBED AREA STABILIZATION – MULCHING ONLY (Ds1)

- A. When mulch only is used without subsequent seeding, mulch shall be applied to provide full coverage of the exposed area. Dry straw or hay, and wood chips shall be applied uniformly by hand or mechanical equipment designed for that specific use.
- B. For areas to receive mulch only, apply at the following rates, to the following depths, and according to the following specifications:
  - 1. Dry Straw or Hay: Spread at a rate of two and one half (2 ½) tons per acre. Apply to a depth of 6 to 10 inches. Apply uniformly and anchor as necessary.
  - 2. Wood Waste: Spread at a rate of 6 to 9 tons per acre. Apply to a depth of 2 to 3 inches. Apply wood waste only on slopes that are 3:1 or flatter. Anchoring is not necessary.
  - 3. Jute Matting or Excelsior Netting: Apply in accordance with manufacturer's recommendations.
  - 4. Asphaltic Emulsion: Apply at a rate of 1200 gallons per acre. Apply uniformly.
- C. If the area will eventually be covered with perennial vegetation, 20-30 pounds per acre of nitrogen, in addition to the normal amount of nitrogen, shall be applied to the area to offset the uptake of nitrogen caused by the decomposition of organic mulches.

### 3.12 DISTURBED AREA STABILIZATION – TEMPORARY SEEDING (Ds2)

- A. This section covers Work necessary for temporary stabilization of soil to prevent erosion following clearing, grubbing, grading or other construction, except wetlands. Temporary stabilization within a buffer zone of Waters of the United States shall meet the requirements of paragraph 3.10 titled Buffer Zone.
- B. General Criteria: The stabilization measures specified herein shall be initiated on all disturbed areas including dikes and ditches within 24 hours of completion to minimize erosion and soil transport. However, stabilization measures specified herein do not have to be initiated in the event that construction activities shall resume on that portion of the site within fourteen (14) days from the date activities temporarily ceased. For cleared areas which may not receive permanent vegetative or other stabilization measures for six (6) months or less, and a suitable growing season is not available for seeding to establish an erosion retardant cover, mulch may be applied according to the specifications below:
  - 1. Contractor shall submit to Engineer, certificates of inspection of seed by state or federal authorities and copies of delivery invoices or other documentation of quantities of mulch and fertilizer.

2. Contractor shall give at least a three (3) day notice to GCDWR for the time and place of the grass planting.
  3. Contractor shall keep Engineer and GCDWR advised of schedule of operations.
- C. Application: Planting and seeding shall be performed in accordance with the following schedule:
1. Summer Seeding: No earlier than April 1 and no later than October 15.
  2. Winter Seeding: October 16 until weather conditions prohibit further construction operations as determined by the Engineer.
  3. Soil Preparation: Prior to seeding operations, and after surface has been shaped, graded, and compacted, scarify surface to a minimum depth of 1 inch.
  4. Seeding: All seedbeds shall be a minimum depth of 1 inch. Seedbeds shall be reviewed by GCDWR, prior to seeding. After soil has been scarified, apply required seed mix, as specified in this section, uniformly with a cyclone seeder, drill, culti-packer seeder, or hydro-seeder. When hydro-seeding is the selected method of seeding, prepare and apply slurry at the rate and proportion specified below:
    - Seed Mix 100 lbs/acre
    - Fertilizer 650 lbs/acre
    - Water as necessary
  5. The required fertilizer mix shall be uniformly applied at the time of seeding. Fertilizer shall not be applied to a land area within a buffer zone area of a body of water in a Waters of the United States.
  6. Upon completion of the seeding operations, apply straw mulch to a uniform thickness of 1 ½ inches to 2 ½ inches in depth. Mulch shall be loose enough to permit penetration of sunlight and air circulation, but dense enough to shade ground, reduce evaporation rate, and prevent or materially reduce erosion of underlying soil. Retain straw in place by applying asphaltic emulsion at a rate of 100 gallons per acre or mechanically tack the mulch into the soil to approximately 3 inches. Equipment used for tacking shall be specially designed for this use.
- D. Maintenance: In accordance with paragraph 3.19 titled Inspections and Maintenance, all stabilized areas shall be inspected and maintenance performed, if needed, within 24 hours of inspection, once every seven (7) calendar days and within 24 hours of a rainfall event that has precipitation of ½ inch or greater. Apply additional stabilization materials as needed.
- 3.13 DISTURBED AREA STABILIZATION – PERMANENT VEGETATION (Ds3)
- A. The subgrade for areas to be seeded shall be brought to a uniform grade, free of large stones. Topsoil shall be uniformly graded, trimmed, and raked free from unsuitable material, ridges, bumps, or depressions. Over this area, spread agricultural lime at the rate of 50 pounds per 1000 square feet, and spread fertilizer uniformly on the surface of the ground at the rate of 35 pounds per 1000 square feet. Mix the lime and fertilizer

uniformly into the top four (4) inches of the soil by suitable harrows, rotary tillers, or other approved equipment.

- B. Seeding shall be performed using a properly proportioned mixture of inoculated seed approved for use in The Piedmont Region “Zone One” as detailed in the 2016 Manual for Erosion and Sediment Control in Georgia. Seeding shall only be permitted during the planting season listed for The Piedmont Region. All seeded areas shall be uniformly mulched immediately after seeding.
- C. The Contractor shall be responsible for maintaining all planted areas including, watering, and reseeding defective area until a stand of grass covering ninety percent (90%) of the entire stabilized area is established, and Final Acceptance of the Work by the Engineer is obtained. Areas showing evidence of settlement or loss of topsoil shall be rebuilt and reseeded as required.

### 3.14 DISTURBED AREA STABILIZATION – SODDING (Ds4)

- A. The subgrade for the areas to be sodded shall be brought to a uniform grade, free of large stones. Topsoil shall be uniformly graded, trimmed, and raked free from unsuitable material, ridges, bumps, or depressions. Over this area, spread agricultural lime at the rate of 50 pounds per 1000 square feet, and spread fertilizer uniformly on the surface of the ground at the rate of 35 pounds per 1000 square feet. Mix the lime and fertilizer uniformly into the top four (4) inches of the soil by suitable harrows, rotary tillers, or other approved equipment.
- B. Sod shall be carefully placed and rolled to insure good soil contact

### 3.15 DUST CONTROL (Du)

- A. The stabilization measures contained in this section are for controlling surface and air movement of dust on construction sites.
- B. Temporary Methods: Dust may be controlled by use of mulches, tillage, and irrigation. For mulches, refer to paragraphs 2.11 and 3.11 Disturbed Area Stabilization – Mulching Only. For emergency measures to deploy before wind erosion starts, tillage and irrigation may be implemented. The practice of tillage is designed to roughen and bring clods to the surface. Irrigation to be accomplished by sprinkling water on the surface until the surface is wet and no longer produces dust. This must be repeated as necessary to minimize dust production.
- C. Permanent Methods: Applying topsoil (a less erosive soil material), crushed stone, and sodding to disturbed areas may be used to permanently control dust.

### 3.16 PERMANENT SLOPE STABILIZATION (Ss)

- A. Matting and blankets shall be installed as specified, as indicated on the Drawings, or as directed by the Designer, Engineer, or GCDWR.



- B. Matting and blankets can be applied in areas of concentrated flows, on slopes steeper than 2½H:1V with a height of ten (10) feet or greater, and cuts and fills within stream buffers.
- C. Installation: After the site has been shaped to the lines and grades as indicated on the Drawings, prepare a friable seedbed relatively free from clods and rocks more than one (1) inch in diameter, and any foreign material that will prevent contact of the mat or blanket to the soil surface. Staple mats or blankets to soil surface following manufacturer's recommendations.
- D. Maintenance: In accordance with paragraph 3.19 titled Inspections and Maintenance, all erosion control matting and blankets shall be inspected and maintenance performed, if needed, within 24 hours of inspection, once every seven (7) calendar days, and within 24 hours of a rainfall event that has precipitation of ½ inch or greater. Any dislocation or failure shall be repaired immediately. If washouts or breakage occurs, reinstall the matting or blanket after repairing damage to the slope or ditch. Continue to monitor these areas until they become permanently stabilized.

### 3.17 ANIONIC POLYACRYLAMIDE (Pm)

- A. This section covers the use of the chemical anionic Anionic Polyacrylamide to settle out silt and suspend solids from surface water and ground water prior to discharge. Application of Anionic Polyacrylamide shall utilize a method and amount as recommended by the manufacturer and approved by the Engineer. Anionic Polyacrylamide may be applied to disturbed areas in either Powder or Liquid/Emulsion form as described herein.
- B. Application: Liquid/Emulsion form of Anionic Polyacrylamide shall be applied to disturbed areas at a rate of 0.5 gallons of emulsion to 1000 gallons of water. Powder form of Anionic Polyacrylamide shall be applied at a rate of 4 pounds per acre of disturbed area.
- C. Maintenance: Apply additional Anionic Polyacrylamide as authorized or directed by the Engineer.

### 3.18 NOTICE OF INTENT (NOI)

- A. When land disturbance construction activities are equal to or greater than one (1.0) acre, and an Erosion Sediment & Pollution Control Plan has been approved by the governing jurisdiction, the Contractor, together with GCDWR shall prepare a Notice of Intent. GCDWR shall submit a properly executed NOI to Georgia EPD at least fourteen (14) calendar days prior to start of land disturbance activities.

### 3.19 INSPECTIONS AND MAINTENANCE

- A. Contractor shall designate a Qualified Person properly certified as such by Georgia Soil and Water Conservation Commission, to perform inspections required by this item. The following areas are to be inspected and maintenance performed, if needed, ~~at least once~~ every seven (7) calendar days and within twenty-four (24) hours of a rainfall event that has a precipitation of ½ inch or greater. Immediate action shall be taken to correct deficiencies to BMPs (Best Management Practices). GCDWR reserves the

right to stop all construction activities not related to maintaining BMP's until such deficiencies to BMPs are repaired. Areas to be inspected under this item are:

1. Disturbed areas of the construction site that have not undergone final stabilization.
  2. Erosion and sediment control structures.
  3. All locations where vehicles enter or exit the site.
  4. Material storage and construction lay down areas that are exposed to precipitation and have not been, or will not be finally stabilized for more than seven (7) calendar days.
- B. In areas that have been finally stabilized, inspections and, if necessary, maintenance by Contractor shall occur at least once per month for the duration of the contract or project, whichever is longer.
- C. During inspections the following shall be observed and appropriate maintenance procedures taken:
1. The conformance to specifications and current condition of all erosion and sediment control structures.
  2. The effectiveness and operational success of all erosion and sediment control measures.
  3. The presence of sediments or other pollutants in stormwater runoff at all runoff discharge points.
  4. The presence of sediments or other pollutants in receiving waters.
  5. Evidence of offsite tracking at all locations where vehicles enter or exit the site.
- D. An inspection checklist is included at the end of this item. This checklist must be completed during each inspection, dated, and signed by the Qualified Person conducting the inspection. Completed inspection checklist shall be kept onsite with the Contract Documents and submitted to GCDWR on a monthly basis. The Contractor shall repair deficiencies within twenty-four (24) hours of inspection.

### 3.20 MONITORING AND REPORTING

- A. **Monitoring:** The Contractor shall be responsible for the implementation of the Comprehensive Monitoring Program (CMP) as written by the Designer. The implementation must comply with EPD guidelines as set forth in NPDES Permit No. GAR 100002 – Infrastructure, Part IV.D.6. Sampling Requirements, Part IV.E. Reporting, and Part IV.F. Retention of Records.
- B. **Reporting:** The Contractor shall prepare and submit a summary of the monitoring results to the Engineer, the Designer and the EPD as required in the NPDES permit (Current Address: Northwest Georgia Regional Office, Georgia Environmental Protection Division, Suite 114, 4244 International Parkway, Atlanta, GA 30354). The County reserves the right to use its own resources to duplicate monitoring and verify the Work required by the Contractor in this section.

- C. Payment Procedures: There shall be no separate payment for Work covered under this section titled Monitoring and Reporting including monitoring, sampling, reporting, all labor, materials, and equipment necessary to complete the Work as specified. There shall be no separate payment for monitoring each location in the project that is to be monitored.

3.21 NOTICE OF TERMINATION (NOT)

- A. When all construction activities have ceased, final stabilization has been certified, and the site is in compliance with the NPDES permit, the Contractor, together with GCDWR shall submit a Notice of Termination.

3.22 REMOVAL OF TEMPORARY EROSION AND SEDIMENT CONTROL STRUCTURES

- A. At such time that temporary erosion and control structures are no longer required under this item, the Contractor shall notify the Designer, and Engineer of Contractor's intent and schedule for the removal of the temporary structures, and obtain Designer's and Engineer's approval in writing prior to removal. Once the Contractor has received such written approval from the Designer and Engineer, the Contractor shall remove, as approved; the temporary structures and all sediments accumulated at the removed structure shall be returned upgrade. In areas where temporary control structures are removed, the site shall be left in a condition that shall restore original drainage. Such areas shall be evenly graded and seeded as specified in paragraph 3.13 Disturbed Area Stabilization – Permanent Vegetation (Ds3).

3.23 SEQUENCE OF CONSTRUCTION OF TEMPORARY SEDIMENT CONTROL MEASURES

- A. Install all erosion and sediment control structures as specified, indicated on the Drawings, or as directed by the Designer, Engineer, or GCDWR, as the first item of Work within a given drainage area. Construction and installation of all erosion and sediment control structures shall begin downgrade of the area to be disturbed and proceed upgrade. Contractor shall, at all times, maintain all soil erosion and sediment control structures and practices throughout construction and until permanent vegetative cover is established.
- B. Time: Land disturbance activities are not authorized to begin until after all required erosion and sediment control permits are obtained from the United States, the State of Georgia, and/or the local issuing authority, *and* fourteen (14) calendar days have passed since Notice of Intent (NOI) is properly filed with Georgia EPD.

3.24 SPECIFIC REQUIREMENTS

- C. The requirements as specified, as indicated on the Drawings, are minimum requirements for the preventing or minimizing soil erosion and sediment transport. Contractor shall install and maintain soil erosion and sediment control measures in accordance with the requirements set forth in the 2016 Manual for Erosion and Sediment Control in Georgia, and said manual shall govern in case of conflicting

information, unless an item is clearly identified on the Drawings as a deviation from the Manual.

3.25 PERMITTING

- A. Land disturbance activity shall not commence until the Land Disturbance Permit has been issued by the local issuing authority, *and* fourteen (14) calendar days have passed since Notice of Intent (NOI) was properly filed with Georgia EPD.
- B. A Certified Design Professional properly certified as such by the Georgia Soil and Water Conservation Commission shall be responsible for performing the following duties with respect to the Erosion and Sedimentation Control Permit.
  - 1. Certified Design Professional shall prepare an Erosion, Sedimentation and Pollution Control Plan (ES&PCP), and shall submit same to the local issuing authority for approval, and shall provide Contractor with three (3) approved copies of the ES&PCP.
  - 2. Engineer shall obtain Land disturbance permits from local governments.
  - 3. The same Certified Design Professional who prepared the ES&PCP shall conduct the initial seven (7) day inspection after initial installation of BMPs.
- C. Contractor shall be responsible for performing the following duties with respect to the Erosion and Sedimentation Control Permit.
  - 1. Contractor shall execute the NOI as “Operator” and submit to GCDWR along with required fees, and GCDWR shall execute the NOI as “Owner” and then properly submit fully executed NOI and the required fees to Georgia EPD. No land disturbance activity shall be started until fourteen (14) calendar days have passed after the Notice of Intent (NOI) is properly submitted to Georgia EPD.
  - 2. Contractor shall employ a Qualified Person who shall perform inspections of BMPs as outlined in NPDES General Permit GAR 100002, Part IV, D.4.
  - 3. Contractor shall employ a Qualified Person who shall gather samples of storm water as outlined in NPDES General Permit GAR 100002, Part IV, D.6., and as further defined in the ES&PCP.
- D. Contractor shall employ a Qualified Person who shall prepare, submit and maintain all reporting and report submittal requirements as outlined in NPDES General Permit GAR 100002, Part IV, E. and F.



**Temporary Interceptor, Diversion and Perimeter Dikes Check List (Di)**

<b>Item No.</b>	<b>Installation or Maintenance</b>	<b>Explanation</b>	<b>N/A</b>	<b>Yes</b>	<b>No</b>
TDK -1	Installation	Are dikes properly placed to divert water to drainage ditches, sediment basins, or temporary or permanent channels?			
TDK -2	Installation	Are dikes constructed of earth fill free of refuse, such as wire, brush, rocks over 6 inches in diameter, ashes, muck, etc?			
TDK -3	Installation	Have dikes been compacted using construction equipment?			
TDK -4	Installation	Do dikes have a top width of at least 2 feet?			
TDK -5	Installation	Are dikes at least 18 inches above surrounding grade?			
TDK -6	Installation	Are side slopes of dikes 2:1?			
TDK -7	Installation	Have dikes been stabilized with vegetative cover (temporary seeding)?			
TDK -8	Maintenance	Are dikes still 2 feet across top and at least 18 inches high even after weathering?			
TDK -9	Maintenance	Do dikes have vegetative cover?			

*Inspection done by:* \_\_\_\_\_ *Date:* \_\_\_\_\_

**Temporary Interceptor, Diversion, and Perimeter Ditches (Di)**

<b>Item No.</b>	<b>Installation or Maintenance</b>	<b>Explanation</b>	<b>N/A</b>	<b>Yes</b>	<b>No</b>
TDD -1	Installation	Are ditches properly placed parallel to, contiguous to, and upslope of temporary dikes?			
TDD -2	Installation	Do ditches have a minimum depth of one (1) foot?			
TDD -3	Installation	Are ditch side slopes 2:1 or flatter?			
TDD -4	Installation	Are ditch sides and bottoms free of projections, trees, brush, stumps, etc?			
TDD -5	Installation	Are ditches stabilized with a vegetative cover?			
TDD -6	Maintenance	Ditch side slopes have not eroded to be steeper than 2:1?			
TDD -7	Maintenance	Are ditches free of sediment and debris?			
TDD -8	Maintenance	Do ditches have vegetative cover?			

*Inspection done by:* \_\_\_\_\_ *Date:* \_\_\_\_\_

**Temporary Sediment Barrier - Silt Fence (Sd1-S or Sd1-NS)**

<b>Item No.</b>	<b>Installation or Maintenance</b>	<b>Explanation</b>	<b>N/A</b>	<b>Yes</b>	<b>No</b>												
SF -1	Installation	<p>Is silt fence installed at proper intervals?</p> <table border="0"> <tr> <td><u>Slope (feet)</u></td> <td><u>Maximum Interval</u></td> </tr> <tr> <td>&lt;2%</td> <td>100</td> </tr> <tr> <td>2% to 5%</td> <td>75</td> </tr> <tr> <td>5% to 10%</td> <td>50</td> </tr> <tr> <td>10% to 20%</td> <td>25</td> </tr> <tr> <td>&gt;20%</td> <td>15</td> </tr> </table>	<u>Slope (feet)</u>	<u>Maximum Interval</u>	<2%	100	2% to 5%	75	5% to 10%	50	10% to 20%	25	>20%	15			
<u>Slope (feet)</u>	<u>Maximum Interval</u>																
<2%	100																
2% to 5%	75																
5% to 10%	50																
10% to 20%	25																
>20%	15																
SF -2	Installation	<p>Is proper type of silt fence installed?</p> <p><b>Type A (Sd1-NS)</b>- Project duration is 6 months or greater or slope is greater than 3:1. Post spacing 6 feet max.</p> <p><b>Type C (Sd1-S)</b>- Where fill slopes exceed a vertical height of 10ft and the slope is greater than 3:1. Post spacing 4 feet maximum. Has woven wire fabric.</p>															
SF -3	Installation	Has silt fence been installed with a trench 6 inches into the ground?															
SF -4	Installation	Has silt fence post been installed at least 18 inches into the ground?															
SF -5	Maintenance	Has silt fence been in place less than 6 months?															
SF -6	Maintenance	Is silt fence controlling offsite migration of sediment?															
SF -7	Maintenance	Has sediment been removed from the up-slope side of the silt fence in the last 14 days?															
SF -8	Maintenance	Is sediment build-up less than one-half (1/2) the installed silt fence height?															
SF -9	Maintenance	Is silt fence free of damage, including Tears and holes?															
SF -10	Maintenance	Is silt fence horizontally tight?															
SF -11	Maintenance	Are post intact (unbroken and unbent)?															

**Inspection done by:** \_\_\_\_\_ **Date:** \_\_\_\_\_



**Temporary Sediment Barrier - Hay Bales (Sd1)**

<b>Item No.</b>	<b>Installation or Maintenance</b>	<b>Explanation</b>	<b>N/A</b>	<b>Yes</b>	<b>No</b>
HB -1	Installation	Have hay bales been installed at the toe of all slopes higher than 3 feet or steeper than 5:1?			
HB -2	Installation	Have hay bales been installed at a maximum of 100ft intervals, if slope persist?			
HB -3	Installation	Are hay bales wire or nylon bound and rectangular shaped?			
HB -4	Installation	Are hay bales placed end to end with ends tightly abutting adjacent hay bale?			
HB -5	Installation	Are hay bales embedded into the soil a minimum of 4 inches below grade?			
HB -6	Installation	Are hay bales anchored with 2 inch x 2 inch wooden stakes or no. 3 reinforced bars, with a minimum length of 36 inches?			
HB -7	Installation	Are stakes driven in at an angle toward the previously placed hay bale, at least 18" into the ground?			
HB -8	Maintenance	Are hay bales intact?			
HB -9	Maintenance	Are stakes unbroken or unbent?			
HB -10	Maintenance	Is sediment build up less than one half (1/2) the original bale height?			
HB -11	Maintenance	Has sediment been removed from the upslope side of hay bale in last 14 days?			
HB -12	Maintenance	Have hay bales been installed less than thirty (30) calendar days ago?			
HB -13	Maintenance	Are hay bales in firm contact with ground surface with no undermining of soil?			

**Inspection done by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Construction Exits (Co)**

<b>Item No.</b>	<b>Installation or Maintenance</b>	<b>Explanation</b>	<b>N/A</b>	<b>Yes</b>	<b>No</b>
CE -1	Installation	Have construction exits been constructed prior to any construction operations at all points where traffic leaves the site to a right-of-way, street, alley, or parking area?			
CE -2	Installation	Are construction exits a minimum of 50 feet long and a right angle to the street, alley, etc?			
CE -3	Installation	Are construction exits a minimum of 20 feet wide?			
CE -4	Installation	Are construction exit pads a minimum of 6 inches in depth?			
CE -5	Installation	Have geotextile underliners been placed under the construction exit pads?			
CE -6	Installation	Have the construction exit pads been constructed of 1 ½ to 3 ½ inch diameter stone?			
CE -7	Maintenance	Are construction exit length, width, and depth being maintained?			
CE -8	Maintenance	Have construction exits been maintained within the last 14 days?			
CE -9	Maintenance	Is geotextile underliner still covered by stone (not visible)?			

**Inspection done by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Check Dams - Stone (Cd-S)**

<b>Item No.</b>	<b>Installation or Maintenance</b>	<b>Explanation</b>	<b>N/A</b>	<b>Yes</b>	<b>No</b>
CD -1	Installation	Were check dams constructed of appropriate materials? < 2 acres draining graded size 5 to 10 inch diameter stone			
CD -2	Installation	Is center of check dam at least 9 inches lower than the outer edges?			
CD -3	Installation	Is check dam height 2 feet maximum at center of check dam?			
CD -4	Installation	Are side slopes of check dam 2:1 maximum?			
CD -5	Installation	Are check dams properly spaced in series (toe of upstream check dam at same elevation as top of downstream check dam)?			
CD -6	Installation	Do check dams cover entire width of ditch or swale?			
CD -7	Installation	Are check dam heights lower than channel banks?			
CD -8	Installation	Are check dam heights lower than upstream property line elevation?			
CD -9	Maintenance	Are check dam dimensions and slopes being maintained?			
CD -10	Maintenance	Is sediment less than one-half (1/2) the original check dam height?			
CD -11	Maintenance	Are check dams in good contact with ground surface with no undermining of soil?			

**Inspection done by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Inlet Sediment Trap (Sd2)**

<b>Item No.</b>	<b>Installation or Maintenance</b>	<b>Explanation</b>	<b>N/A</b>	<b>Yes</b>	<b>No</b>
SD -1	Installation	Are inlet sediment traps constructed around all storm drain inlets that receive runoff from disturbed areas?			
SD -2	Installation	Are sediment traps constructed according to design?			
SD -3	Installation	Do sediment traps provide for a minimum of 1½ feet of sediment storage?			
SD -4	Installation	Are sediment traps self-draining?			
SD -5	Installation	If gravel is used for the filtering media, is it 3 to 6 inches in diameter?			
SD -6	Installation	If baffle box inlet filters were used, are they constructed of 2"x 4" or 4"x 4" posts and 2"x 4" boards?			
SD -7	Maintenance	Does sediment trap have adequate storage volume for subsequent rains?			
SD -8	Maintenance	Are sediment traps intact?			
SD -9	Maintenance	Are wooden components unbroken?			
SD -10	Maintenance	Is gravel overtaken with sediment?			
SD -11	Maintenance	Are filter fabrics free of tears or holes?			

**Inspection done by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Disturbed Area Stabilization (Ds1, Ds2, Ds3, Ds4)**

<b>Item No.</b>	<b>Installation or Maintenance</b>	<b>Explanation</b>	<b>N/A</b>	<b>Yes</b>	<b>No</b>
VS -1	Installation	Have disturbed areas been stabilized with temporary vegetation and mulched within 24 hours of completion?			
VS -2	Installation	Have disturbed areas awaiting permanent stabilization cover, where suitable growing season is not available, been stabilized with temporary vegetation and/or mulch?			
VS -3	Installation	Was surface prepared for seeding (by scarifying soil a minimum of 1 inch deep)?			
VS -4	Installation	Has seeding been performed according to growing seasons and required mixtures of seed and fertilizer?			
VS -5	Installation	Has mulch been loosely applied, after seeding, to a thickness of 1 ½ to 2 ½ inches?			
VS -6	Installation	Has mulch been retained using an asphaltic emulsion or mechanically tacked?			
VS -7	Installation	For areas which have not received temporary vegetation and have received mulch only: Has dry straw or hay mulch been applied to a thickness of 2 to 4 inches? Has wood waste been applied to a thickness of 2 to 3 inches?			
VS -8	Maintenance	Are stabilized areas intact with no signs of eroded areas?			
VS -9	Maintenance	Do disturbed areas that have been stabilized with mulch have the proper thickness of mulch?			
VS -10	Maintenance	Are previously stabilized areas intact and not in need of touch up seeding or mulching?			

**Inspection Done by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Storm Drain Outlet Protection (St)**

<b>Item No.</b>	<b>Installation or Maintenance</b>	<b>Explanation</b>	<b>N/A</b>	<b>Yes</b>	<b>No</b>
St -1	Installation	Are storm drain outlet protections constructed around all storm drain outlets?			
St -2	Installation	Are storm drain outlet protections constructed according to design?			
St -3	Installation	Are storm drain outlet protection aprons constructed straight – no bends?			
St -4	Installation	Is geotextile filter fabric present between soil and quarried stone?			
St -5	Installation	Is minimum thickness of stone pad at least 18” thick?			
St -6	Installation	Is apron constructed level (0.0%) grade?			
St -7	Maintenance	Has erosion occurred around or below riprap?			
St -8	Maintenance	Have riprap stones been dislodged?			
St -9	Maintenance	Are filter fabrics free of tears or holes?			

**Inspection done by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Permanent Slope Stabilization (Ss)**

<b>Item No.</b>	<b>Installation or Maintenance</b>	<b>Explanation</b>	<b>N/A</b>	<b>Yes</b>	<b>No</b>
Ss -1	Installation	Are mats installed in concentrated flow areas?			
Ss -2	Installation	Are mats installed on slopes steeper than 2½:1 with a height 10 feet or greater?			
Ss -3	Installation	Are mats installed in cuts and fills within stream buffers?			
Ss -4	Installation	Are mats in direct contact with soil surface (no foreign materials between mats and ground)?			
Ss -5	Installation	Are mats stapled to the ground with U-shaped staples having legs at least 6 inches long?			
Ss -6	Maintenance	Do mats show signs of erosion or undermining?			
Ss -7	Maintenance	Are mats dislocated, broken, or washed out?			

**Inspection done by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

END OF SECTION 31 25 00

SECTION 31 32 23

PRESSURE GROUTING SOIL STABILIZATION

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Definitions
1.5	Submittals
2.1	Fine Aggregates
2.2	Grout Mixtures
3.1	Pressure Grouting

B. This specification generally conforms to GDOT Standard Specification Section 450.

1.2 REFERENCES

A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

A. This work includes pumping a slurry type grout mixture to fill underground voids and provide stabilization of soils under and around storm sewer infrastructure.

B. Use a grout mixture that can form a hard and durable mass to fill voids under the pavement. Regrout unstable slabs after initial undersealing and stabilizing as directed by the GCDWR.

C. Measurement and payment shall be in accordance with Specification 01 22 15.11 of the Contract Documents.

1.4 DEFINITIONS

A. Initial set: 200 psi with 0.25 sq. in. probe according to AASHTO T 197 (Proctor Needle Test).

1.5 SUBMITTALS

A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.

B. Submit mix design for pressure grout to be used showing materials, proportioning and



design strength.

PART 2 - PRODUCTS

2.1 FINE AGGREGATES

- A. Fine aggregates shall conform to GDOT Standard Specification 801.2.02, except mortar-making properties are not required.

2.2 GROUT MIXTURES

- A. Per GDOT Standard Specification 450.2.B.

PART 3 - EXECUTION

3.1 PRESSURE GROUTING

- A. Perform pressure grouting in accordance with the applicable sections of GDOT Standard Specification Section 450.

END OF SECTION 31 32 23

SECTION 31 37 00

RIPRAP

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Products
3.1	Materials
3.2	Construction

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall furnish all labor, equipment, and materials necessary for hauling and properly placing stone riprap at the locations and to the limits indicated on the Contract Documents and/or Drawings or as directed by GCDWR.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. Submittals shall show in detail the type, size, and location of all riprap and accessories to be used in construction.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Unless otherwise specified, stone furnished for riprap shall meet the requirements of the Georgia Department of Transportation Standard Specifications for Road and Bridge Construction, Sections 603 and 805, latest edition.
- B. Suitable rock from onsite excavation may be used as stone rip rap. Rock shall meet the requirements identified above, as determined by GCDWR's materials testing firm and be subject to the GCDWR's approval.
- C. Plastic filter fabric shall meet the requirements of Georgia Department of Transportation

Standard Specifications for Road and Bridge Construction, Section 881, latest edition.

PART 3 - EXECUTION

3.1 CONSTRUCTION

- A. Prepare the ground surface where the riprap will be placed to conform with the correct lines and grades before beginning the placement. Ground surface should be smooth and free from obstructions, depressions, or debris. Place woven plastic filter fabric on the prepared ground surface under all riprap. Place riprap to a uniform thickness as specified in the Project Specific scope of work, Contract Documents, and/or Contract Drawings. If no thickness is specified, place riprap to a minimum of 18 inches thick.

END OF SECTION 31 37 00

SECTION 32 12

16 ASPHALT

PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Materials
2.2	Delivery, Storage, and Handling
2.3	Equipment
3.1	Preparation
3.2	Construction
3.3	Quality Acceptance

- B. This section provides general requirements for asphalt paving work associated with pipeline installation. However, it is the Contractor's responsibility to ensure all asphalt paving work meets the requirements of the Gwinnett County Department of Transportation Standard Specifications.

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.
- B. Gwinnett County Department of Transportation Standard Specifications.
1. Where section numbers are identified throughout this specification, the reference is to the Georgia Department of Transportation Standard Specifications for Road and Bridge Construction.

1.3 WORK INCLUDED

- A. The Contractor shall furnish all labor, equipment, and materials necessary to install asphalt paving as required for the installation of proposed stormwater drainage systems, sanitary sewer systems, water mains and related appurtenances.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. PAVING PLAN

1. Before starting asphaltic concrete construction, submit a written paving plan to

GCDWR and/or the Engineer for approval. Include the following on the paving plan:

- a. Proposed starting date
  - b. Location of plant(s)
  - c. Rate of production
  - d. Average haul distance(s)
  - e. Number of haul trucks
  - f. Paver speed feet (meter)/minute for each placement operation
  - g. Mat width for each placement operation
  - h. Number and type of rollers for each placement operation
  - i. Sketch of the typical section showing the paving sequence for each placement operation
  - j. Electronic controls used for each placement operation
  - k. Temporary pavement marking plan
2. If staged construction is designated in the Plans or contract, provide a paving plan for each construction stage.
  3. If segregation is detected, submit a written plan of measures and actions to prevent segregation. Work will not continue until the plan is submitted to and approved by the Department.

C. JOB MIX FORMULA

1. Submit to GCDWR and/or the Engineer a written job mix formula proposed for each mixture type to be used based on an approved mix design. Furnish the following information for each mix:
  - a. Specific project for which the mixture will be used
  - b. Source and description of the materials to be used
  - c. Mixture I.D. Number
  - d. Proportions of the raw materials to be combined in the paving mixture
  - e. Single percentage of the combined mineral aggregates passing each specified sieve
  - f. Single percentage of asphalt by weight of the total mix to be incorporated in the completed mixture
  - g. Single temperature at which to discharge the mixture from the plant
  - h. Theoretical specific gravity of the mixture at the designated asphalt content
  - i. Name of the person or agency responsible for quality control of the mixture during production
2. Do the following to have the formulas approved and to ensure their quality:
  - a. Submit proposed job mix formulas for review at least two weeks before beginning the mixing operations.
  - b. Do not start hot mix asphaltic concrete work until GCDWR and/or the Engineer has approved a job mix formula for the mixture to be used. No mixture will be accepted until GCDWR and/or the Engineer has given approval.
  - c. Provide mix designs for all Superpave and 4.75 mm mixes to be used. The Department will provide mix design results for other mixes to be used.
  - d. After a job mix formula has been approved, assume responsibility for the quality control of the mixtures supplied according to Section 106.

- D. Photographs or videotape, sufficiently detailed, of existing conditions of project site that might be misconstrued as damage, caused by debris, or construction material removal.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Ensure that materials comply with the specifications listed in Table 1.

**Table 1—Materials Specifications**

Material	GDOT Subsection
Asphalt Cement, Grade Specified	820.2
Coarse Aggregates for Asphaltic Concrete	802.2.02
Fine Aggregates for Asphaltic Concrete	802.2.01
Mineral Filler	883.1
Heat Stable Anti-Stripping Additive	831.2.04
Hydrated Lime	882.2.03
Silicone Fluid	831.2.05
Bituminous Tack Coat: PG 58-22, PG 64-22, PG 67-22	820.2
Hot Mix Asphaltic Concrete Mixtures	828
Fiber Stabilizing Additives	819

- B. When required, provide Uintaite material, hereafter referred to by the common trade name Gilsonite, as a reinforcing agent for bituminous mixtures. Supply a manufacturer’s certification that the Gilsonite is a granular solid which meets the following requirements:
  1. Softening Point (AASHTO: T-53) 300-350°F  
(150-175 °C)
  2. Specific Gravity, 77°F (25°C) (AASHTO: T-228) 1.04±0.02
  3. Flash Point, COC (AASHTO: T-48) 550 °F (290°C) Min.
  4. Ash Content (AASHTO: T-111) 1.0% Max
  5. Penetration, 77°F (25°C),100 gm, 5 sec. (AASHTO: T-49) 0

2.2 DELIVERY, STORAGE, AND HANDLING

- A. Storage of material is allowed in a properly sealed and insulated system for up to 24 hours except that Stone Matrix Asphalt (SMA), Open-Graded Friction Course (OGFC), or Porous European Mix (PEM) mixtures shall not be stored more than 12 hours. Mixtures other than SMA, OGFC, or PEM may be stored up to 72 hours in a sealed and insulated system, equipped with an auxiliary inert gas system, with GCDWR and/or the Engineer’s approval. Segregation, lumpiness, drain-down, or stiffness of stored mixture is cause for rejection of the mixture. GCDWR and/or the Engineer will not approve using a storage

or surge bin if the mixture segregates, loses excessive heat, or oxidizes during storage.

- B. GCDWR and/or the Engineer may obtain mixture samples or recover asphalt cement according to GDT 119. AASHTO T 202 and T 49 will be used to perform viscosity and penetration tests to determine how much asphalt hardening has occurred:
- C. Vehicles for Transporting and Delivering Mixtures:
  - 1. Ensure that trucks used for hauling bituminous mixtures have tight, clean, smooth beds.
  - 2. Follow these guidelines when preparing vehicles to transport bituminous mixtures:
    - a. Use an approved releasing agent from QPL 39 in the transporting vehicle beds, if necessary, to prevent the mixture from sticking to the bed. Ensure that the releasing agent is not detrimental to the mixture. When applying the agent, drain the excess agent from the bed before loading. Remove from the project any transporting vehicles determined to contain unapproved releasing agents.
    - b. Protect the mixture with a waterproof cover large enough to extend over the sides and ends of the bed. Securely fasten the waterproof cover before the vehicle begins moving.
    - c. Insulate the front end and sides of each bed with an insulating material with the following specifications:
      - 1) Consists of builders insulating board or equivalent.
      - 2) Has a minimum “R” value of 4.0.
      - 3) Can withstand approximately 400 °F (200 °C) temperatures.
    - d. Install the insulating material so it is protected from loss and contamination. A “Heat Dump Body” may be used in lieu of insulation of the bed. “Heat Dump Body” refers to any approved transport vehicle that is capable of diverting engine exhaust and transmitting heat evenly throughout the dump body to keep asphalt at required temperature. Mark the “Heat Dump Body” clearly with “OPEN” and “CLOSE” position at the exhaust diverter. Install a padlock and lock it in the “OPEN” position when the “Heat Dump Body” is used to transport bituminous mixtures.
    - e. Mark each transporting vehicle with a clearly visible identification number.
    - f. Create a hole in each side of the bed so that the temperature of the loaded mixture can be checked. The placement of these holes shall be located to assure that the thermometer is being placed in the hot mix asphaltic concrete.
    - g. Ensure that the mixture is delivered to the roadway at a temperature within  $\pm 20$  °F ( $\pm 11$  °C) of the temperature on the job mix formula.
    - h. If GCDWR and/or the Engineer determines that a truck may be hazardous to the Project or adversely affect the quality of the work, remove the truck from the project.
- D. Containers for Transporting, Conveying, and Storing Bituminous Material:
  - 1. To transport, convey, and store bituminous material, use containers free of foreign material and equipped with sample valves. Bituminous material will not be accepted from conveying vehicles if material has leaked or spilled from the containers.

## 2.3 EQUIPMENT



**A. PLANT EQUIPMENT**

1. Hot mix asphaltic concrete plants that produce mix for use on paving projects in Gwinnett County shall be governed by Quality Assurance for Hot Mix Asphaltic Concrete Plants in Georgia, Laboratory Standard Operating Procedure No. 27. Plants shall meet all requirements as defined in the GCDOT Standard Specifications for Hot Mix Asphaltic Concrete Construction.

**B. PROJECT SITE EQUIPMENT**

1. The following equipment shall be used at the project site as required for paving work. The equipment shall meet all requirements of the GCDOT Standard Specifications for Hot Mix Asphaltic Concrete Construction.
  - a. Cleaning equipment
  - b. Pressure distributor
  - c. Bituminous pavers
  - d. Compaction equipment
  - e. Materials transfer vehicles

**PART 3 - EXECUTION**

**3.1 PREPARATION**

**A. The existing surface shall be prepared as follows:**

1. Clean the Existing Surface. Before applying hot mix asphaltic concrete pavement, clean the existing surface to GCDWR and/or the Engineer's satisfaction.
2. Patch and Repair Minor Defects
  - a. Before placing leveling course:
    - 1) Correct potholes and broken areas that require patching in the existing surface and base as directed by GCDWR and/or the Engineer.
    - 2) Cut out, trim to vertical sides, and remove loose material from the areas to be patched.
    - 3) Prime or tack coat the area after it has been cleaned. Compact patches to GCDWR and/or the Engineer's satisfaction. Material for patches does not require a job mix formula, but shall meet the gradation range shown in Section 828. GCDWR and/or the Engineer must approve the asphalt content to be used
3. Apply Bituminous Tack Coat
  - a. Apply the tack coat according to Section 413. GCDWR and/or the Engineer will determine the application rate, which must be within the limitations Table 2.

**Table 2—Application Rates for Bituminous Tack, gal/yd<sup>2</sup> (L/m<sup>2</sup>)**

	<b>Minimum</b>	<b>Maximum</b>
Under OGFC and PEM Mixes	0.06 (0.270)	0.08 (0.360)
All Other Mixes	0.04 (0.180)	0.06(0.270)

**\*On thin leveling courses and freshly placed asphaltic concrete mixes, reduce the application rate to 0.02 to 0.04 gal/yd<sup>2</sup> (0.09 to 0.18 L/m<sup>2</sup>).**

**B. PLACE PATCHING AND LEVELING COURSE**

1. When the existing surface is irregular, bring it to the proper cross section and grade with a leveling course of hot mix asphaltic concrete materials.
2. Place leveling at the locations and in the amounts directed by GCDWR and/or the Engineer.
3. Use leveling course mixtures that meet the requirements of the job mix formulas defined in:
  - a. Subsection 400.3.05.A, “Observe Composition of Mixtures” in the Gwinnett County DOT Standard Specifications for Hot Mix Asphaltic Concrete Construction.
  - b. Section 828
  - c. Leveling acceptance schedule in Subsection 400.3.06.A, “Acceptance Plans for Gradation and Asphalt Cement Content” in the Gwinnett County DOT Standard Specifications for Hot Mix Asphaltic Concrete Construction.
4. If the leveling and patching mix type is undesignated, determine the mix type by the thickness or spread rate according to Table 3.

**Table 3—Leveling and Patching Mix Types**

<b>Thickness</b>	<b>Rate of Spread</b>	<b>Type of Mix</b>
Up to 0.75 in (19 mm)	Up to 85 lbs/yd <sup>2</sup> (45 kg/m <sup>2</sup> )	4.75 mm Mix or 9.5 mm Superpave Type 1
0.75 to 1.5 in (19 to 38 mm)	85 to 165 lbs/yd <sup>2</sup> (45 to 90 kg/m <sup>2</sup> )	9.5 mm Superpave Type 2
1.5 to 2 in (38 to 50 mm)	165 to 220 lbs/yd <sup>2</sup> (90 to 120 kg/m <sup>2</sup> )	12.5 mm Superpave *
2 to 2.5 in (50 to 64 mm)	220 to 275 lbs/yd <sup>2</sup> (120 to 150 kg/m <sup>2</sup> )	19 mm Superpave *
Over 2.5 in (64 mm)	Over 275 lbs/yd <sup>2</sup> (150 kg/m <sup>2</sup> )	25 mm Superpave

\* These mixtures may be used for isolated patches no more than 6 in. (150 mm) deep and no more than 4 ft. (1.2 m) in diameter or length.

**3.2 CONSTRUCTION**

- A. Provide GCDWR and/or the Engineer at least one day’s notice prior to beginning construction or prior to resuming production if operations have been temporarily suspended.
- B. All paving operations shall meet the requirements of Section 400 – Hot Mix Asphaltic Concrete Construction of the Gwinnett County DOT Standard Specifications.

**3.3 QUALITY ACCEPTANCE**

- A. ACCEPTANCE PLANS FOR GRADATION AND ASPHALT CEMENT CONTENT
  - 1. The Contractor shall randomly sample and test mixtures for acceptance on a lot basis. All sampling and testing shall be in compliance with Section 400 – Hot Mix Asphaltic Concrete Construction of the Gwinnett County DOT Standard Specifications.
- B. COMPACTION
  - 1. The Contractor shall determine the mixture compaction using either GDT 39 or GDT 59. The compaction is accepted in lots defined in Subsection 400.3.06. An “Acceptance Plans for Gradation and Asphalt Cement Content” of the Gwinnett County DOT Standard Specifications for Hot Mix Asphaltic Concrete Construction and is within the same lot boundaries as the mixture acceptance.
- C. SURFACE TOLERANCE
  - 1. The Contractor shall verify the paved road meets the surface tolerance requirements as defined in Section 400 – Hot Mix Asphaltic Concrete Construction of the Gwinnett County DOT Standard Specifications.
  - 2. The Gwinnett County DOT may conduct its own acceptance testing for surface tolerance using the Laser Road Profiler method in accordance with GDT 126. Any deficiencies found shall be corrected by the Contractor.

END OF SECTION 32 12 16

SECTION 32 16 13

SIDEWALKS, CURBS, AND GUTTERS

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
1.5	Quality Control
2.1	Materials
2.2	Preparation
3.2	Joints
3.3	Finishes
3.4	Construction
3.5	Curing

- B. This section provides general requirements for providing labor, materials, and equipment for the replacement of concrete sidewalks, curbs, and gutters disturbed by construction. However, it is the Contractor's responsibility to ensure all work meets the requirements of the Gwinnett County Department of Transportation Standard Specifications.

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall furnish all labor, equipment, and materials necessary to remove, handle, haul-off, and install concrete sidewalks, curbs, and gutters, as required for the rehabilitation, replacement, and/or installation of storm drainage systems and related appurtenances.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.

1.5 QUALITY CONTROL

- A. Tolerances: Construct concrete surfaces within 0.05 feet of the indicated elevation, and deviating not more than 3/8-inch from a ten-foot straightedge placed anywhere on the surface.

- B. Strictly conform to requirements for compaction of subgrade, air entrainment of concrete and curing of concrete.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Concrete: All concrete shall be Class "A" in accordance with GDOT Standard Specifications Section 500.03, and have a 28-day compressive strength of 3,000 psi.
- B. Joint filler: Nonextruding joint material, furnished in a single piece for the full depth and width required for the joint unless otherwise specified by GCDWR and/or the Engineer.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Excavate and compact the subgrade as specified in Section 31 23 00.3.2.E, true to the indicated grade and cross section.
- B. Place forms or extrusion machine guides to exact elevation and location required. Visually check forms and machine guides and adjust where necessary to ensure smooth curves and transitions in grade. Provide close spacing on curves to maintain a smooth curve.

### 3.2 JOINTS

- A. Expansion Joints: Install expansion joints at intervals as indicated, but not exceeding 40 feet for walks and curbs, and wherever new concrete abuts existing construction. Additional joints are to be placed at tangent points of circular curbs and other places where stresses may develop.
- B. Contraction (Control) Joints:
  - 1. Sidewalks: Cut joints with a saw immediately after concrete reaches adequate hardness to allow sawing. Contraction joints in sidewalks shall be 3/4 inch deep and spaced at a distance equal to the width of the walk.
  - 2. Curb and Gutter: For formed work, use full depth steel forms to achieve contraction joints. For extruded work, cut contraction joints with a saw immediately after concrete reaches adequate hardness to allow sawing. Contraction joints in curb and gutters shall be 1 1/2 inch deep and spaced at 10 feet intervals.
  - 3. Concrete flatwork: Cut joints with a saw immediately after concrete reaches adequate hardness to allow sawing. Contraction joint depth shall be 1/4 of the concrete thickness. Spacing and pattern shall be as shown on plans or determined by GCDWR and/or the Engineer.
- A. Premolded expansion joint filler must be cut to full cross section of the proposed construction and shall extend the full depth, width, and length of the construction. Trim expansion joint material protruding after the concrete has been finished as directed by GCDWR and/or the Engineer. All longitudinal expansion joints shall be placed as indicated on the Contract documents and/or drawings.

3.3 FINISHES

- A. Pedestrian and Wheelchair Ramps: Non-slip finish.
- B. All others: Broom finish.

3.4 CONSTRUCTION

- A. Place forms true to line, grade, and cross section.
- B. Brace forms adequately before placing the concrete. Place concrete in forms and thoroughly tamp, vibrate or work it into all corners, removing air pockets. Allow forms to remain in place until the concrete has set sufficiently to hold its shape.
- C. Begin each phase of screed, float, trowel and finish work as soon as the concrete can be properly worked. Completely finish sidewalks and flat work with forms in place.
- D. Remove forms on the front face of curbs as soon as the concrete will hold its shape and finish the face. For gutters, a strike-off template of the form and shape of the gutter shall be used to shape the top surface of the gutter. Round top edges of curb and edges of gutter using a radius tool matching the radius shown on the Contract documents and/or drawings. Finish the edges where templates have been removed or expansion joint material has been placed with an edging tool with a radius of not over 1/4-inch and then all lines or marks removed with a wet brush.
- E. Remove all tool marks with a wetted brush or wooden float, and the finished surface shall present a uniform and smooth appearance.

3.5 CURING

- A. Cure concrete as specified in Section 03 30 00.

END OF SECTION 32 16 13

SECTION 32 32 29

TIMBER RETAINING WALLS

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Wood Timbers
2.2	Spikes
1.1	Wall Construction

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. This work includes restoration of timber retaining walls to pre-construction conditions where they are disturbed by construction activities.
- B. Timber retaining walls shall conform to Gwinnett County Planning and Development Standard Drawing 106, "Cross-Tie Retaining Wall".
- C. Timber retaining wall shall be measured and paid under the pay item for such work.

1.4 SUBMITTALS

- A. None required for this section.

PART 2 - PRODUCTS

2.1 WOOD TIMBERS

- A. Provide all new materials matched in like and kind to the pre-existing timber wall to the extent practical. Lumber shall be pressure treated in accordance with American Wood Preservers' Association Standard for Ground Contact UP4A.

2.2 SPIKES

- A. Spikes shall be galvanized steel, 3/8" diameter x 12" long, or No. 3 Steel Rebar.

PART 3 - EXECUTION

3.1 TIMBER WALL CONSTRUCTION

- A. Provide 2” weephole slots at every 8’-0” length in the third course of wall height.
- B. Member joints shall be staggered from the joints of the courses above and below.
- C. Cross ties shall be placed as shown on Gwinnett County Planning and Development Standard Drawing 106, “Cross-Tie Retaining Wall”.
- D. Backfill behind the wall with approved structure fill materials.
- E. Spike corners adequately to prevent wall movement.
- F. Replace any disturbed underdrain piping in like and kind with new materials at no additional cost to GCDWR.

END OF SECTION 32 32 39



SECTION 32 73 00

WETLAND PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Definitions
1.4	Overview
1.5	Work Included
1.6	Submittals
3.1	Construction Activities Near Wetlands
3.2	Enforcement

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 DEFINITIONS

- A. Contractor: For the purposes of this item, the term “Contractor” is synonymous with Discharger, Equipment Operator, and Construction Manager, as used in the Individual or NWP, laws, rules, regulations, ordinances and other wetland protection and permitting references.
- B. Designer: For the purpose of this item the term “Designer” is synonymous with Consulting Engineer, Licensed Professional and Consultant used in permits, laws, rules, regulations, ordinances and other soil erosion and sediment control references.

1.4 OVERVIEW

- A. The Contractor shall comply with all laws, rules, regulations, ordinances, and/or other requirements concerning stream buffers, jurisdictional water, and wetlands protection and permitting designated by GCDWR and established by the United States, the State of Georgia, and/or Gwinnett County.
- B. Time: Land disturbing activities are not authorized to begin until after all required wetland permits and buffer variances are obtained from the U.S. Army Corps of Engineers (USACE), the State of Georgia, and Gwinnett County.
- C. For the purposes of this item the Designer, may at any time during the project, provide direction. This direction shall be considered equivalent to direction from GCDWR.

1.5 WORK INCLUDED

- A. The Contractor is responsible for using construction techniques and implementing other

measures that ensure compliance with all local, state, and federal laws, rules, ordinances, and/or other requirements concerning stream buffers, jurisdictional waters, and wetlands protection. In addition, the Contractor is also responsible for complying with all project-specific conditions outlined in the Drawings and/or Contract Documents, or Project Specific Scope of Work. This item covers the Work necessary to comply with the above referenced regulations before, during, and after construction in and adjacent to stream buffers, jurisdictional waters, and wetlands. The Contractor shall furnish all material and labor necessary for compliance under this item.

#### 1.6 SUBMITTALS

- A. The Contractor for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, the following documents proposed to follow in the execution of the Work under this item.
- B. Spill Plan: The Contractor shall prepare a Spill Plan that addresses handling of fuels, lubricants, chemicals, and other toxic materials that may be used. The plan must include:
  - 1. Identification of refueling sites.
  - 2. Identification of storage areas for fuels, lubricants, chemicals, and other toxic materials.
  - 3. Procedures for refueling and maintaining pontoon-mounted backhoes, trench dewatering pumps, and other similar equipment used in wetlands or other water bodies.
  - 4. Contingency plan for cleaning up spills and other releases of fuels, lubricants, chemicals, and other toxic materials.
- C. Certification of Completed Work: The Contractor shall submit to GCDWR and/or the Engineer a signed certification regarding the completed Work and any required mitigation. GCDWR shall forward this certification to the USACE with the authorization letter. The certification shall include:
  - 1. A statement that the authorized Work was done in accordance with the USACE authorization, including any general or specific conditions.
  - 2. A statement that any required mitigation was completed in accordance with the permit conditions if completed by the Contractor.
  - 3. The signature of the Contractor certifying the completion of the Work and mitigation if completed by the Contractor.

PART 2 - PRODUCTS - (NOT

USED) PART 3 - EXECUTION

#### 3.1 CONSTRUCTION ACTIVITIES NEAR WETLANDS

- A. The Contractor shall complete the following:
  - 1. Marking of Locations: Wetland locations affected by the project shall be permanently marked (staked, flagged, and surveyed) so that inadvertently removed markers can be relocated. The marking shall be clearly visible to all site

- personnel and equipment operators. Markings shall be maintained during the construction period.
2. Access: All site personnel, including all equipment operators, shall use pre-designated access and egress points to the site and pre-designated access roads within the construction site. No access or egress point shall be located in a wetland or other water of the United States. Access roads through wetlands and other waters of the United States shall be limited to those directed by GCDWR and approved by the USACE, State of Georgia, and the Designer.
  3. Staging Areas: All staging areas, spoil storage areas, and additional work areas shall be placed at least 50 feet from wetlands and other water bodies. No clearing of vegetation between these areas and adjacent wetlands is permitted.
  4. Right-of-Way Stabilization: Dirt, rockfill, tree stumps, brush, rip rap, or other material that would not promote a natural system shall not be used to stabilize a right-of-way.
  5. Equipment: Low-ground-weight equipment shall be used, or conventional equipment shall be operated from mats or other approved bedding material in wetlands and other water bodies.
  6. Trench Breakers: Trench breakers shall be constructed or the bottom of the trench shall be sealed with approved material in areas where the trench could drain adjacent wetlands or other water bodies.
  7. Equipment, Fuel, and Hazardous Material Storage: Equipment, fuels, and hazardous materials shall be stored at least 100 feet from wetlands and other water bodies. In addition, land-based equipment shall not be refueled or maintained within 100 feet of a wetland or other water body.
  8. Sediment and Erosion Control: Appropriate sediment and erosion control devices shall be installed and maintained to prevent sediment or other materials from reaching adjacent wetlands and water bodies. All exposed soil and other fills, as well as any Work below the ordinary high water mark, must be permanently stabilized at the earliest practicable date. Erosion and sediment control devices shall be installed in advance of the start of construction and shall be maintained in accordance with the requirements of item titled Erosion and Sedimentation Controls.
  9. Crossings: Wetland and water body crossings shall be limited to the minimum size required to safely construct the project. Crossings shall be constructed perpendicular to the water body channel unless prior approval for other methods is obtained from GCDWR and/or the Engineer, the USACE, the State of Georgia, and the Designer.
  10. Flow in Water Bodies: Flows in all water bodies affected by a project shall be maintained at all times unless prior approval is obtained from GCDWR and/or the Engineer, the USACE, the State of Georgia, and the Designer.
  11. Water Quality Standards: State water quality standards in streams and other water bodies affected by or adjacent to the project area shall be maintained in accordance with Chapter 391-3-6 of the Georgia Rules and Regulations for Water Quality Control. Water quality in adjacent waterways shall be maintained as specified by GCDWR and/or the Engineer, the USACE, the State of Georgia, and the Designer.

12. **Schedule:** All wetland and water body crossings shall be completed using a compressed schedule to minimize disturbance in these areas.
13. **Temporary Roads and Bridges:** Temporary roads and bridges shall be removed as soon as the wetland or water body crossing has been constructed and the project has been completed.
14. **Metropolitan River Protection Act:** The terms, provisions, and requirements of the Metropolitan River Protection Act shall be abided by at all times.
15. **Restoration:** Disturbed areas shall be restored through seeding and planting of trees and shrubs as directed by GCDWR and/or the Engineer, the USACE, the State of Georgia, and the Designer. Liquid and granular fertilizers shall not be spread within 25 feet of the stream bank.
16. **Long-Term Maintenance:** The site shall be inspected as specified by GCDWR and/or the Engineer, the USACE, the State of Georgia, and the Designer to assure re-establishment of vegetation.
17. **Topsoil:** Topsoil shall be segregated from spoil and stored within sediment-filtering enclosures. Topsoil shall be backfilled into the top 6-12 inches of any trench through wetlands.
18. **Access Barriers:** Barriers shall be installed to prevent access to the site and any adjacent rights-of-way by off-road vehicles.
19. **Navigation:** No activity may cause more than a minimal adverse effect on navigation.
20. **Maintenance:** Any structure or fill authorized by the permit shall be properly maintained, including maintenance to ensure public safety.
21. **Aquatic Life Movements:** No activity may substantially disrupt the movement of those species of aquatic life indigenous to the water body, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water. The Contractor shall not construct perennial water body crossings from March 1 through May 30 unless otherwise authorized by GCDWR, the USACE, the State of Georgia, and the Designer.
22. **Regional and Case-by-Case Conditions:** The activity must comply with any regional or case-by-case conditions which may have been added by the USACE.
23. **Wild and Scenic Rivers:** No activity may occur in a component of the National Wild and Scenic River system, or in a river officially designated by Congress, as a study river for possible inclusion in the system.
24. **Tribal Rights:** No activity or its operation may impair reserved tribal rights, including but not limited to, reserved water rights and treaty fishing and hunting rights.
25. **Endangered Species:** No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species, or a species proposed for such designation as identified under the Federal Endangered Species Act, or which is likely to destroy or adversely modify the critical habitat of such species.
26. **Historic Properties:** No activity which may affect historic properties listed, or eligible for listing in the National Register of Historic Places, is permitted unless authorized by GCDWR, State Historic Preservation Office (SHPO), the USACE, the State of Georgia, and the Designer (33 CFR part 325, appendix C).

27. Discharge of Dredged or Fill Material: The following conditions apply to activities that involve the discharge of dredged or fill material into waters of the U.S.
- a. Water Supply Intakes: No discharge of dredged or fill material may occur in proximity to a public water supply intake except where the discharge is for repair of the public water supply intake structures and/or adjacent bank stabilization.
  - b. Suitable Material: No discharge of dredged or fill material may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material discharged must be free from toxic pollutants in toxic amounts (as defined in section 307 of the Clean Water Act).
  - c. Spawning Areas: Discharges in spawning areas during spawning seasons must be avoided to the maximum extent practicable. The Contractor shall not construct perennial water body crossings from March 1 through May 30 unless otherwise authorized by GCDWR, USACE, the State of Georgia, and the Designer.
  - d. Obstruction of High Flows: Discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water (unless the primary purpose of the fill is to impound waters) unless authorized by GCDWR, the USACE, the State of Georgia, and the Designer.
  - e. Adverse Effects from Impoundments: If the discharge creates an impoundment of water, the accelerated passage of water and/or restriction of its flow shall not adversely affect the aquatic system unless authorized by GCDWR, the USACE, the State of Georgia, and the Designer.
  - f. Waterfowl Breeding Areas: Discharges into breeding areas for migratory waterfowl must be avoided unless authorized by GCDWR, the USACE, the State of Georgia, and the Designer.
  - g. Removal of Temporary Fills: Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

### 3.2 ENFORCEMENT

- A. The Contractor is responsible for conducting any restoration and/or paying any fine resulting from a violation of the requirements of these specifications or of an applicable permit or regulatory requirement (including work outside an easement). This responsibility is in effect even if the action is initially directed at Gwinnett County.

END OF SECTION 32 73 00

SECTION 32 92 00

TURFS AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
1.5	Warranty
2.1	Seed
2.2	Sod
2.3	Topsoil
2.4	Landscape Mulch
3.1	Preparation of Seeded or Sodded Areas
3.2	Seeding and Sod Replacement
3.3	Sod Removal/Replacement
3.4	Topsoil
3.5	Mulching
3.6	Watering
3.7	Landscape Mulch
3.8	Maintenance

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall furnish all labor, equipment, and materials necessary for and to properly restore to the satisfaction of GCDWR, all ground surfaces irrespective of the type, which may be disturbed in the progress of Work required under this contract.
- B. These items shall include in general, but without limitation, the spreading of topsoil, seeding, sod placement/replacement, fertilizing, and mulching required to restore disturbed areas as necessary for the proper completion of the Work as may be required, directed, or as specified herein. It is the intent of these specifications to place seed over all disturbed easement areas and to place topsoil and sod where established lawns or other well improved grass areas existed prior to construction. All disturbed areas are to be restored to same or better general conditions that existed prior to commencement of the Work or to the satisfaction of the GCDWR Inspector. Items covered under this section are considered as permanent restoration, as compared to grassing required in the item titled Erosion and Sedimentation Controls, which is for temporary erosion

and sediment control. Areas disturbed outside the lines and limits of the right-of-way and easements indicated on the plans shall be restored at the expense of the Contractor unless directed by GCDWR.

- C. Standard Specifications: The requirements of the manual for Erosion and Sediment Control in Georgia and as revised to date, shall apply insofar as they are applicable.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. Submittals shall include, but not be limited to product data for seed, fertilizer, agricultural limestone, vegetative mulch, landscape, mulch, sod and topsoil.
- C. The Contractor shall submit plans showing in detail the type, location, fertilizer ratios, and percentage cover of all seeding and sodding to be used in construction.

1.5 WARRANTY

- A. All plantings, seeded or sodded, shall be guaranteed for a period of one (1) year after Final Completion of the project. Any areas showing evidence of settlement or loss of topsoil shall be rebuilt and replanted as required. Any plantings that are dead or dying during the Warranty Period must be replaced, and at Contractor's expense.

PART 2 - PRODUCTS

2.1 SEED

- A. Seed shall be labeled in accordance with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act. All seeds shall be furnished in sealed standard containers. The minimum percentage by weight of pure live seed in each lot of seed shall be as follows:

1. Seed Type	Percent
K31 Fescue	95
Material other than grass seed	
	<u>5</u>
	Total 100

- B. The aggregate percent of material other than grass seed shall include all non-viable seed, chaff, bulbs, live seed of crop plants other than those specified above, harmless inert matter, and weed seed not exceeding 1.0% by weight of pure live seed and other material in the mixture.
- C. Commercial fertilizer shall be composed of a formula of 20-12-10 and shall conform to applicable Georgia fertilizer laws. It shall be uniform in composition, dry, and free flowing and shall be delivered to the site in the original unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer, which becomes caked or otherwise damaged making it unsuitable for use, shall not be accepted.

D. Agricultural limestone shall be an acceptable grade of ground limestone, ground



dolomite, or a mixture of limestone and dolomite meeting the following physical and chemical requirements:

1. Gradation

<u>Standard Sieve Size</u>	<u>Maximum Percent (%) Retained</u>
No. 8, maximum	10
No. 100, maximum	75

- E. The vegetative mulch shall be the cereal straw from stalks of oats, rye, wheat, or barley. The straw shall be free of prohibited weed seeds and shall be relatively free of all other noxious and undesirable seeds. The straw shall be clean and bright, relatively free of foreign material and be dry enough to spread properly. If the above straw specifications cannot be met practicably, the foliage of the following plants may, with GCDWR's approval, be substituted: Smooth Brome, Timothy, Orchard Grass, Red Canary Grass, Tall Fescue, Red Top, Millet, Blue Stem, Indian Grass, Red Clover, White Clover, Alfalfa, Crimson Clover, Birds Foot Trefoils, and Vetch. The foliage shall be taken relatively free of noxious and undesirable seeds and foreign material. The asphalt emulsion shall be SS-1, SS-1h, CSS-1 or CSS-1h conforming to the requirements of AASHTO M140-70 or AASHTO M208-72.

2.2 SOD

- A. Turfgrass Sod: Complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.
- B. Turfgrass Species: Bermudagrass, Carpetgrass, Axonopus, Centipedegrass, St. Augustinegrass, and Zoysiagrass.
- C. Turfgrass Species: Sod of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
  - 1. Full sun: Kentucky bluegrass, a minimum of three cultivars.
  - 2. Sun and partial shade: Proportioned by weight as follows:
    - a. 50 percent Kentucky bluegrass.
    - b. 30 percent Chewings Red Fescue.
    - c. 10 percent Perennial Ryegrass.
    - d. 10 percent Redtop.
  - 3. Shade: Proportioned by weight as follows:
    - a. 50 percent Chewings Red Fescue.
    - b. 35 percent Rough Bluegrass.
    - c. 15 percent Redtop.

2.3 TOPSOIL

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 7.4 percent organic material minimum, free

of stones 1 inch or larger in any dimension, and other extraneous materials harmful to plant growth.

1. Topsoil Source: Reuse surface soil stockpiled on the site. Verify suitability of surface soil to produce topsoil meeting requirements and amend when necessary. Supplement with imported topsoil when quantities are insufficient. Clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.
2. The Contractor shall furnish topsoil free from objectionable materials such as hard clods, stiff clay, sods, hardpan, partially disintegrated stone, plantstumps, large roots, litter, or other materials that are not integrally a natural component of good agricultural soils and which are harmful to or unnecessary for successful plant growth.

#### 2.4 LANDSCAPE MULCH

- A. Pine Straw: Reddish-brown naturally occurring pine needles (leaves), shed from mature pine trees, mechanically harvested, and baled. Pine straw shall be fresh, dry and bright in color and shall be free of weeds, twigs, pine cones, and insects.
- B. Shredded Bark Mulch: Shredded bark mulch shall consist of shredded bark and wood. Maximum length of any individual component shall be two inches (2") and a minimum of seventy-five percent (75%) of the mulch shall pass through a one inch (1") screen. Mulch shall be free of germination-inhibiting ingredients. The bark mulch shall have the characteristics of retaining moisture, forming a mat not susceptible to spreading by wind or rain, and providing a good growth medium for plants. Shredded bark mulch may contain up to fifty percent (50%) shredded wood material. Wood chips are not acceptable. Bark mulch containing shredded wood shall be aged a minimum of one year prior to installation. Bark mulch shall be free of soil, rocks, and weeds

### PART 3 - EXECUTION

#### 3.1 PREPARATION OF SEEDED OR SODDED AREAS

- A. The sub grade for the areas to be seeded or sodded shall be brought to a uniform grade, free of large stones. Where topsoil is required by GCDWR, the topsoil shall be uniformly graded, trimmed, and raked free from unsuitable material, ridges, bumps, or depressions. Over this area, spread agricultural lime at the rate of 40 pounds per 1000 square feet, and spread fertilizer uniformly on the surface of the ground at the rate of 1500 pounds per acre. Mix the lime and fertilizer uniformly into the top four (4) inches of the soil by suitable harrows, rotary tillers, or other approved equipment.

#### 3.2 SEEDING AND SOD REPLACEMENT

- A. Sod shall be placed on all established type lawns and other improved well established grass areas. On un-improved grass areas, and easements, seeding will be allowed when approved by the GCDWR Inspector.
- B. Where directed by the GCDWR Project Inspector, areas shall be seeded or sodded. Seeding shall be performed using a properly proportioned mixture of inoculated seed

approved for use in The Piedmont Region "Zone One" as detailed in the Manual for Erosion and Sediment Control in Georgia. Seeding shall only be permitted during the planting season listed for The Piedmont Region. All seeded areas shall be uniformly mulched immediately after seeding.

- C. The Contractor shall be responsible for maintaining all areas including, watering, and reseeded defective area until a satisfactory stand of grass is accomplished and Final Acceptance of the Work by GCDWR and/or the Engineer is obtained. Areas showing evidence of settlement or loss of topsoil shall be rebuilt and reseeded or resodded as required.
- D. In General, the Contractor shall replace existing maintained lawn areas with the same type of grass as was established prior to construction. Any deviations or alternatives proposed due to unavailability of seasonal grasses or inappropriateness of sod or seeding due to the time of year must be presented to the GCDWR Project Inspector, approved by GCDWR, and in writing by the homeowner.

### 3.3 SOD REMOVAL / REPLACEMENT

- A. On all well-established "sod" type lawns and other improved well established grass areas, the sod/grass shall be carefully removed, kept, watered, alive, and replaced after backfilling has been properly completed. Sod replacement shall be performed using sod of type and grade of that which was disturbed. Sod shall be carefully placed and rolled to insure good soil contact.

### 3.4 TOPSOIL

- A. Where directed by GCDWR, areas to be seeded shall be covered with a layer of topsoil. The topsoil shall be of sufficient thickness that when spread and compacted, a minimum of four (4) inches shall be available. The Contractor shall furnish natural topsoil of a good condition and tillable structure. Obtain topsoil as borrow from an outside source and from piles of uniform texture, drainage, and other characteristics so as to constitute a homogenous soil meeting the requirements of the Georgia Department of Transportation (GDOT) of and approved by GCDWR. Do not place topsoil containing frost or in muddy conditions. If utilizing existing material obtained from the initial excavation of the worksite for reuse as top soil, the Contractor must first obtain approval from GCDWR as to suitability of its content, including approval of location and method of storage of topsoil for reuse.

### 3.5 MULCHING

- A. Uniformly mulch all seeded areas in a continuous blanket immediately after seeding. Apply the mulch so as to permit some sunlight to penetrate and the air to circulate and at the same time shade the ground, reduce erosion, and conserve soil moisture. Approximately 25 percent of the ground shall be visible through the mulch blanket.
- B. Hold mulch on slopes greater than 3 to 1 ratio in place by the use of an approved mulch binder. Thoroughly mix binder and apply with the mulch. Apply emulsified asphalt or cutback asphalt at the approximate rate of 5 gallons per 1,000 square feet as required to

hold the mulch in place.

- C. Cover structures, poles, fence, and appurtenances if the mulch binder is applied in such a way that it would come in contact with or discolor the structures.
- D. Apply mulch and binder by suitable blowing equipment at closely controlled application rates.

### 3.6 WATERING

- A. Maintain the proper moisture content of the soil to insure adequate plant growth until a satisfactory stand is obtained. If necessary, perform watering to maintain an adequate water content in the soil.
- B. Accomplish watering by hoses, tank truck, or sprinklers in such a way to prevent erosion, excessive runoff, and overwatered spots.

### 3.7 LANDSCAPE MULCH

- A. Apply landscape mulch at least 2 inches for shredded bark and at least 4 inches loose depth for pine straw to obtain a compacted depth of at least 2 inches depth. Compaction to occur naturally.

### 3.8 MAINTENANCE

- A. After the grass has grown to a height of 2 inches and before final acceptance, apply one additional application of nitrogen at the rate of 50 lbs/acre.
- B. Apply nitrogen with mechanical hand spreaders or other approved spreaders capable of uniformly covering the grassed areas. Do not apply nitrogen on windy days or when the foliage is damp. Do not apply nitrogen between October 15 and March 15 except in Zone 4. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
- C. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- D. Immediately reseed areas that show bare spots.
- E. Apply fertilizer at approximately 600 lbs/acre each spring after initial plant establishment until Final Acceptance.
- F. GCDWR and/or the Engineer may require replanting of an area that shows unsatisfactory growth for any reason at any time. Except as otherwise specified or permitted, prepare replanting areas according to the Specifications as if they were the initial planting areas.
- G. If the compaction depth of landscape mulch is less than 2 inches prior to Final Acceptance, apply additional landscape mulch to deficient areas.

END OF SECTION 32 92 00

SECTION 32 93 43

TREES, SHRUBS, AND

PLANTS

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Trees, Shrubs, and Plants
3.1	Warranty
3.2	Workmanship

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall, under this item, furnish all materials, tools, labor, and equipment necessary to install select nursery trees, riverbank joint plantings, shrubs, and plants as indicated on the Contract Documents and/or Drawings or as directed by GCDWR.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. The Contractor shall submit detailed plans for tree planting, including location and spacing, hole size, fertilizer rates, and staking requirements.

PART 2 - PRODUCTS

2.1 TREES, SHRUBS, AND PLANTS

- A. All trees, shrubs and plants shall be nursery grown.
1. GCDWR will not accept trees, shrubs, and/or plants that are severely cut back or pruned to conform to size requirements.
  2. GCDWR will reject trees, shrubs, and plants that are undersized, have poorly developed tops or root systems, or are infected with disease or infested with

insects.

- B. GCDWR shall have the option to select either 15 Gallon nursery sized trees or, if deemed necessary, shall authorize Trees that shall be a minimum of 2 inches in diameter as measured 12 inches above the ground. The 2 inch caliper Trees shall be a minimum of 8 feet tall. The exact species of trees and river bank joint plantings must be approved by GCDWR prior to planting.
- C. Refer to Contract Documents or Project Specific Scope of Work for type, size, and quantity.

PART 3 - EXECUTION

3.1 WARRANTY

- A. All trees, riverbank plantings, shrubs, and plants shall be guaranteed for a period of one (1) year after substantial completion of the project. Any trees or plantings that are dead or dying must be replaced.

3.2 WORKMANSHIP

- A. All trees shall be delivered with a burlap root bag, and installed with supporting wires when necessary. Riverbank planting shall be provided by an individual experienced with such plantings and their installation. Riverbank joint plantings shall be installed according to the directions of the supplier. The proposed location of trees, plants, and shrubs must be marked with a stake and approved by GCDWR prior to planting.

END OF SECTION 32 93 43

SECTION 33 01 30.16

TV INSPECTION OF STORM DRAINAGE PIPELINES

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Definitions
2.1	General
3.1	General
3.2	Digital Audio Visual Recording
3.3	Television Inspection Reports
3.4	Data Quality Control Procedures
3.5	Documentation

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Codes, Specifications, and Standards
  - a. NASSCO – National Association of Sewer Service Companies
- C. Testing and Materials Standards (None Cited)

1.3 WORK INCLUDED

- A. The work of this section is to determine the internal physical condition of the storm sewer system, locate physical defects, locate remote connections and locate defects. All storm structures encountered during TV inspection shall be assessed.

1.4 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, defects, leaking joints, seepage, debris and roots. Contractor shall furnish all labor, materials, equipment, tools, and other incidental services for closed circuit television inspection. (CCTV)
- B. MPEG: MPEG (pronounced M-peg), which stands for Moving Pictures Expert 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.

- C. 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 most common types of interfaces are USB and Firewire. The Contractor will deliver all inspection databases, digital reports and media to the County on an external hard drive that is compatible with the Data Administrator's desktop system.
- D. No separate payment will be made for television inspection when that inspection is associated with the installation of rehabilitation systems. The work and materials being considered as incidental to and part of the rehabilitation system unit bid prices. Contractor will be required to submit both a Pre-Lining and Post-Lining inspection, and these inspections must comply with the same technical standards and specifications as all CCTV Condition Assessment surveys.
- E. No separate payment will be made for the training and certification of Contractor personnel for NASSCO's Pipeline Assessment and Certification Program (PACP).
- F. No separate payment will be made for the training and certification of Contractor personnel for NASSCO's Manhole Assessment and Certification Program (MACP).
- G. The Contractor shall allow in the rates and provide at no additional cost, a vehicle when required by GCDWR, together with a driver, to assist with visual reconnaissance surveys and/or inspections. The vehicle shall be suitable for carrying the survey team and laborers and shall be equipped with the following:
  - 1. Equipment for easing and lifting manhole/structure covers.
  - 2. Pipe safety equipment.
  - 3. Road safety equipment.
  - 4. Protective clothing for the survey/inspection teams comprising coveralls, boots, gloves, hard hats, etc.
- H. The Contractor shall allow in the rates and provide at no additional cost, structure assessments in accordance with NASSCO's MACP. Every structure encountered during the TV inspection process shall be assessed.

## PART 2 - PRODUCTS

### 2.1 - GENERAL

- A. The Contractor shall furnish the mobile television inspection studio, television camera, audio-visual digital encoding equipment / software, and other necessary equipment, materials, power, labor, and technicians as needed to perform the television inspection.
- B. The television inspection equipment shall be capable of inspecting a minimum of 1,500



- feet of pipe, when entry into the line can be accessed from the upstream and downstream manhole/structure. When entry is at one end only, the inspection equipment shall be capable of inspecting seven hundred and fifty (750) feet by a self-propelled unit. The inspection equipment shall be capable of clearly televising the interior of a 6-inch and larger diameter pipes.
- C. The television equipment shall be transported in a stable condition through the pipe line main under inspection. Throughout the inspection, the camera equipment shall be positioned with the camera directed along the longitudinal axis of the pipe. When the television equipment is towed by winch and bond through the pipe line, all winches shall be stable with either locking or ratcheting drums. All winches shall be inherently stable under loaded conditions. The bonds shall be steel or of an equally non-elastic material to ensure the smooth and steady progress of the camera equipment. 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 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 by the Contractor.
- D. When necessary, the Contractor shall divert stormwater flow in accordance with the requirements of Bypass Pumping (33 01 30.74).
- E. The studio shall be of sufficient size to accommodate four people for the purpose of viewing the television monitor while the inspection is in progress. The studio shall be insulated against noise and extremes in temperature, and shall 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 these Specifications. GCDWR, or its representative shall have access to view the television screen at all times. The central control panel and television camera shall be located in the studio. The studio shall be mounted on a mobile vehicle (truck or trailer), which allows safe and orderly movement of the inspection equipment throughout the job site.
- F. The television camera used for the pipe line inspection shall be one specifically designed and constructed for pipeline inspection. The camera shall be waterproof and shall be operative in any conditions that may be encountered in the inspection environment. The Contractor shall provide a color pan and tilt camera to facilitate the inspection of connections, storm water mains, and manhole/structure defects. The television camera shall be capable of 360° rotational scan indicating any salient defects. The tilt arc must not be less than 225° unless otherwise approved by GCDWR. The adjustment of focus and iris shall provide a minimum focal range of 3 inches in front of the camera's lens. The distance along the pipe in focus from the initial point of observation shall be a minimum of twice the vertical height of the pipe. The illumination must be such as to allow an even distribution of the light around the perimeter without the loss of contrast, flare out of picture, or shadowing. The view seen by the television camera shall be transmitted to a monitor of not less than 11 inches in size. The television camera shall be capable of receiving and transmitting a

- picture having not less than a resolution of 500 lines. The travel speed of the television inspection camera (through the pipe) shall be uniform and shall not exceed the maximum speed directed by GCDWR of 30 feet per minute, unless CCTV is used to validate CCP spray, where speed needs to be defined by Contractor and GCDWR to assure visibility of all hairline cracks.
- G. The Contractor shall test the television inspection equipment to verify the picture quality. The Marconi Regulation Chart No. 1 or the equipment manufacturer's recommendation shall be used to clearly differentiate between the following colors: white, yellow, cyan, green, magenta, red, blue and black.
- H. The television inspection equipment shall be of such quality as to enable the following to be achieved:
1. Color: With the monitor adjusted for correct saturation, the six colors plus black and white shall be clearly resolved with the primary and complementary colors in order of decreasing luminance.
  2. Linearity: The background grid shall show squares of equal size, without convergence/divergence over the whole of picture. The center circle shall appear round and have the correct height/width relationship (+/-5%).
  3. Resolution: The live picture must be displayed on a digital capable of providing a clear, color, stable image free of electrical interference with a minimum resolution of not less than 500 lines.
  4. Color Consistency: To ensure that the camera shall provide similar results when used with its own illumination source, the lighting shall be fixed in intensity prior to commencing the survey. In order to ensure color consistency no variation in illumination shall take place during the inspection.
- I. GCDWR may periodically check both the live and video picture color consistency against the calibration charts. Any differences will necessitate re-survey of the new length or lengths affected, at the Contractor's expense.
- J. The closed circuit television monitor display shall incorporate an automatically updated record in feet and tenths of a foot of the distance along the line from the cable calibration point to the center point of the camera or center point of the transducer, whichever unit is being used. The relative positions of the two center points should also be noted. The Contractor shall use a suitable metering device that enables the cable length to be accurately measured; this shall be accurate to +/-1% or 6 inches whichever is greater. The Contractor shall calibrate the footage meter on a regular basis and demonstrate that the tolerance is being achieved by tape measurement between manhole/structures 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.
- K. If the Contractor fails to meet the required standard of accuracy, GCDWR will instruct the Contractor to provide a new device to measure the footage. GCDWR may at their discretion instruct the Contractor in writing, to re-survey those lengths of pipe first

inspected with the original measuring device, at no additional expense to GCDWR.

- L. All audio-visual recordings and collected data made during the television inspection shall become the property of GCDWR and shall be submitted to GCDWR immediately upon completion of the television inspection. The Contractor shall maintain an additional copy of all video inspections and correlating data for the duration of the contract period.

## PART 3 - EXECUTION

### 3.1 - GENERAL

- A. Television Inspection: The Contractor shall inspect pipelines with pan and tilt conventional television imagery as specified so as to record all relevant features and defects of the pipeline under inspection. Inspection of pipelines shall be carried out utilizing GCDWR approved formats only. Cleaning shall be performed in accordance with the requirements of Cleaning of Storm Drainage Systems (33 01 30.51). Pipes should be sufficiently clean so as to allow for clear viewing of all of the interior surfaces of the lines during television inspection. It is required for contractor to video condition of pipe, prior to cleaning. 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 expense.
- B. Inspection shall be documented using NASSCO's Pipeline Assessment and Certification Program (PACP).
- C. If television inspection of an entire section cannot be successfully performed from one manhole/structure, a reverse setup shall be performed to obtain a complete inspection. REVERSE SETUPS shall be considered as subsidiary to the unit price bid for CCTV inspection.
- D. Each pipe length, i.e. the length of pipe between two consecutive manhole/structures, shall be entered on separate work order headers electronically. Thus where a Contractor elects to "pull through" a manhole/structure during a CCTV Survey, a new coding sheet shall be started at the manhole/structure "pulled or walked through" and the footage re- set to zero on the coding sheet. Where a length of pipe between consecutive manhole/structures is surveyed from each end (due to an obstruction or structural failure) two coding sheets should be used. Where a length of pipe between two consecutive manhole/structures cannot be surveyed or attempted for practical reasons a (complete header) coded sheet shall be made out defining the reason for abandonment. At the start of each pipe length being surveyed or inspected and each reverse set-up, the length of pipeline from zero footage, the entrance to the pipe, up to the cable calibration point shall be recorded and reported in order to obtain a full record of the pipe length. All reverse set-ups, blind manhole/structures, and buried

- manhole/structures shall be logged on a separate log. Video digits shall be recorded so that every recorded feature has a correct elapsed time stamp and footage. Each log shall make reference to the start Upstream Manhole/structure (AMH) and finish Downstream Manhole/structure (AMH) unless abandonment took place because of blockage. Manhole/structure Facility ID numbers shall be indicated in the remarks column of the detail report. Only the field "Direction of Inspection" and the order of the start and finish manhole/structures as listed on the observations section of the inspection will be utilized to indicate reverse setups. Contractor will take an "above ground measurement" (AGM) for each reach of pipe inspected. This measurement will be entered into the report for the particular pipe reach. Where Contractor's inspection software does not accommodate a location for the AGM, use the "Comments" section to indicate the AGM.
- E. The Contractor shall provide a complete television inspection of both the upstream and downstream manhole/structures beginning at the top of each manhole/structure and panning down to inspect the entire manhole/structure. Contractor shall also stop and pan each remote connection as standard procedure.
  - F. Whenever prevailing conditions allow, the camera head shall be positioned to reduce the risk of picture distortion. In circular pipes, the camera lens shall be positioned centrally (i.e. in prime position) within the pipe. In non-circular pipes, picture orientation shall be taken at mid-height, unless otherwise agreed, and centered horizontally. In all instances the camera lens shall be directed along the longitudinal axis of the pipe when in prime position. A positioning tolerance of  $\pm 10\%$  of the vertical pipe dimension shall be allowed when the camera is in prime position.
  - G. All television inspections shall be performed during low flow conditions. GCDWR reserves right to refuse any television inspection that does not produce an effective survey of the pipe because of high flow conditions or for any other reason.
  - H. If flows are greater than 25% of the pipe diameter the Contractor will either control the stormwater flow according to Bypass Pumping (33 01 30.74) or return at a time when flows are less than 25%.
  - I. Particular attention shall be taken to insure adequate light is provided, especially in larger diameter storm systems. This applies to both pre and post inspections. Failure to provide adequate light for the inspection will be cause for re-inspection, at no cost to GCDWR.
  - J. Particular attention shall be taken to insure adequate detail (pan, tilt, rotation, focus, zoom, and etcetera) is provided on all defects, especially in larger diameter storm systems. This applies to both pre and post inspections. Failure to provide adequate detail of defects during inspections will be cause for re-inspection, at no cost to GCDWR.
  - K. Each survey/inspection unit shall have on call equipment available to carry out the

flushing, rodding and jetting of pipes as and when such procedures are deemed to be necessary.

### 3.2 – DIGITAL AUDIO VISUAL RECORDING

- A. Video Recording: 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. The recording shall be MPEG-4. The digital video encoding shall include both sound and 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, when reviewed by an ISO-MPEG-4 compliant viewer, shall be free of electrical interference and shall produce a clear, stable image. The audio portion of the composite digital coding shall be sufficiently free of electrical interference and background noise to produce an oral report that is clear and complete and easily discernible.
- B. The audio portion of the inspection report shall include the location or identification of the Upstream manhole/structure number to the Downstream manhole/structure number, the direction of travel, the Pipe Facility ID being inspected, and the distance traveled on the specific run encountered. The inspection camera equipment shall be continuously connected to the monitoring equipment.
- C. The recording and monitoring equipment shall have the built-in capability to allow GCDWR to instantly review both the audio and video quality of the recordings at all times during the inspection. The size and position of the data display shall be such as not to interfere with the main subject of the picture.
  - 1. Once the survey of the pipeline is under way, the following minimum information shall be continually displayed
  - 2. Automatic update of the camera's footage position in the line from adjusted zero
  - 3. Pipe dimensions
  - 4. Upstream Manhole/structure Number
  - 5. Downstream Manhole/structure Number
  - 6. Facility ID of Pipe being surveyed
  - 7. Date of survey
  - 8. Road name/location
  - 9. Direction of survey
  - 10. Time of start of survey
  - 11. Material of construction of the pipe
- D. Separate MPEG-4 files shall be created for each pipe. 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 GCDWR.
- E. Footage and corresponding time elapsed shall be logged throughout survey/inspection for all relevant defects and construction features encountered unless otherwise agreed.
- F. MPEG files shall be named according to the following file specification:

TV\_[UPSTREAMMANHOLE/STRUCTUREID]\_[DOWNSTREAMMANHOLE  
/STRUCTUREID]\_[PIPEID]\_  
[Contractor Unique ID]\_[MMDDYYYY]\_[IncrementalNumber] .mpg

- G. The incremental number shall be used if multiple inspections are performed for the same line, such as a reverse inspection setup.
- H. Facility ID numbers will be provided to the Contractor by GCDWR in a personal geodatabase or shape files, or as specified in a GIS drawing with facility IDs
- I. GCDWR, 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 GCDWR.
- J. All continuous defects shall incorporate a start and finish abbreviation in the inspection.
- K. All data submittals will be in a single PACP version 4 database. All inspections shall be contained within one database.
- L. All data submittals shall also contain a directory of all inspections and the corresponding Segment Grade and Quick rating Scores for Structural, Operation and Maintenance, and Overall.

### 3.3 – TELEVISION INSPECTION REPORTS

- A. The Contractor shall complete a television inspection report for each pipeline segment. These reports shall be per the format and defect codes of NASSCO's Pipeline Assessment and Certification Program (PACP) including the Scoring for Structural, Operation and Maintenance and Overall. Prior to beginning work, the Contractor shall submit a hardcopy sample of the television inspection report to GCDWR for approval. All reports shall be exported in electronic format and delivered with the monthly invoice, database and media submittal, or more frequently as determined by GCDWR.
- B. In addition to recording the defects for the pipes and manhole/structures, the Contractor shall also record attribute data as work order header fields in their inspections. Attachment A defines each of the proper NASSCO PACP and Gwinnett County assigned field usage.
- C. For project specific evaluations, reports shall include a summary sheet indicating the assessment score, and relational above ground findings, including photographs, where structural defects are discovered. This information will assist in determining if obstacles above the defects will restrict access.

### 3.4 – DATA QUALITY CONTROL PROCEDURES

- A. The Contractor shall operate a quality control system, to be approved by GCDWR, which will effectively gauge the accuracy of all survey reports produced by the operator.
- B. The system shall be such that the accuracy of reporting is a function particularly of:
  1. The number of faults not recorded (omissions).
  2. The correctness of the coding and classification of each fault recorded.
- C. The minimum levels of accuracy to be attained under the various survey headings are as follows:
  1. Header Accuracy 95%
  2. Detail Accuracy 95%
- D. The Contractor's data quality control program shall include routine outside auditing of the work completed by a qualified subcontractor. The qualified subcontractor shall meet the minimum specified Contract requirements for the performance of the work and shall be approved in writing by GCDWR. The accuracy of the Contractor's data shall be based on the percentage of the data confirmed correct by the subcontractor. The minimum acceptable accuracy of the data shall be 95%. The general sequence of the auditing shall be as follows:
  1. The Contractor shall randomly select one day per month, typically in the first week of the month, and the work performed during this day shall be reviewed and/or repeated by the qualified subcontractor.
  2. If the work is greater than or equal to 95% accurate, no further outside auditing will be required for the month unless requested by GCDWR at their sole discretion. The cost for this audit is included in the allowances specified in the Bid Form. If the work is less than 95% accurate, the Contractor shall at his own expense repeat and/or correct the work and have the work re-audited by the qualified subcontractor.
  3. If this work is still less than 95% accurate, the Contractor shall repeat and/or correct and have the work re-audited, at his own expense, until the work is greater than or equal to 95% accurate.
  4. When this re-audited work is found to be greater than or equal to 95% accurate, the Contractor shall have the work of another randomly selected day in the same month reviewed and/or repeated by the qualified subcontractor at the Contractor's own expense.
  5. Steps 2 through 5 shall be repeated at the Contractor's own expense until the selected data is 95% accurate on the initial audit.
  6. The occurrence of five randomly selected days not achieving 95% accuracy on initial subcontractor review will constitute cause for dismissal.
  7. If the contractor successfully meets the 95% accuracy requirement for the initial randomly selected day for two consecutive months (Step 2 above), the contract may subsequently audit one day every other month. The Contractor may continue auditing one day every other month until the initial randomly selected day does not

meet 95% accuracy, at which time it must resume auditing one day every month,

- E. The Contractor shall perform this QA/QC analysis on all data recorded before the data is submitted to GCDWR. The Contractor shall provide a summary report of the results of the Quality Assurance analysis with each data submission.
- F. The data submissions shall undergo the same random review checks for Quality when submitted to GCDWR. Should accuracy levels fall below 95%, the data submittal will be refused and no payment will be released. Contractor will be required to correct or re-do inspections until 95% level of accuracy is reached. Continuous data submittal refusals for quality under 95% will constitute cause for dismissal.

### 3.5 DOCUMENTATION

- A. The Contractor shall complete work on each asset as assigned via the County's Computerized Work Order Management system. Upon start of work, the Contractor shall receive work orders as assigned by the Project Manager, or if project specific by the Construction Manager. The Contractor shall utilize the Mobile Work Manager to maintain and synchronize the status of each rehabilitation work order issued.
- B. The Contractor shall be responsible for providing all computer hardware necessary to use GBA Mobile Master.
- C. The Contractor shall be responsible for acquiring the appropriate version license of GBA Mobile Master.

END OF SECTION 33 01 30.16



SECTION 33 01 30.18

STORM SYSTEM STRUCTURE ASSESSMENT

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Definitions
1.5	Measurement and Payment
2.1	Equipment
3.1	General
3.2	Documentation
3.3	Photographic Documentation Procedures
3.4	Deliverables
3.5	Quality Control Procedures
3.6	Collapsing Manhole/Structures, Collapsing Pipes

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Codes, Specifications, and Standards
  - 1. NASSCO – National Association of Sewer Service Companies
- C. Testing and Materials Standards (None Cited)

1.3 WORK INCLUDED

- A. The purpose of manhole/structure condition assessment (MCA) is to locate a manhole/structure, document all incoming and outgoing pipes, and determine its physical dimensions, materials, structural condition, and maintenance concerns. NASSCO's MACP manhole/structure condition assessment codes will be utilized. Manhole/structure condition assessments will be conducted on every manhole/structure in the project basin, unless otherwise noted.

1.4 DEFINITIONS

- A. Buried Manhole/structure: A manhole/structure on a pipe, which is not visible at ground surface. All buried manhole/structures on the storm sewer systems shall be reported for

raising following their location. Subsequently, the raised manhole/structures shall be inspected.

- B. Designated Manhole/structure(s): Manhole/structures identified by County to be assessed. For the purpose of this contract, Designated Manhole/structures shall be all manhole/structures on the storm sewer systems including new manhole/structures, raised manhole/structures, buried manhole/structures, and unmapped manhole/structures discovered during the project.
- C. Manhole/structure: 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 drop inlets, inspection chambers, drop shafts, sumps, and all other auxiliary structures appurtenant to the storm sewer systems.
- E. Mapped Manhole/structure: A manhole/structure that appears on GCDWR's storm system maps.
- F. Raised Manhole/structure: A manhole/structure in which the frame and cover has been raised above their previous level.
- G. Unburied Manhole/structure: A manhole/structure on a pipe to be assessed formerly buried below ground surface.
- H. Unmapped Manhole/structure: A manhole/structure not included on GCDWR's storm system maps. An unmapped manhole/structure is also known as an uncharted manhole/structure.
- I. Exposed Manhole/structure: A manhole/structure in which the frame and cover are above normal levels above ground, i.e., more than 18-inches above ground level on any side.

## 1.5 MEASUREMENT AND PAYMENT

- A. Payment for manhole/structure condition assessment shall be incidental to the cost of TV Inspection, and should be included in that cost structure.
- B. No separate payment will be made for the training and certification of Contractor personnel for NASSCO's Manhole Assessment and Certification Program (MACP).

## PART 2 - PRODUCTS

### 2.1 EQUIPMENT

- A. Digital photographs shall be taken with a 12.0 mega pixel color camera, minimum.
- B. Line lamping, when requested, shall be performed using a zoom camera capable of

illuminating 75' to 250' of 12" to 120" pipe diameters.

- C. The Contractor will provide high-powered hand held spotlights and mirrors (to direct natural sunlight into the manhole/structure) to properly illuminate the interior of the manhole/structure when a Top Side Inspection is performed.
- D. The Contractor shall ensure that the zoom camera is centered in the middle of circular pipe lines and manhole/structure risers at all times during inspection. Using a steel tape or graduated survey rod, the manhole/structure depths are to be measured from the invert to the manhole/structure frame to the nearest .10 inch.
- E. Zoom camera Line-Lamping inspections, when requested, will be completed using a self-portable zoom camera inspection unit conforming to the following criteria:
  - 1. Multi-directional closed-circuit television zoom camera inspection and lighting system;
  - 2. Wide angled lens manhole/structure camera and lighting system for manhole/structure wall inspections;
- F. Zoom camera inspection unit must use a waterproof, pan and tilt color camera, capable of entering into a minimum manhole/structure cover size of (22 inches) including lighting, cables, power source, and other related equipment.
- G. The camera shall be equipped with an optic telephoto lens with sufficient magnification that the effects of pixelization do not degrade the farthest image.
- H. The light source will be adjustable to allow an even distribution of light around the pipes and manhole/structure perimeter without loss of contrast, flare out of picture, or shadowing.
- I. The telescopic boom must be capable of lowering the camera to a depth of at least 20 ft. inside the manhole/structure.
- J. It is the responsibility of the Contractor to comply with OSHA regulations, the County's Safety Guidelines, and the County's Confined Space Guidelines as applicable. The Contractor must provide all equipment required to comply with the regulations and guidelines.
- K. The Contractor shall provide all labor, material, supplies, equipment, transportation, traffic control, etc., necessary to complete the manhole/structure condition assessments.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Manhole/structures to be assessed (designated manhole/structures):
  - 1. The Contractor shall identify all designated manhole/structures on the storm systems to be assessed and confirm the manhole/structure referencing system to be used throughout the survey and for all subsequent reporting. The Contractor shall

- inspect and record both mapped and unmapped manhole/structures as well as buried and unburied manhole/structures in addition to designated manhole/structures.
2. The visible portion of each main entering designated manhole/structures shall also be inspected, when accessible, to assess overall structural and service condition and possible forms of infiltration or obstructions.
  3. For manhole/structures without a pre-assigned facility ID number the contractor shall assign a temporary unique identifier number from a series assigned by GCDWR.
  4. When buried manhole/structures are discovered, Contractor will alert GCDWR, and submit report of all buried manhole/structures, their location and surface cover. GCDWR will make determination if ROE is required or if work can proceed on easement or on ROW, and will notify property owner in advance of such work being performed
  5. When active infiltration is identified, Contractor will advise GCDWR in writing of manhole/structures encountered that require sealing.
  6. When a broken manhole/structure cover and/or casting are identified, Contractor will advise GCDWR in writing of the location of such broken cover and/or casting.
  7. Inspection data shall be submitted to the county following the format laid out in the Manhole/structureInspectionTemplate.xls. Digital data and high resolution digital photographs will be delivered to GCDWR on external hard drives.
  8. Digital photographs shall be named in the following format:
    - a. \_Manhole/structureID\_ContractorUniqueID\_Date\_IncrementalNumber.jpg

B. Ground Level - manhole/structure assessment procedures:

1. Manhole/structures less than 20 feet deep, with all mains less than 48 inches in diameter, will be inspected from the ground level without entry into the manhole/structure.
2. The manhole/structure interior structure shall be manually inspected using high- level illumination. High-resolution digital photographs with approved picture quality shall be taken of observed defects as well as all other relevant features. Information gathered shall provide a full illustration of the condition of the manhole/structure's interior as well as each main entering or leaving the manhole/structure.
3. If required to properly document the manhole/structure condition the Contractor shall employ pole mounted lights and camera.
4. The Contractor shall take digital photos as described in this section, complete the assessment report, make map verifications, and record map corrections as necessary.
5. Man Entry – manhole/structure assessment procedures: (This procedure only utilized when approved in writing by GCDWR. Must receive written approval for each manhole/structure.)
6. Manhole/structures that are 20 feet deep and greater will be inspected using the man entry condition assessment method. Also, manhole/structures with any main 48 inches in diameter and greater or with offset manhole/structures, overflow weirs, or other unique features precluding effective ground level assessment will be inspected using this method.
7. The manhole/structure interior structure shall be manually inspected using high-

level illumination. High-resolution digital photographs with approved picture quality shall be taken of observed defects as well as all other relevant features. Information gathered shall provide a full illustration of the condition of the manhole/structure's interior as well as each main entering or leaving the manhole/structure.

8. Confined Space safety procedures must be employed.
9. The Contractor shall take digital photos as described in this section, complete the assessment report, make map verifications, and record map corrections as necessary.

### 3.2 DOCUMENTATION

A. The following data will be recorded by the Contractor and submitted in the form of electronic data, including all text, updated maps and digital photos. Submitted data shall incorporate the following:

1. Manhole/structure Facility ID Number
2. Date of condition assessment
3. Status of the manhole/structure as covered, buried, or un-located manhole/structure
4. Type of manhole/structure lid
5. Number and size of holes, if any, in manhole/structure cover
6. Deficiencies in the ring and cover
7. Whether or not the manhole/structure is subject to ponding and the size of the runoff/ponding area.
8. Location of manhole/structure (street address, cross streets, etc)
9. Depth to manhole/structure invert (nearest 0.1 foot)
10. Manhole/structure construction materials and conditions of the walls, steps, benches, troughs.
11. Clock reference of each manhole/structure defect (outgoing main at 6:00 o'clock)
12. Facility ID number and clock reference of each main (outgoing main at 6:00 o'clock)
13. Size, material, condition and depth of each main.
14. Location and nature of visible defects and obstruction, i.e., indication of structural conditions or special problems in the main/manhole/structure
15. Root growth and type in manhole/structure wall/base, if any
16. Special problems and conditions, such as overflows, bypasses, etc.
17. Plan and profile drawings of the manhole/structure. Include the invert showing direction of flow of the incoming and outgoing main(s), defects, etc.
18. Type and depth of debris and deposition in the manhole/structure
19. Evidence of surcharge and the level of the surcharge

### 3.3 PHOTOGRAPHIC DOCUMENTATION PROCEDURES

A. A set of high-resolution digital color photographs shall be taken for each manhole/structure assessed, showing:

1. Manhole/structure cover (closed) taken from 20 feet downstream of manhole/structure standing over effluent pipe.

2. Manhole/structure cover (closed) taken directly over the manhole/structure.
3. View from surface, of manhole/structure invert – outgoing pipe at 6:00 o'clock.
4. Any structural defects, evidence of leakage, obstructions, roots, mortar loss, evidence of deterioration, etc.
5. The digital photographs shall incorporate references to both manhole/structure facility ID number and date when the photograph was taken. The annotation shall be clearly visible and shall have a 12pt (uppercase) font size. Each photograph filename shall be entered into the electronic database in the appropriate record that it is associated with.
6. If inspection performed with a Zoom camera, then digital photographs of all in/out pipes in the manhole/structure shall also be submitted.

### 3.4 DELIVERABLES

- A. Electronic database with inventory and condition data, along with photographs of each shall be submitted to GCDWR. The electronic database, using the required file format as outlined in Attachment B, filename Manhole/structureInspectionTemplate.xls, shall be tied to the County GIS sewer maps through the Manhole/structure facility ID numbers.
- B. Data Collection Methods: Electronic data must be delivered in the prescribed method for uploading to the County's Maintenance Management System (MMS). However, the Contractor may use whatever method he chooses to collect the data. Electronic copies of blank data tables will be provided to Contractor at the Project – Kickoff Meeting.
- C. The Manhole/structure Condition Assessment form must be delivered in the County's MMS format.
- D. The Contractor shall complete work on each asset as assigned via the County's Computerized Work Order Management system. Upon start of work, the Contractor shall receive work orders as assigned by the Project Manager. The Contractor shall utilize the Mobile Work Manager to maintain and synchronize the status of each rehabilitation work order issued.
- E. The Contractor shall be responsible for providing all computer hardware necessary to use GBA Mobile Master.
- F. The Contractor shall be responsible for acquiring the appropriate version license of GBA Mobile Master.

### 3.5 QUALITY CONTROL PROCEDURES

- A. The Contractor shall operate a quality control system, to be approved by the designated project manager, which will effectively gauge the accuracy of all survey reports produced by the operator.
  1. The system shall be such that the accuracy of reporting is a function particularly of:
    - a. The number of faults not recorded (omissions).
    - b. The correctness of the coding and classification of each fault recorded.

- B. The minimum levels of accuracy to be attained under the various survey headings are as follows:
1. Inspection Accuracy 95%
- C. The Contractor's data quality control program shall include routine outside auditing of the work completed by a qualified subcontractor. The qualified subcontractor shall meet the minimum specified Contract requirements for the performance of the work and shall be approved in writing by the project manager. The accuracy of the Contractor's data shall be based on the percentage of the data confirmed correct by the subcontractor. The minimum acceptable accuracy of the data shall be 95%.
- The general sequence of the auditing shall be as follows:
1. The project manager shall randomly select one day per month, typically in the first week of the month, and the work performed during this day shall be reviewed and/or repeated by the qualified subcontractor.
  2. If the work is greater than or equal to 95% accurate, no further outside auditing will be required for the month unless requested by the project manager at his sole discretion. The cost for this audit is included in the allowances specified in the Bid Form.
  3. If the work is less than 95% accurate, the Contractor shall at his own expense repeat and/or correct the work and have the work re-audited by the qualified subcontractor.
  4. If this work is still less than 95% accurate, the Contractor shall repeat and/or correct and have the work re-audited, at his own expense, until the work is greater than or equal to 95% accurate.
  5. When this re-audited work is found to be greater than or equal to 95% accurate, the Contractor shall have the work of another randomly selected day in the same month reviewed and/or repeated by the qualified subcontractor at the Contractor's own expense.
  6. Steps 2 through 5 shall be repeated at the Contractor's own expense until the selected day is 95% accurate on the initial audit.
  7. The occurrence of five randomly selected days not achieving 95% accuracy on initial subcontractor review will constitute cause for dismissal.
  8. If the contractor successfully meets the 95% accuracy requirement for the initial randomly selected day for two consecutive months (Step 2 above), the contractor may subsequently audit one day every other month. The Contractor may continue auditing one day every other month until the initial randomly selected day does not meet 95% accuracy, at which time it must resume auditing one day every month.
  9. The Contractor shall perform this QA/QC analysis on all data recorded before the data is submitted to GCDWR. The Contractor shall provide a summary report of

the results of the Quality Assurance analysis with each data submission.

10. The data submissions shall undergo the same random review checks for Quality when submitted to GCDWR. Should accuracy levels fall below 95%, the data submittal will be refused and no payment will be released. Contractor will be required to correct or re-do inspections until 95% level of accuracy is reached. Continuous data submittal refusals for quality under 95% will constitute cause for dismissal.

### 3.6 COLLAPSING MANHOLE/STRUCTURES, COLLAPSING PIPES

- A. Any manhole/structure with severely compromised structural integrity and posing a hazard or threat of personal injury to the public must be reported to GCDWR immediately for remedial action. Written confirmation of the report, including all details/photos of the defect/hazard shall be made to GCDWR within 24 hours of the discovery of the problem.
- B. The Contractor must protect any manhole/structure with conditions that pose a threat of personal injury to the public until GCDWR arrives at the job site.

END OF SECTION 33 01 30.18



SECTION 33 01 30.51

CLEANING OF STORM DRAINAGE SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Personnel
2.1	General
3.1	General
3.2	Cleaning Precautions
3.3	Documentation

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Codes, Specifications, and Standards
  - a. NASSCO – National Association of Sewer Service Companies
- C. Testing and Materials Standards (None Cited)

1.3 WORK INCLUDED

- A. Storm system 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.
- B. Contractor will be required to submit both a Pre-Rehabilitation and Post-Rehabilitation inspection, and these inspections must comply with the same technical standards and specifications as all CCTV Condition Assessment surveys as outlined in Section 33 01 30.16.

1.4 PERSONNEL

- A. The Supervisor must daily visit the project site 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.

- C. No crewmember shall enter confined spaces without the necessary certified training.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. The Contractor shall provide all supervision, labor, material, supplies, equipment, transportation, traffic control, etc., necessary to satisfactorily clean the stormwater pipes(s).
- B. **Hydraulically Propelled Equipment:** The equipment used shall be of a movable dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the system. If cleaning balls or other equipment, which cannot be collapsed, are used, special precautions to prevent flooding of the system and public or private property shall be taken.
- C. **High-Velocity Jet (Hydrocleaning) Equipment:** All high-velocity 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. Equipment shall also include a high-velocity gun for washing and scouring manhole/structure walls and floor and produce at least 2000-psi pressure. 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. When additional quantities of water from fire hydrants are used in normal working procedures, the water shall be conserved and not used unnecessarily. The Contractor's truck/trailer must be permitted by GCDWR as having the proper backflow prevention devices. GCDWR will supply a meter that must be connected to the fire hydrants prior to the withdrawal of water to document all water usage by the Contractor. The Contractor will be required to record daily meter readings at the beginning and ending of each workday and provide these readings to the GCDWR representative monthly. The Contractor will not be charged any fees for the use of the meter nor for any water used in the execution of this work unless otherwise indicated. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant. No additional payment to the Contractor shall be required use of the meter or the documentation of water used. The Contractor shall be responsible for providing all other necessary hoses and tools for obtaining the water.

PART 3 - EXECUTION

3.1 GENERAL

- A. **Cleaning Precautions:** During cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard the flow in the main are used, precautions shall be taken to insure that the water pressure created does not damage or cause flooding of public or private property being served by the system.
- B. **Cleaning:** The designated 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 County. The equipment shall be capable of cleaning a minimum of 750' linear feet and of removing dirt, rocks, sand, and other materials and obstructions from the pipes and manhole/structures. If cleaning of an entire section cannot be successfully performed from one manhole/structure, the equipment shall be set up on the other manhole/structure and cleaning again attempted. If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire section, it will be assumed that a major blockage exists and the cleaning effort shall be repeated with other types of equipment.
- C. The term "clean" as used herein shall mean the complete removal of all garbage, dirt, gravel, rocks, roots, settled sludge and all other solid or semi-solid materials from the pipes and manhole/structures.
  - 1. Light Cleaning is defined as cleaning of a pipe that has 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/structure-to-manhole/structure section. Rocks should be smaller than 3" in diameter.
  - 2. Heavy Cleaning is defined as cleaning of a pipe that has 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/structure-to-manhole/structure section. Rocks should be larger than 3" in diameter. If a pipe is encountered which requires heavy cleaning, the Contractor shall video the pipe, validating the cleaning required, prior to cleaning as part of both Light and Heavy Cleaning, the Contractor shall scour debris and/or roots from manhole/structure walls with high velocity water gun. No additional cost will be paid for such scour.
  - 3. Specialty Cleaning is defined as cleaning of a pipe that has heavy accumulation of roots, large diameter rocks and/or debris and requires the use of bucketing, jacking, and/or rodding methodologies to clean.
- D. Conditions such as broken pipe 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 notify GCDWR immediately, and shall not be required to clean those specific sections unless GCDWR authorizes the removal of the apparent obstruction, or authorizes the

Contractor to remove the obstruction as a function of this contract.

- E. Whenever sections 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/structure and pulled, in intervals, towards the upstream manhole/structure.
  - 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 relined. 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 cutters and porcupines, and equipment such as high-velocity jet cleaners.
- G. Material Removal: All sludge, dirt, sand, rocks, and other solid or semisolid material resulting from the cleaning operation shall be removed from the section being cleaned. Passing material from manhole/structure section to manhole/structure section 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 approved to accept 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 County. **UNDER NO CIRCUMSTANCES SHALL DEBRIS AND/OR LIQUIDS REMOVED THEREFROM BE DUMPED INTO THE GROUND OR STREETS OR INTO DITCHES, CATCH BASINS OR STORM DRAINS FOR ANY LENGTH OF TIME.**  
Contractor shall be responsible for all disposal costs.
- I. Protruding Connection Removal: Connections extending into the pipe shall be removed by means of hydraulically or mechanically operated equipment, or man entry procedures in appropriately sized pipes. Connections should be removed so that the resulting protrusion is less than 1" at the greatest point. All debris resulting from protruding connection removal shall be removed immediately from the pipe. Where protruding connections prevent the passage of equipment through the pipe, notify GCDWR immediately for point repair execution. Note: All protruding connections must be verified via television inspection prior to inserting any type of cutting tool into the main

to remove the protruding connection, and resulting pre and post television inspection shall be provided to the County for review.

- J. Final Acceptance: Acceptance of pipe cleaning shall be made upon the successful completion of the television/sonar inspection and shall be to the satisfaction of GCDWR. If the inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to re-clean and re-inspect the pipe, at no additional cost to GCDWR, until the cleaning is shown to be satisfactory.

### 3.2 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 pipe 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 which retard the flow of water in the mains are used, precautions shall be taken to ensure that the water pressure so created does not cause any damage or flooding to public or private property being served by the main involved.
- C. Any damage to the mains caused by the Contractor's operations shall be repaired in a manner approved by GCDWR at the Contractor's expense. GCDWR 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 which is over-filled by Contractor's cleaning operations shall also be repaired or otherwise paid for by the Contractor.

### 3.3 DOCUMENTATION

- A. The Contractor shall keep records (in a log-type 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. Manhole/structure ID Number to Manhole/structure ID Number.
  - 3. Pipe ID Number
  - 4. Date and Time.
  - 5. Length of Pipe.
  - 6. Condition and depth of manhole/structures.
  - 7. Size and type of main.
  - 8. Type and condition of manhole/structure.
  - 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 County's Computerized Work Order Management system. Upon start of work, the Contractor

shall receive work orders as assigned by the Project Manager. The Contractor shall utilize the Mobile Work Manager to maintain and synchronize the status of each rehabilitation work order issued.

- C. The Contractor shall be responsible for providing all computer hardware necessary to use GBA Mobile Master.
- D. The Contractor shall be responsible for acquiring the appropriate version license of GBA Mobile Master.

END OF SECTION 33 01 30.51

SECTION 33 01 30.71

STORM SYSTEM STRUCTURE REHABILITATION

PART 1- GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
1.5	Lining Systems
2.1	General
3.1	Rehabilitation of Manhole/Structure
3.2	Spray Applied Lightweight Structural Reinforced Cement
3.3	Centrifugally Cast Structural Reinforced Cement
3.4	Structure Rehabilitation Acceptance
4.1	Reporting
5.1	Warranty

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Codes, Specifications, and Standards (None Cited)
- C. Testing and Materials Standards: American Society of Testing and Materials (ASTM)

1.3 WORK INCLUDED

- A. The repair, rebuild and rehabilitation of the base, invert, bench, walls, chimney and cone including the removal of any unsound material in storm water manholes, catch basins, drop inlets and junctions boxes, cumulatively referred to as structures. Work includes surface preparation, sealing and testing.
- B. Provide the following items, but not limited to, as directed by the County:
  - 1. Repair crack or joint with cement mortar.
  - 2. Restore the structural integrity by lining the structure with cement mortar.
  - 3. Rebuild bench and invert using cement mortar.
  - 4. Provide thickness gauges, wet film gauges and other testing equipment to test the thicknesses as required by this specification.
  - 5. Provide bypass pumping to facilitate rehabilitation activities.

1.4 SUBMITTALS

- A. The contractor shall submit for approval, in accordance with Section 01 33 00

SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.

1. Manufacturers' Certificate of Compliance certifying compliance with the applicable specifications and standards. The certifications shall list all materials furnished under this Section.
2. Certified copies of test reports of factory tests required by the applicable standards, the manufacturer, and this Section.
3. Manufacturer's handling, storage, and installation instructions and procedures.
4. Recommended lining thickness design to withstand groundwater pressure as specified in Part 3 of this Section.
5. Shop drawings and samples for any material proposed as equivalent or alternative to a specified material. Submit sufficient manufacturer's information to support equivalency or suitability to the satisfaction of the GCDWR.

## 1.5 LINING SYSTEMS

- A. The lining system used shall result in a monolithic structure to the shape and contour of the interior of the existing structure. The lining system shall be completely water tight and free of any joints or openings other than pipe inlets, pipe outlets and the rim opening. The junction of the lining material with the pipe material at the inlets and outlets shall be watertight.

## PART 2 -PRODUCTS

### 2.1 GENERAL

- A. Materials:
  1. The materials used shall be designed, manufactured, and intended for manhole/structure rehabilitation and the specific application in which they are used. The materials shall have a proven history of performance in manhole/structure rehabilitation. The materials shall be delivered to the job site in original unopened packages and clearly labeled with the manufacturer's identification and printed instructions. All materials shall be stored and handled in accordance with recommendations of the manufacturer. All materials shall be mixed and applied in accordance with the manufacturer's written instructions.
  2. The Contractor shall warrant and save harmless GCDWR against all claims for patent infringement and any loss thereof.
  3. Dispose of all wastes in accordance with applicable regulations.
  4. Each coating/lining system shall be designed for application over wet surfaces (but not active running water) without degradation of the final product and/or the bond between the product and the manhole/structure surfaces.
- B. Patching, repointing, filling, and repairing holes, cracks, joints and spalls in concrete and masonry manholes/structures (Cement Mortar):
  1. A premixed nonshrink cement-based patching material consisting of hydraulic



cement, graded silica aggregates, special plasticizing and accelerating agents, which has been formulated for vertical or overhead use. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder, or gas-forming agents or promote the corrosion of steel it may come into contact with. Set time (ASTM C-191) shall be less than 30 minutes. One-hour compressive strength (ASTM C-109) shall be a minimum of 200 psi and the ultimate compressive strengths (ASTM C-882-Modified) shall be a minimum of 1700 psi.

2. The product shall display the following properties:

	<b>Properties</b>		
	<b>1-Day</b>	<b>7-Day</b>	<b>28-Day</b>
Compressive Strength (ASTM C 109)	3,875 psi	4,550 psi	6,190 psi
Flexural Strength (ASTM C 78)	---	825 psi	985 psi
Tensile Strength (ASTM C 190)	---	290 psi	575 psi
Shrinkage (ASTM C 157, Modified)	---	---	0.04 Percent

3. Shall be a factory blended, low shrinkage, high strength, polymer modified, sprayable microsilica mortar.
4. The cement mortar shall be QM-1s Restore by Quadex, Inc., Mainstay ML-72 by Madewell Products Corporation, Silatec MSM by CEMTEC, or approved alternate.

C. Spray applied or centrifugally cast lightweight structural reinforced cement manhole/structure lining (Cement Mortar):

1. A premixed nonshrink cement-based patching material consisting of hydraulic cement, graded silica aggregates, special plasticizing and accelerating agents, which has been formulated for vertical or overhead use. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder, or gas-forming agents or promote the corrosion of steel it may come into contact with. Set time (ASTM C-191) shall be less than 30 minutes. One-hour compressive strength (ASTM C-109) shall be a minimum of 200 psi and the ultimate compressive strengths (ASTM C-882-Modified) shall be a minimum of 1700 psi.
2. The product shall display the following properties:

	<b>Properties</b>		
	<b>1-Day</b>	<b>7-Day</b>	<b>28-Day</b>
Compressive Strength (ASTM C 109)	3,875 psi	4,550 psi	6,190 psi
Flexural Strength (ASTM C 78)	---	825 psi	985 psi
Tensile Strength (ASTM C 190)	---	290 psi	575 psi

Shrinkage (ASTM C 157, Modified)	---	---	0.04 Percent
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3. Shall be a factory blended, low shrinkage, high strength, polymer modified, sprayable microsilica mortar.
  4. Shall be suitable for low-pressure spray or trowel application for the repair of vertical and horizontal concrete and masonry structures.
  5. Cement mortar shall be QM-1s Restore by Quadex, Inc., Mainstay ML-72 by Madewell Products Corporation, Silatec MSM by CEMTEC, or approved alternate.
- D. The hydraulic cement and cement mortar do not have to be from the same manufacturer; however, the Contractor is responsible for assuring compatibility of the various components.

### PART 3 - EXECUTION

#### 3.1 REHABILITATION OF MANHOLE/STRUCTURE

##### A. General Procedures

1. Previous Work: Manholes/structures previously rehabilitated under other projects shall not be rehabilitated if in good condition as determined by GCDWR.
2. Cleaning: All concrete and masonry surfaces to be rehabilitated shall be clean. All oil, laitance, coatings, loose bricks, mortar, unsound brick or concrete and other foreign materials shall be completely removed. Water blasting utilizing a 5000 psi pressure washer and proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers or mechanical means may be required to properly clean the surface. All surfaces on which these methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products. Debris resulting from cleaning shall be removed from the manhole/structure and not discharged downstream.
3. Patching: All large holes and/or voids, joints or pipes, all spalled areas, all lifting holes and all holes caused by missing or cracked brick shall be patched and all missing mortar repointed using a nonshrink cement mortar. All cracked or disintegrated material shall be removed from the area to be patched or repointed, exposing a sound subbase. All cracks not subject to movement shall be cleaned to remove all unsound material so that a solid fixed surface is established and patched with nonshrink patching mortar.
4. Manhole/Structure Walls: The thicknesses of the patches, coatings, etc. must be such that a uniform, vertical wall is established from the manhole/structure bench to the manhole/structure top section.
5. Flow Control: The Contractor shall be responsible for plugging, plugging with flow-thru pipe or diverting the flow as needed for repair and rehabilitation of manholes/structures. Flow shall be maintained in accordance with Section 33 01 30.74, Bypass Pumping of these Specifications. Bypass pumping will not be

- utilized unless approved in advance by the County.
6. Remove all loose grout and rubble from existing invert. Rebuild invert if required by reshaping, repairing slope of shelves or benches. Work shall include aligning inflow and outflow ports in such a manner as to prevent the deposition of solids at the transition point. All inverts shall follow the grades of the pipe entering the manhole. Changes in direction of the flow and entering branch or branches shall have a true curve of as large a radius as the size of the manhole/structure will permit, but will be shaped to allow easy entrance of maintenance equipment including buckets, T.V. camera, etc. **All inverts shall be rebuilt to a depth equal to the mid-point of the exiting pipe.** Where rehabilitation methods travel through a structure, the top of the liner may be cut out, at an elevation equal to the midpoint of the exiting pipe, and used as a form to build the invert. In structures where rehabilitation methods do not travel through the structure, the invert shall be built using bricks, blocks, or other approved materials, to an elevation equal to the mid- point of the exiting pipe. The rehabilitation method for pipelines shall be tied into the new invert and other structure rehabilitation, if installed. The face of all inverts, and all benches, shall be covered with materials in accordance with Section 2.1.A above. Where the structure is rehabilitated, the rehabilitation material will seamlessly tie in to the bench area.
  7. Manhole steps: Inspect all manhole steps prior to rehabilitation. Report to GCDWR any steps that appear loose, deteriorated, broken, or otherwise unsafe. Unless directed otherwise, cut all loose, deteriorated, broken, or otherwise unsafe steps from the manhole/structure and replace with new steps.
  8. Each lining system shall be installed in accordance with the manufacturer's recommendation to withstand groundwater pressures. For manholes/structures greater than 12 feet in depth, the lining shall withstand the pressures associated with a groundwater depth equal to the manhole/structure depth. Linings for all other manholes/structures shall withstand the pressures associated with groundwater depth of 12 feet. Measure groundwater depth from manhole/structure bench to top of ground surface.
  9. Application of products shall be by factory certified applicators.

### 3.2 SPRAY APPLIED LIGHTWEIGHT STRUCTURAL REINFORCED CEMENT

- A. The surface prior to spraying shall be damp without noticeable free water droplets or running water. Materials shall be spray-applied to a minimum uniform thickness to insure that all cracks, crevices, and voids are filled and a somewhat smooth surface remains after light troweling. The light troweling is performed to compact the material into voids and to set the bond.
- B. The first application shall have begun to take an initial set (disappearance of surface sheen, which could be 15 minutes to 1 hour depending upon ambient conditions) before the second application to assure a minimum total finished thickness of one (1) inch. The final finished thickness may need to be greater than one (1) inch as recommended by the manufacturer to withstand groundwater pressures. A depth gauge shall be used during application, at various locations, to verify the required thickness. The surface then shall be trowelled to smooth finish with care taken not to over trowel so as to bring additional water to the surface and weaken it. Manufacturer's recommendations shall

be followed whenever more than 24 hours have elapsed between applications.

- C. The bench covers used to catch debris shall be removed and the bench and invert sprayed such that a gradual slope is produced from the walls to the top of the invert with the thickness at the edge of the invert being no less than 1/2 inch. The wall-bench intersection shall be rounded to a uniform radius the full circumference of the intersection.
- D. No application shall be made to frozen surfaces or if freezing is expected to occur within the manhole/structure for 24 hours after application. If ambient temperatures are in excess of 95° F, precautions shall be taken to keep the mix temperature at time of application below 90° F, using ice if necessary.
- E. The final application shall have a minimum of four (4) hours cure time before being subjected to active flow.

### 3.3 CENTRIFUGALLY CAST STRUCTURAL REINFORCED CEMENT

- A. The rotating casting applicator shall be positioned to evenly apply the material and be withdrawn at a rate to assure a final minimum thickness of one (1) inch. The final finished thickness may need to be greater than one (1) inch as recommended by the manufacturer to withstand groundwater pressures. A depth gauge shall be used during application, at various locations, to verify the required thickness. The surface shall be trowelled to smooth finish with care taken not to over trowel so as to bring additional water to the surface and weaken it.
- B. The bench covers used to catch debris shall be removed and the bench and invert sprayed so that a gradual slope is produced from the walls to the top of the invert with the thickness at the edge of the invert being no less than 1/2-inch. The wall-bench intersection shall be rounded to a uniform radius the full circumference of the intersection.
- C. No application shall be made to frozen surfaces or if freezing is expected to occur within the manhole for 24 hours after application. If ambient temperatures are in excess of 95° F, precautions shall be taken to keep the mix temperature at time of application below 90° F.
- D. The final application shall have a minimum of four (4) hours cure time before being subjected to active flow.

### 3.4 STRUCTURE REHABILITATION ACCEPTANCE

- A. All structures rehabilitated using cement mortar lining shall be subject to visual inspection for conformance with these specifications.

## PART 4 – DOCUMENTATION

#### 4.1 REPORTING

- A. The Contractor shall complete work on each asset as assigned via the County's Computerized Work Order Management system. Upon start of work, the Contractor shall receive work orders as assigned by the Construction Manager. The Contractor shall utilize the Mobile Work Manager to maintain and synchronize the status of each rehabilitation work order issued.
- B. The Contractor shall be responsible for providing all computer hardware necessary to use GBA Mobile Master.
- C. The Contractor shall be responsible for acquiring the appropriate version license of GBA Mobile Master.

### PART 5 - WARRANTY

#### 5.1 WARRANTY

- A. The Contractor shall guarantee his work for a warranty period of three (3) years from the date of final acceptance. If, at any time during the warranty period, any leakage, cracking, loss of bond, or other discontinuity is identified, the Contractor shall make repairs at no additional cost to the GCDWR.
- B. The Contractor shall furnish an extended warranty from the liner manufacturer for manhole rehabilitation materials and from the Contractor for his work for a total of five (5) years from date of final acceptance.

END OF SECTION 33 01 30.71

SECTION 33 01 30.72

RELINING STORM SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Definitions
1.5	Responsibility for Overflows and Spills
1.6	Products
1.7	Submittals
1.8	Delivery, Storage, and Handling
2.1	Cured-in-Place Liner
2.2	Sliplining
2.3	Centrifugally Cast Pipe
3.1	Preparation
3.2	Installation
3.3	Post Installation
3.4	Remote Connection Reinstatement
3.5	Testing
3.6	Television Inspection
3.7	Acceptance
3.8	Prosecution of Work
3.9	Documentation
3.10	Alternative Technologies and Rehabilitation Systems
3.11	Warranty

B. RELATED SECTIONS:

The following listed sections do not purport to be all inclusive, as it is the Contractor's responsibility to do all the Work in accordance with the Contract Documents.

1. Measurement and Payment (01 22 15.11)
2. TV Inspection of Storm Drainage Pipelines (33 01 30.16)
3. Cleaning of Storm Drainage Systems (33 01 30.51)
4. Bypass Pumping (33 01 30.74)
5. Stormwater System Rehabilitation (33 01 30.71)

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

- B. American Society for Testing and Materials (ASTM) Standards: C33, C39, C78, C109, C114, C157, C172, C293, C309, C403, C469, C496, C531, C666, C801, C802, C882, C1090, C1140-03A, C1202, D543, D578, D638, D790, D1216, D1238, D1505, D1598, D1603, D1693, D2122, D2412, D2837, D2990, D3262, D3350, D3550, D3567, D3681, D4161, D4783, D5813, F477, F1216, F1473, F1743, F2019, F2414.
- C. American Concrete Institute (ACI) Standards: ACI 305H-99, ACI 306R-88
- D. American Association of State Highway Transportation Officials (AASHTO) Standard: M326-08.

### 1.3 WORK INCLUDED

- A. Work under this section shall include the rehabilitation of a length of an existing storm drainage system by trenchless methods.

### 1.4 DEFINITIONS

- A. Cured-in-Place Pipe Liner (CIPP) is defined as a hollow cylinder consisting of a flexible fabric tube with cured (cross linked) thermosetting cured resin or a flexible glass fiber reinforced tube with ultra-violet (UV) cured resin. Interior or exterior coatings/films, or both, may be included. The CIPP is formed within an existing pipe and takes the shape of and fits tightly to the pipe.
- B. Sliplining is defined as the insertion, by pushing or pulling, of a new, smaller diameter pipe material into an existing conduit.
- C. Centrifugally Cast Pipe (CCP) is defined as the horizontal application of centrifugally cast materials onto the interior of an existing conduit.

### 1.5 RESPONSIBILITY FOR OVERFLOWS AND SPILLS

- A. It shall be the responsibility of the Contractor to schedule and perform his work so as to result in no overflows or spills from the system. If flows are such that they interfere with the Contractor's ability to perform work, the Contractor shall be responsible for scheduling his work during low flow periods or provide bypass pumping. Bypass pumping shall be provided only with the specific approval of GCDWR.
- B. In the event of overflows caused by the Contractor's work activities, the Contractor shall immediately take appropriate action in accordance with the County's Emergency Response Plan (ERP), copies of which are available at Gwinnett County Department of Water Resources, to contain and stop the overflow, clean up the spillage, disinfect the area affected by the spill, and notify the designated Engineer in a timely manner. The Contractor shall prepare his own written Standard Operating Procedure (SOP) for handling and reporting spills, which shall be compatible with the County's ERP.
- C. Contractor will indemnify and hold harmless the County and the Engineer for any fines or third-party claims for personal or property damage arising out of a spill or overflow that is fully or partially the responsibility of the Contractor. Should fines subsequently

be imposed as a result of any overflow for which the Contractor is fully or partially responsible, the Contractor shall pay all such fines and all of the County's legal, engineering, and administrative costs in defending such fines and claims associated with the overflow.

## 1.6 PRODUCTS

- A. The system proposed (material, methods, workmanship) must have been proven through previous successful installations to an extent and nature satisfactory to GCDWR. Only CIPP products with a 50 year design life will be considered for approval.
- B. Products must meet all of the following criteria to be deemed commercially acceptable:
  - 1. For a CIPP and UV CIPP product to be considered commercially proven it shall have been successfully in service in applications similar to this project for a minimum of five (5) years. Additionally, a minimum of 250,000 linear feet and 1,000 line sections must have successfully been installed in the USA. The Manufacturer (Licensor) shall have completed sufficient enough testing to document the material and the method(s) of installation proposed will produce the desired long- term performance.
  - 2. Sliplining products shall have a minimum of 10,000 linear feet of installations in the USA.
  - 3. Centrifugally Cast Pipe Products shall have a minimum of 50,000 linear feet of installations in the USA.

## 1.7 SUBMITTALS

- A. The contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to the Georgia DOT when work is within a state road right-of-way, all working drawings and schedules of materials and methods proposed to be followed in execution of the Work under this item.
  - 1. Submit the following for product and installer pre-approval:
    - (1) Manufacturer's certificate that the materials to be used meet the referenced standards and these specifications.
    - (2) License or certificate verifying Manufacturer's/Licensor's approval of the installer.
    - (3) Proposed equipment and procedures for accomplishing the work.
    - (4) Product data and third party testing results.
  - 2. Submit the following during the project, per work order, for approval of the use of a particular system at a particular location:
    - (1) Field measurements.
    - (2) Design wall thickness calculations, signed and sealed by a registered professional engineer proficient in the design of the particular system.
    - (3) Contractor's procedures and materials for installation of the rehabilitation system including the duration expected for the particular location.
    - (4) Sampling procedures and locations for obtaining representative samples of the finished rehabilitation system.
    - (5) For Centrifugally Cast Pipe (CCP) systems, indicate the pounds of material to be used per linear foot of pipe diameter to be rehabilitated, as well as the proposed packaging of that material.



(6) For CCP systems, the Contractor shall submit the proposed plan for ensuring that the installed liner meets the engineer's minimum thickness requirements. The plan shall include the proposed liner thickness to be installed and the total weight of the dry materials needed to complete the installation.

3. A final certificate of compliance with this specification shall be provided by the manufacturer for all rehabilitation material furnished. Tests for compliance by an independent third party laboratory approved by GCDWR shall be made according to the applicable ASTM specification and the manufacturer's quality control program.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

A. The Contractor shall be responsible for the delivery, storage, and handling of products. No products shall be shipped to the job site without the approval of GCDWR's Representative.

B. Keep products safe from damage. Promptly remove damaged products from the job site. Replace damaged products with undamaged products.

### PART 2 - PRODUCTS

#### 2.1 CURED-IN-PLACE LINER

A. The finished CIPP liner shall be fabricated from materials which when complete are chemically resistant to and will withstand internal exposure to common flow having a pH range of 5 to 11 and temperatures up to 150°F.

B. CIPP liner design may be based on material properties of the liner that exceed the minimum values specified in ASTM F1216. However, the initial flexural modulus used in structural design calculations shall not exceed 400,000 psi. For UV cured CIPP, the initial flexural modulus used in the structural design calculations shall not exceed 1,250,000 psi.

C. CIPP liner design shall be based on achieving test parameters as follows:

	Water/Steam Cured CIPP	UV Cured CIPP
Flexural Modulus	250,000 psi	725,000 psi
Flexural Strength	4,500 psi	6,500 psi
Tensile Strength	3,000 psi	9,000 psi
Thickness	per particular work order design calculations	

D. The minimum length shall be that deemed necessary by the Contractor to effectively span the distance from the inlet to the outlet of the respective manholes/structures unless otherwise specified. The Contractor shall verify the lengths in the field before manufacturing.

E. Prior to design and manufacture of the liner the Contractor shall take all necessary

field measurements (including, but not limited to, the condition of the host pipe, diameter, ovality, deflection and length of the host pipe, bury conditions, soil type, soil loading factor and hydrostatic load) to ensure the liner is designed for the particular location's conditions.

- F. The liner must be designed for a minimum service life of 50 years.
- G. The minimum liner thickness installed shall be calculated according to ASTM standards, and based on 1.5mm increments for non UV cured CIPP, and based on 0.5 mm increments for UV cured CIPP.

Unless field measurements determine other conditions, the liner shall be structurally designed for minimum conditions of: earth load of 12.0 feet at the pipe invert; hydrostatic load at the pipe invert of 80% of the pipe's depth or 12.0 feet (whichever is greater); **fully deteriorated host pipe/direct bury condition**; prism loading; soil loading of 120 pcf; factor of safety of 2.0; 2% ovality; maximum deflection of 5%; soil modulus of 1000 psi, maximum lining enhancement factor of 7; HS20 live loading; and 50% long-term modulus reduction factor.

The installed (cured) minimum thickness of CIPP liners shall be as indicated in the chart below:

PIPE DIA	DEPTH	CIPP MINIMUM THICKNESS	UV CIPP MINIMUM THICKNESS
12 inch	0-12'	7.5 mm	3.0 mm
15 inch	0-12'	9.0 mm	3.0 mm
18 inch	0-12'	9.0 mm	4.0 mm
21 inch	0-12'	9.0 mm	4.0 mm
24 inch	0-12'	12.0 mm	5.0 mm
30 inch	0-12'	13.5 mm	6.0 mm
36 inch	0-12'	16.5 mm	7.0 mm
42 inch	0-12'	19.5 mm	8.0 mm
48 inch	0-12'	19.5 mm	9.0 mm
54 inch	0-12'	24.0 mm	N/A
60 inch	0-12'	28.5 mm	N/A
66 inch	0-12'	30.0 mm	N/A
72 inch	0-12'	32.5 mm	N/A
78 inch	0-12'	33.0 mm	N/A
84 inch	0-12'	35.5 mm	N/A
90 inch	0-12'	38.0 mm	N/A
96 inch	0-12'	40.5 mm	N/A
102 inch	0-12'	43.0 mm	N/A
108 inch	0-12'	46.0 mm	N/A
114 inch	0-12'	50.0 mm	N/A
120 inch	0-12'	53.0 mm	N/A

- H. The interior wall color of all cured CIPP liners shall be light reflective so that a clear CCTV inspection may be made of the finished liner.
- I. All cured-in-place lining products shall comply with ASTM F1216, ASTM F1743, or ASTM F2019 as applicable or intent thereof as determined by the GCDWR.
- J. The seamless flexible tube shall be fabricated to a size that when installed will neatly fit the internal circumference of the existing storm sewer lines. Allowance shall be made for circumferential stretching during insertion so that the final cured product is snug against the wall of the host pipe.
- K. UV cured CIPP liners shall be non-corrosion (E-CR Glass) material and shall be free from tears, holes, cuts, foreign materials and other surface defects. The glass fibers must extend in a longitudinal direction to insure no longitudinal stretching during the pull in process. The interior and exterior plastics shall be styrene resistant to protect and contain the resin used in the liner. A third layer of protective foil shall be installed on the exterior of the liner to prevent liner damage during the installation process and block external UV light penetration causing the liner to cure prematurely.
- L. Unless otherwise specified, the Contractor shall furnish a general purpose, unsaturated, polyester or vinyl ester resin and catalyst system compatible with the reconstruction inversion process that provides cured physical strengths specified herein.

- M. Resin system shall not contain non-structural enhancing fillers of any kind. The Contractor shall submit for approval, by GCDWR, the proposed resin system.
- N. The resin system for UV cured CIPP shall be a chemically resistant UV cured isophthalic polyester or vinyl ester resin.
- O. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.

## 2.2 SLIPLINING

- A. Sliplining products shall conform to the applicable ASTM standards previously noted.
- B. High Density Polyethylene Pipe (HDPE) shall meet the requirements of AASHTO M326-08 Specification. HDPE pipe shall be manufactured from PE resin compounds which conform to the requirements of cell class 345464C as in ASTM D3550-06. HDPE pipe used for Sliplining shall be of solid wall construction. Individual pipe section lengths shall not exceed 50 linear feet.
- C. Glass Reinforcement Pipe (GRP) shall utilize polyester resin systems with a proven history of performance in this type application. The historical data shall have been acquired from a composite material of similar construction and composition as the proposed product. The reinforcing glass fibers used to manufacture the components shall be of the highest quality commercial grade E-glass filaments with binder and sizing compatible with the impregnating resins. Silica sand shall be a minimum of 98% silica with a maximum moisture content of 0.2%. Resin additives, of any type, shall not detrimentally affect the performance of the product. Elastomeric gaskets shall meet ASTM F477 and be suitable for the application.

## 2.3 CENTRIFUGALLY CAST PIPE (CCP)

- A. Geopolymer Lining Material
  - 1. The geopolymer lining material shall be a micro-fiber reinforced ultra-dense geopolymer. This material provides a high strength fiber reinforced mortar specifically designed for ease of mechanical pumping, spraying and spin casting.
  - 2. The nano-ceramic geopolymer liner shall not clog spinner heads or spray equipment.
  - 3. The geopolymer liner can also be used to repair, resurface, or rebuild pits, sumps, trenches, tunnels, bridges, piers or any concrete structure that has experienced deterioration.
  - 4. The geopolymer liner shall be designed to produce a liner with improved compressive and flexural strength, high adhesion to damp surfaces, lower permeability and increased resistance to aggressive chemical attack.
  - 5. This fiber reinforced formula shall be engineered to improve hydraulic abrasion resistance, provide dimensional stability and protect against penetration by substances such as fats, oils, gases, chloride ions found in marine applications, and

where high corrosion exists within a sewer system.

6. Additional materials including chemical grouts and hydraulic cements necessary to stop infiltration and create a surface for the geopolymer lining be applied to may be necessary. Specific materials must be compatible with the geopolymer lining and the Owner reserves the right to require preapproval of such materials.

**B. Cementitious Lining Material**

1. The cementitious lining material shall be a high strength, high build, abrasion resistant and corrosion resistant mortar, based on advanced cements and additives. When mixed with the appropriate amount of water, a paste-like material which can be sprayed, cast or pumped into areas ¼ inch and larger shall be obtainable.
2. The hardened, finished liner shall be a dense and highly impermeable pipe within a pipe. The above stated performance shall be achieved by a complex formulation of mineral, organic and densifying agents and sophisticated chemical admixtures including rust inhibitors. Graded quartz sands are to be used to enhance particle packing and further improve the fluidity and hardened density. The resultant composition shall possess excellent thin-section toughness, a high modulus of elasticity in flexure and strong self-bonding capabilities. Fibers are to be added as an aid to the centrifugal casting process, for increased cohesion and to enhance flexural strength.
3. The water content shall be adjusted to achieve consistencies ranging from plastic to modeling clay. The lining mortar shall be capable of being cast against soil, metals, wood, plastic or other normal construction materials.

**C. The centrifugally cast lining material shall conform to the following minimum requirements:**

<b>Physical Properties</b>	<b>ASTM Reference</b>	<b>Requirements</b>
Compressive Strength	ASTM C39 or C109	2,500 psi @ 1 day 8,000 psi @ 28 days
Flexural Strength	ASTM C78	600 psi @ 7 days 800 psi @ 28 days
Tensile Strength	ASTM C496	650 psi @ 28 days
Modulus of Elasticity	ASTM C469	1,000,000 psi @ 1 day 3,560,000 psi @ 28 days
Bond Strength	ASTM C882	900 psi @ 1 day 2,100 psi @ 28 days
Freeze Thaw Durability	ASTM C666	Zero loss 300 cycles
Set Time	ASTM C403 <sup>1</sup>  ASTM C807 <sup>2</sup>	Initial – Less than 150 min <sup>1</sup> Final – Less than 240 min <sup>1</sup> Initial – Less than 75 min <sup>1</sup> Final – Less than 120 min <sup>1</sup>

2.1.1.1 Cementitious Lining Material

2.1.1.2 Geopolymer Lining Material

- D. The structural centrifugally cast lining rehabilitation system shall be designed based on observed soil loads, HS20 traffic loads, factor of safety of 2.0, and in accordance with a

“fully deteriorated gravity pipe condition”. The Contractor shall submit liner thickness calculations to GCDWR. These calculations will be performed by a third party registered professional engineer. The liner thickness calculations shall include the total weight of dry material needed to complete the installation.

- E. The minimum installed centrifugally cast liner thickness shall be one inch (1.0). This thickness shall be measured from the high point of the repeating undulations in coated metal pipe (CMP). For structural plate culvert materials, the cover over the projecting bolts shall be a minimum of ½-inch, making the minimum applied thickness for these culverts 1.0-inch. The liner thickness shall be applied to the thickness specified by the third party registered professional engineer, but at no point shall it be less than the required minimum of 1.0-inch.

### PART 3 – EXECUTION

#### 1.1 PREPARATION

- A. The following installation procedures shall be adhered to unless otherwise approved by the GCDWR.
- B. The Contractor shall carry out his operations in strict accordance with all OSHA, State, local, and manufacturer’s safety requirements. Particular attention is drawn to those safety requirements involving entering confined spaces (follow OSHA requirements) and steam curing. Curing with pressurized steam creates additional safety concerns with regard to high temperatures, quick burn times, potential blow offs, etcetera. Contractors shall take additional precautions to secure the work area and insure the safety of everyone in or around the curing apparatus. Contractors utilizing this method shall provide GCDWR a copy of their company’s standard operating procedure that addresses safety issues for this methodology.
- C. It shall be the responsibility of the Contractor to remove all internal debris and clean the existing storm system prior to installation of the rehabilitation system. Cleaning and disposal of material shall be performed in conformance with Section 33 01 30.51, Cleaning of Storm Drainage Systems.
- D. Experienced personnel trained in locating breaks, obstacles and remote connections by closed circuit television shall perform inspection of existing storm lines. The interior of the line shall be carefully inspected to determine the location of any conditions that may prevent proper installation of the rehabilitation system into the lines, and such conditions shall be noted so they can be corrected. A video recording and suitable log shall be kept for later reference by GCDWR as specified in Section 33 01 30.16, TV Inspection of Storm Drainage Pipelines.
- E. The Contractor shall provide for the flow of stormwater around the section or sections of pipe designated for lining as specified in Section 33 01 30.74, Bypass Pumping, if necessary.
- F. The Contractor shall clear the line of obstructions such as solids, dropped joints,

protruding remote connections and/or collapsed pipe. If inspection reveals an obstruction that cannot be removed by conventional cleaning equipment, the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction prior to rehabilitation. Pre-rehabilitation point repairs will be paid for at the unit prices bid.

- G. Where practicable, CIPP liners can be installed in continuous runs through manholes/structures where there are two or more continuous segments, especially to connect several short segments with a continuous lining. When this situation occurs, the CIPP may be used as the basis for the invert in the intermediate structure(s), provided there are no other joining pipes. Should this be the case, the CIPP liner shall be cut and trimmed at the mid- point of the exiting pipe and the bench built behind the CIPP.

## 1.2 INSTALLATION

### A. General

1. Alternative methods of liner insertion, pressurization, and processing may be used for products and processes approved by the Georgia Department of Natural Resources and GCDWR, and when the final liner product meets the intent of the applicable ASTM installation procedures as determined by GCDWR. Installation shall be in accordance with manufacturer's recommendations, which shall be available for verification by the inspector.
2. Seal the area where the line enters or leaves each manhole/structure. Leave approximately two (2) inches of cured liner exposed in each manhole/structure. Dress the end of the cured liner. This space may be sealed with a mechanical seal, chemical seal, or combination of both. GCDWR and the rehabilitation system manufacturer must approve the chosen method. The material used SHALL not be cementitious based.
3. If the pipe liner fails to make a tight seal due to broken or misaligned pipe at the manhole/structure wall or other reason, the Contractor shall apply a seal at that point. GCDWR and the rehabilitation system manufacturer shall approve the seal. This seal SHALL not be cementitious based.
4. The temperature of water discharged to the sanitary sewer system from processing liners shall not exceed 90°F maximum or the level allowed by State or local standards. **100% OF CIPP LINER WATER MUST BE DISCHARGED TO THE NEAREST SANITARY SEWER. A DISCHARGE PLAN MUST BE SUBMITTED AND APPROVED FOR EACH PROJECT PRIOR TO THE COMMENCEMENT OF WORK. NO SEPARATE PAYMENT WILL BE MADE FOR ADDITIONAL CONTAINMENT METHODS UTILIZED TO ACHIEVE THIS.**
5. After the liner has been installed, all active, existing remote connections shall be reinstated to 100% of the original opening. This shall be done without excavation in pavement areas, and in the case of non-man-entry pipes, from the interior of the pipeline by means of a 360° television camera and a cutting device that re-establishes the remote connection.

### B. Cured-In-Place Liner

1. The Contractor shall designate a location where the reconstruction tube will be vacuum impregnated prior to installation. The Contractor shall allow GCDWR to inspect the materials and “wet out” procedure. A catalyst system compatible with the resin and reconstruction tube shall be used. Sufficient resin will be provided to insure the tube is completely saturated with additional resin as necessary to flow into cracked pipe and or joints of the pipe after curing.
2. The wet out reconstruction tube shall be inserted through an existing manhole or other approved access by means of an inversion process, pulled in place process, or other approved method, and the application of a hydrostatic head, or equivalent pressure sufficient to fully extend it to the next designated manhole/structure or termination point. The reconstruction tube shall be inserted into the vertical inversion standpipe with the impermeable plastic membrane side out. The inversion head will be adjusted to be of sufficient height to cause the impregnated tube to invert from manhole/structure to manhole/structure and hold the tube tight to the pipe wall, produce dimples at side connections and flared ends at the manholes/structures. Groundwater levels shall be taken into account when considering the necessary hydrostatic pressure on the CIPP liner. The use of a lubricant is recommended. All lubricants shall be non-petroleum based. Care shall be taken during the elevated curing temperature so as not to overstress the liner.
3. After inversion is completed the Contractor shall supply suitable heat source and recirculation equipment. The equipment shall be capable of delivering the heat source throughout the section uniformly to raise the temperature above the temperature required to affect a cure of the resin. This temperature shall be determined by the resin/catalyst system employed. Remote temperature sensors shall be provided to document the temperature and curing times.
4. The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing heat source all along and through the pipe. Another such gauge shall be placed between the impregnated reconstruction tube and the pipe invert at the remote manhole to determine the temperatures during cure. The resin manufacturer shall recommend temperature in the line during the cure period. If utilizing steam curing, a plan must be submitted indicating the duration and temperature of the curing.
5. Initial cure shall be deemed to be completed when inspection of the exposed portions of cured pipe appear to be hard and sound and the remote temperature sensor indicates that the temperature is of a magnitude to realize the exothermal properties of the resin system. The cure period shall be of a duration recommended by the resin manufacturer, as modified for the cured-in-place inversion process, during which time the recirculation of the heat source and cycling of the heat exchanger to maintain the temperature continues.
6. The Contractor shall cool the hardened pipe to a temperature of 90° F or below before relieving the static head in the inversion standpipe. Cool-down may be accomplished by the introduction of cool water into the inversion standpipe to replace water being drained from a small hole made in the downstream end discharging to the sewer. Care shall be taken in the release of the static head so that a vacuum will not be developed that could damage the newly installed CIPP liner.
7. The Contractor shall maintain records and logs of all installations. These records



shall record, at a minimum, the date, location, length, diameter, rehabilitation system employed, wall thickness, pounds/types of resin, pounds/types of catalyst(s) used, inversion start/stop times, curing temperatures every fifteen (15) minutes of the curing process from initiation through cool down, crew member names, weather, visitors names, and any other pertinent information germane to the installation. These records shall be transmitted to GCDWR with the pre and post CCTV inspections of each installation.

8. UV cured CIPP shall be cured by the introduction of the UV light assembly into the inflated liner and drawn through the inflated liner at the speed recommended by the liner manufacturer. A camera must be located on the UV light assembly to enable the video inspection of the liner and to insure that the liner has been properly inflated and any liner problems can be identified before curing begins. A record of the curing period shall be delivered to GCDWR, indicating the start and end times of the curing, the rate of travel for the UV light train, the internal temperatures and pressures as well as the CCTV video of the curing process. Additionally, the record for each installation shall include the date, location, length, diameter, rehabilitation system employed, wall thickness, pounds/types of resin, pounds/types of catalyst(s) used, crew member names, weather, visitors names, and any other pertinent information germane to the installation. These records shall be transmitted to GCDWR with the pre and post CCTV inspections of each installation.

### C. Sliplining

1. Insertion: Sections of liner pipe shall be field connected at the insertion point. An elastomeric gasket meeting the requirements of ASTM F477, or approved alternative, shall be used to provide a sealing system at each joint. Maximum allowable joint deflection shall be 3 degrees. Subaqueous gasket lubricant provided (or approved) by the pipe manufacturer shall be used in assembling the joints. Additional sections of liner pipe shall be joined and pushed or pulled into the existing pipe until the joined sections span the desired distance. Care shall be taken to insure no damage is inflicted upon the liner pipe during the insertion process.
2. Sealing at Termination Points: The annulus between the liner pipe and the host pipe shall be sealed at termination points and at intermediate structures. Bulkheads shall be constructed in sequence from upstream to downstream allowing flow trapped in the annulus to escape. Annular grouting is to be performed so grout tubes and ventilation tubes shall be constructed into the bulkheads.
3. Annular Grouting: The annulus between the liner pipe and the host pipe shall be grouted. Several grouting methods may be used at the contractor's discretion with the approval of GCDWR. Some of these grout insertion methods include:
  - a. Holes drilled from grade through the crown of the host pipe, with GCDWR approval.
  - b. Gravity flow or low pressure pumping of grout from upstream bulkhead to downstream bulkhead. If low pressure pumping is used, pump pressures shall not exceed five (5) psi.
4. Grouting is not to be considered a structural component of the rehabilitation

system. Grout is placed to provide liner pipe stabilization, to protect the liner pipe if the host pipe is in structural distress, to fill voids in the pipe zone and to stop water infiltration through the host pipe annulus. The annular grout should have a 28 day compressive strength greater than 100 psi and less than 1000 psi. Grout should consist of Portland cement, pozzolanic fly ash and water. Foaming agents used in the production of cellular grouts shall be acceptable upon approval of GCDWR. No aggregates shall be used in the grout mix. Sand content, if used, shall be kept to a minimum. All grout designs shall be approved by the Pipe Manufacturer, and GCDWR. With annular spaces of more than three inches, flotation of the liner should be taken into consideration. To avoid potential liner collapse, the recommended maximum grout pressure is 5 psi with a safety factor of 4:1. Contact the pipe manufacturer for consultation and additional information.

5. Encasement: At points where the liner is exposed (remote connections, insertion pits, etc.), the liner pipe may, at the GCDWR's option, be encased in compacted sand, cement stabilized sand and/or other high density material. In preparation for the placing of the encasement material, debris shall be removed along each side of the liner pipe down to and under the haunches. After the encasement material is in place and accepted by GCDWR's Representative, backfill is placed and compacted to the required finished grade in accordance with the job specifications. Particular care shall be taken to insure compacting of earth beneath remote connections in order to prevent subsidence and resultant stress at the connections.

#### D. Centrifugally Cast Pipe

##### 1. Geopolymer Lining Material

###### a. Preparation

- i. The contractor shall mix geopolymer material to manufacturer's recommended water/cement ratio. Precision metering of water in a continuous mixing chamber is required to maintain the strict water to material ratio. It is important to maintain the specified water to polymer ratio throughout the application process. Uniform water to polymer ratio equates to consistent strength. The ability to closely adjust and monitor the addition of water through the use of a sight tube system is required.
- ii. Mixing water temperatures must be determined before blending operations begin. The mixing water temperature must be recorded in the daily operation log at multiple times throughout the day during the installation process. If water temperatures exceed 80° F, then the water should be chilled to 80° F or lower. The ability to provide mixing water at a consistent temperature is a critical aspect of the mixing and installation process. Industrial electronic chillers are available and should be of a suitable capacity to provide the proper amount of water and at the required temperature. High temperature applications, those greater than 80° F, require the use of water chillers to maintain the water at the proper temperature.
- iii. The geopolymer lining material shall be mixed in a high shear mixer. This ensures thorough and uniform mix of water with the material prior to pumping. Begin pumping through an adjustable rotor stator pump for

- continuous delivery to the appropriate application device.
- iv. The mixing operations must be performed so that the minimum of dust is released into the surrounding environment.
- v. This process requires the use of continuous automated mixing and pumping, which eliminates human error and mechanical issues associated with maintaining consistent water/material ratio, mix time, mix speed and dwell time prior to pumping. The automation of dry material feed rate, precise metering of water and pump rate eliminates wet/dry and thick/thin variations resulting in a uniform structure regardless of the pumping distance.
- vi. Pumps must be equipped with multiple sensors that stop the pump if material either runs out or is overflowing.
- vii. Multiple pumps shall be onsite at all times in the event one pump has mechanical difficulties.
- viii. Multiple spin casting units should be onsite to address any application issues that arise during the lining process.
- ix. Multiple spin cast nozzles should be onsite at all times to address any application issues or failure of the nozzle. Multiple nozzles may be required to produce the required depth or finish of the liner surface.
- b. Spray Application
  - i. The work consists of spray applying and/or centrifugally spin-casting the specified geopolymer liner material to the inside of an existing structure. The necessary equipment and application methods to apply the liner materials shall be only as approved by the material Manufacturer. Material shall be mixed in accordance with Manufacturer's specifications to proper consistency, then the materials shall be pumped through a material plaster hose for delivery to the appropriate and / or selected application device.
  - ii. The mortar delivery hose shall be coupled to a high speed rotating applicator device.
  - iii. The rotating casting applicator shall then be positioned within the center, or positioned higher inside the pipe, as required by the diameter the pipe
  - iv. The spin cast nozzle must be cable of bidirectional operation.
  - v. The spin cast nozzle should be attached to a reciprocating head. The reciprocating head allows the spin cast mechanism and the associated selected nozzle to make multiple passes on the pipe wall in a single pass of the sled assembly.
  - vi. The high speed rotating applicator shall then be initialized, and pumping of the material shall commence. As the material begins to be centrifugally cast evenly around the interior of the cavity, the rotating applicator head shall uniformly travel back and forth at or near the center point of the pipe at a controlled frequency conducive to providing a uniform material thickness to the pipe walls.
  - vii. Controlled multiple passes shall then be made until the specified minimum finished thickness is attained. If the procedure is interrupted for any reason, the operator shall arrest the retrieval of the applicator head until flows are recommenced.
  - viii. Spraying shall be performed by starting at the pipe end-project location and

- progressing towards the entrance of the pipe.
- ix. Begin at one side of the pipe, and retract the spin cast assembly at a monitored uniform rate. Just as important as knowing that a consistent amount of water is being added to the mix, the retrieval rate of the spin head must be measurable and constant. At the beginning of each pipe segment the retraction device should be calibrated. The calibration process includes setting the digital readout to the desired retrieval rate. Then the retrieval system is laid out and marked to show the distance traveled in two minutes. The rate obtained must be within 5% of the expected speed and can be verified by this process.
  - x. The geopolymer liner shall be applied to a specified uniform minimum thickness and can be applied in multiple passes.
  - xi. Material thickness may be verified at any point with a depth gauge and shall be no less than a uniform 1/4-inch. If additional material is required at any level, the rotating applicator head shall be placed at the location and application shall recommence until that area meets the required thickness.
  - xii. The geopolymer lining material shall be applied to a damp surface, with no flowing water.
  - xiii. When the pipe is sufficiently out of round hand spray application of the geopolymer lining maybe necessary, the mortar delivery hose shall be coupled to a medium-velocity spray application nozzle. Pumping of the material shall commence and the material shall be atomized by the introduction of air at the nozzle, creating a medium-velocity spray pattern for material application.
  - xiv. Hand spraying shall be performed by starting at the bottom of the structure and progressing up the wall.
  - xv. The medium-velocity spray nozzle and the centrifugal spin casting head may be used in conjunction to facilitate uniform application of the material to irregularities in the contour of the pipe walls.
  - xvi. If desired, the geopolymer liner may be troweled following the spray application. Initial troweling shall be in an upward motion, to compress the material and solidify the pipe wall. Precautions shall be taken not to over-trowel. Only a wood float or Magnesium (Mg) float should be utilized.
  - xvii. The geopolymer liner should not be placed when the ambient temperature is 37°F and falling or when the temperature is anticipated to fall below 32°F during the next 24 hours, unless specific precautions are employed.
  - xviii. Refer to ACI 305R-99 Hot Weather Concreting. Do not apply geopolymer liner material when ambient and surface temperatures are 100°F and above. Shade the material and prepare the surface to keep it cool. To extend working time, mix the material with chilled water. Be certain the substrate is saturated surface dry (SSD) before application begins. Proper curing is always required and is particularly important in hot weather.
  - xix. Refer to ACI 306R-88 Cold Weather Concreting. Low-substrate and ambient temperatures slow down the rate of set and strength development. At temperatures below 45°F, warm the material and monitor substrate temperatures. Properly ventilate the area when heating. Protect the new liner from freezing in the first 6 hours after application.

- c. Curing
  - i. Follow manufacturer's recommended cure schedule in curing of the geopolymer liner. The material must be allowed to cure a minimum of 2 hours or until the material has reached an initial set condition whichever is longer prior to the release of bypass or flow through the pipe.
  - ii. Proper steps shall be taken to ensure the material is cured in a moist and moderate climate. General underground conditions are usually adequate to meet this curing requirement. However, when situations of dry and/or hot conditions are present, the use of a wind barrier and fogging spray may be required.
- 2. Cementitious Lining Material
  - a. Preparation
    - i. The Contractor mix the cementitious material to manufacturer's recommended water/cement ratio with a high-speed shear type mixer until proper consistency is obtained. The Contractor shall continue to agitate the mortar to prevent thickening beyond the desired fluidity. The working time is approximately 30 minutes depending upon the ambient conditions.
  - b. Spray Application
    - i. The Contractor shall position the bi-directional rotating casting applicator within the culvert pipe as required by the Manufacturer and commence pumping the mortar. As the mortar begins to be centrifugally cast evenly around the interior, the Contractor shall retrieve the applicator head at the best speed for applying the thickness that has been specified. The spinning applicator head shall be positioned inside the pipe at a height to maximize the application of the material while. Additional spinning applicator heads shall be available on site. If the mortar flow is interrupted for any reason, the Contractor shall arrest the retrieval of the applicator head until the mortar flow is restored. Throughout the application process the Contractor shall verify the thickness using an appropriate tool.
    - ii. The cementitious liner should not be placed when the ambient temperature is 37°F and falling or when the temperature is anticipated to fall below 32°F during the next 24 hours, unless specific precautions are employed.
    - iii. Refer to ACI 305R-99 Hot Weather Concreting. Do not apply geopolymer liner material when ambient and surface temperatures are 100°F and above. Shade the material and prepare the surface to keep it cool. To extend working time, mix the material with chilled water. Be certain the substrate is saturated surface dry (SSD) before application begins. Proper curing is always required and is particularly important in hot weather.
    - iv. Refer to ACI 306R-88 Cold Weather Concreting. Low-substrate and ambient temperatures slow down the rate of set and strength development. At temperatures below 45°F, warm the material and monitor substrate temperatures. Properly ventilate the area when heating. Protect the new liner from freezing in the first 6 hours after application.
  - c. Curing
    - i. Follow manufacturer's recommended cure schedule in curing of the geopolymer liner.
    - ii. The Contractor shall use an ASTM C309 conforming curing compound.

3. Termination and Sealing
  - a. Termination of the centrifugally cast liner at the end of a pipe shall be completed by hand applying the centrifugally cast liner to the outer surface of the pipe or into the interior of the host structure.
4. Daily Activity Logs
  - a. A Daily Activity Log will be filled out completely anytime a work crew is on site. This log includes listing the personnel present at the site, when they arrived and when they left the site.
  - b. Important spray data includes the times material was applied and under which atmospheric conditions. The ambient air temperature, the dry powder temperature, the mixing water temperature, and the temperature inside the pipe are all recorded on the daily activity report.
  - c. The operating conditions are also recorded. These measurements include the water addition rate taken at the meter tube, the retrieval speed of the retraction system and the pump motor speed recorded at the pump. Any special conditions are to be noted in the daily log.
  - d. Additionally, the record for each installation shall include the date, location, length, diameter, rehabilitation system employed, wall thickness, pounds of material used, crew member names, weather, visitors names, and any other pertinent information germane to the installation.
  - e. These records shall be transmitted to GCDWR with the pre and post CCTV inspections of each installation.

### 1.3 POST INSTALLATION

- A. Where rehabilitation systems of any type are installed in two or more continuous segments, the invert through the intermediate manholes/structure shall be left intact. Final finishing of the installation in those intermediate manholes/structures shall require removal of the top of the exposed rehabilitation system and neat trimming of the edge at the midpoint of the exiting pipe. The remaining rehabilitation material may be used as a form for the installation of the invert.
- B. Portions of any piece of rehabilitation material removed during installation shall be available for inspection and retention by the GCDWR.
- C. Each line segment lined shall be TV inspected as soon as practical after processing to assure complete curing and/or installation. Segments not fully conforming to these Specifications must be immediately brought to GCDWR's attention with a proposed method of correction, which is accordance with manufacturer's recommendations.

### 1.4 REMOTE CONNECTION REINSTATEMENT

- A. After the rehabilitation system has been installed, all active, existing remote connections shall be reinstated to 100% of the original opening. This shall be done without excavation in pavement areas, and in the case of non-man-entry pipes, from the interior of the pipeline by means of a 360° television camera and a cutting device that re-establishes the remote connection.

- B. For CIPP and UV CIPP, remote connection reinstatements in smaller diameter pipes shall be made using robotic cutters. As pipe sizes allow, man-entry options may be utilized. When man-entry methods are used, the connection interface between the main line pipe and the remote connection pipe shall be treated with the same product approved for end of line sealing. The intent of this treatment is to provide a watertight seal between the main line pipe and the remote connection pipe.
  
- C. For Sliplining applications, special care shall be taken to positively identify and locate remote connections. When encountered in Sliplining situations, remote connections must be brought to the attention of GCDWR so that reinstatement options may be considered before initiating Sliplining operations. Alternate rehabilitation methods may need to be employed in lieu of Sliplining. When Sliplining is the preferred rehabilitation method, and there are remote connections within the scope of the work, remote connection reinstatement planning must be approved by GCDWR in advance of commencement of Sliplining operations. Detailed, exacting measurements must be taken so that remote connections can be reinstated precisely. Remote connections must be reinstated, and the main line pipe interface to the remote connection pipe must be sealed prior to any grouting operations. The materials used to seal this interface must be as recommended by the Sliplining pipe manufacturer and approved by GCDWR. The material used to seal this interface must be able to adhere to the Sliplining pipe material and withstand the grouting pressures, with a safety factor of 2.
  
- D. For CCP applications, special care shall be taken to positively identify and locate remote connections. These remote connections shall be protected from overspray during the installation process of the CCP material. Following installation, remote connections shall be opened and the interface between the main line pipe and the remote connection pipe shall be treated with the same material used in the CCP process. The intent of this treatment is to provide a watertight seal between the main line pipe and the remote connection pipe.

## 1.5 TESTING

- A. The Contractor shall have an independent, third party testing lab, approved by GCDWR, analyze finished liner samples taken from the lined pipe sections in accordance with the manufacturer's recommendations, or in accordance with the specified testing standard.
  - 1. A minimum of 1 sample shall be taken for each pipe diameter per work order for each rehabilitation system used.
  - 2. For CIPP, these may be plate samples cured within the installation process.
  - 3. For UV Cured CIPP, these may be cured samples cut from the ends of the cured liner.
  - 4. For Sliplining, the Contractor shall be required to submit the certified statements from the pipe manufacturer as to the pipe materials composition, physical properties and wall thickness.
  - 5. For CCP, a minimum of six (6) cylinder samples are to be taken at a position as close as practical to the discharge and placement point of the mixture on the pipe.
  - 6. For CCP, thickness verification can be done with mass balance calculations where

you calculate the amount of material that went in over the surface area to get an average depth. Small indicator tabs or screws can be attached on the structure to verify the proper thickness is achieved. These are positioned to be just below the specified thickness and are left in place when sprayed over.

7. Tests in accordance with ASTM standards;
  - a. For CIPP and UV CIPP samples, test for Flexural Modulus, Flexural Strength and Tensile Strength per these specifications and liner thickness per the particular work order design calculations.
  - b. For CCP samples, test for Flexural Strength, Compressive Strength, Tensile Strength, and Modulus of Elasticity per these specifications and liner thickness per the particular work order design calculations.
8. The Contractor shall determine sampling location and procedures to ensure representative samples are obtained from the finished liner, subject to approval by GCDWR.
9. The Contractor shall be responsible for the cost of sample preparations and testing as these activities are considered incidental to the rehabilitation system employed. Additionally, the Contractor is responsible for all repairs necessitated by destructive testing techniques. Repairs to rehabilitation systems following destructive testing shall be approved by the rehabilitation system manufacturer and GCDWR.
10. Sample testing results shall be transmitted to GCDWR within 60 days following the completion of the work order.
11. GCDWR will accept test results only from GCDWR pre-approved third party laboratories.
12. GCDWR reserves the right to perform confirmation testing of rehabilitated storm systems with its own forces, or with contracted firms specializing in this type testing. In these cases, the findings of this audit process will be considered to supersede any other results previously presented.

#### 1.6 TELEVISION INSPECTION

- A. After completing rehabilitation, remote connection renewals where directed by GCDWR, and manhole/structure rehabilitation/replacement, every rehabilitated section and manhole/structure shall be CCTV inspected with a 360° integral lighthouse camera as soon as practical to verify proper installation.
- B. All rehabilitated sections must be CCTV inspected following the protocols and formats as outlined in Section 33 01 30.16, TV Inspection of Storm Drainage Pipelines. Care shall be taken to fully examine the rehabilitated storm system, with particular attention to adequate lighting and camera travel speed.

#### 1.7 ACCEPTANCE

- A. It is the intent of these specifications that the completed rehabilitation system with all appurtenances shall be essentially equivalent in final quality and appearance to new pipe installation. The conditions of the existing host pipe will be taken into consideration.



- B. The finished rehabilitation system shall be continuous over the entire segment between manholes/structures and homogenous throughout.
- C. The finished rehabilitation system shall be fully rounded and as free as commercially practicable from visible defects, including but not limited to damage, deflection, holes, delamination, ridges, cracks, uncured resin, foreign inclusions or other objectionable defects.
- D. There shall be no visible infiltration through the rehabilitation system, around the system at manhole/structure connections, or at remote connections. Contractor shall repair any visible leaks.
- E. Where a defect in the rehabilitation system requires removal of a section of the rehabilitated pipe, in GCDWR's opinion, the Contractor shall make all repairs as required by GCDWR and shall install a segmental repair, compatible with the rehabilitation system, to accomplish a continuous finished section. No separate payment will be made for such defect repair.

#### 1.8 PROSECUTION OF WORK

- A. If the Contractor discovers remote connections the Contractor shall receive GCDWR approval before re-instating.
- B. The Contractor shall note that not all segments have been televised in their entirety due to obstructions blocking further entry, etc. These obstructions shall be cleared to allow CCTV viewing of the entire segment length before rehabilitation is commenced.

#### 1.9 DOCUMENTATION

- A. The Contractor shall complete work on each asset as assigned via the County's Computerized Work Order Management system. Upon start of work, the Contractor shall receive work orders as assigned by the Project Manager. The Contractor shall utilize the Mobile Work Manager to maintain and synchronize the status of each rehabilitation work order issued.
- B. The Contractor shall be responsible for providing all computer hardware necessary to use GBA Mobile Master.
- C. The Contractor shall be responsible for acquiring the appropriate version license of GBA Mobile Master.

#### 1.10 ALTERNATIVE TECHNOLOGIES AND REHABILITATION SYSTEMS

- A. Gwinnett County Department of Water Resources (GCDWR) recognizes that construction technologies are evolving quickly and that there may be alternate technologies or rehabilitation systems available or arising not covered by this specification. Where alternate technologies or rehabilitation systems can be shown to be a more practical and cost effective method of achieving the same intent of this

specification, they will be considered on a case by case basis. Pricing for alternate technologies or rehabilitation systems shall be in concert with the force account specifications included in this specification.

#### 1.11 WARRANTY

- A. The Contractor shall guarantee his work for a warranty period of three (3) years from the date of final acceptance. If, at any time during the warranty period, any leakage, cracking, loss of bond, or other discontinuity is identified, the Contractor shall make repairs acceptable and at no additional cost to the GCDWR.

END OF SECTION 33 01 30.72

SECTION 33 01

30.74 BYPASS

PUMPING

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	Administrative Requirements
1.3	Submittals
1.4	Quality Assurance
1.5	Field Conditions
2.1	Pumping Equipment – Stormwater Systems
3.1	Bypass Pumping – Stormwater Systems
3.2	Stormwater System Plugging and Blocking
3.3	Stormwater System Flow Control Precautions
3.4	Attachments

B. SCOPE :

1. The scope of this specification is limited to providing the necessary labor, materials, supervision, and equipment required for bypass pumping of storm drainage systems being repaired, replaced, or rehabilitated. All flow shall be pumped around the storm drainage segments during the installation and testing of the new storm drainage, storm drainage connections/reconnections, and the replacement of manholes and drainage structures. Contractor shall be responsible for all storm drainage pumping and any overflows or spills that may occur for any reason including, but not limited to, equipment failure, clogging, hose or pipe breakage, or high flows. Provide 24-hours per day, seven day per week manned operation of the bypass pumping system when in operation. Provide a radio communication or auto-dialer system to contact the contractor, bypass pump system supplier, Engineer, GCDWR personnel, and GCDWR SCADA system for all alarm conditions.
2. In emergency situations, as defined by GCDWR and/or the Engineer, some requirements of these specifications may be waved in order to have the ability to have an operating bypass pumping system installed and operating as soon as possible.
3. The work of this section shall be considered incidental to the Work and shall not be measured or paid for separately.

1.2 ADMINISTRATIVE REQUIREMENTS

A. COORDINATION

1. Prior to the time said pumping and bypassing work is started obtain approval from GCDWR and/or the Engineer for all pumping or bypassing work, the

arrangement or layout of the pumping and bypassing facilities, and the facilities to be utilized in such work, a minimum of two (2) weeks prior to planned start of work.

2. Bypass pumping shall be monitored by the Contractor or bypass system supplier personnel at all times. If pumping operation continues past normal working hours, monitor the pumps 24 hours a day, seven days per week on site as long as the operation is in place. Provide an automatic notification system (similar to a RACO type system) to notify the Contractor and GCDWR of a pump failure or high water level in the suction manhole. Respond to any alarm condition within five (5) minutes of notification. All costs incurred due to alarm conditions will be the responsibility of the Contractor.

#### B. PRE-INSTALLATION MEETINGS

1. Prior to beginning bypass pumping operations, schedule and conduct a pre-startup meeting. Items to be covered include, but are not limited to the following:
  - a. Testing of bypass pumping equipment to verify satisfactory operation, as described below.
  - b. Testing of alarm status notification system.
  - c. Coordination with GCDWR Operations personnel to ensure suitable access is provided to facilities which will remain in operation.
  - d. Verification of noise levels around pumping equipment.
  - e. Identification of lowest overflow location within system and maximum water surface elevation in suction manhole. GCDWR and/or the Engineer will provide data.
2. Utilize Bypass Pump System Start-up Checklist, which will be provided by GCDWR and/or the Engineer (sample attached at end of section), for starting and shutting down bypass pump system. Obtain GCDWR and/or the Engineer approval on Checklist prior to starting or shutting down the bypass pump system.

### 1.3 SUBMITTALS

- A. The contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to be followed in the execution of the Work under this item.

#### 1. Product Data

- a. Pump curves for the proposed temporary pumping equipment identifying the duty point (flow and head) for the system.
- b. Engineering calculations showing required suction lift and system head for bypass pumping system.

2. Shop Drawings

- a. Drawings showing arrangement of temporary pumping equipment and location of suction and discharge piping.
- b. Size and type of temporary suction and discharge piping.

3. Special Procedure Submittals

- a. Prepare and submit a detailed written bypass pumping plan for set-up, testing, operation, and shutdown of the bypass pumping system a minimum of two (2) weeks prior to start of by-pass pumping operations. Include the following in the plan:
  - 1) Implementation plan showing coordination between the installation of the new sewer piping or repairs and the starting of the bypass pumping system.
  - 2) Emergency action plan identifying the measures taken in the event of a pump failure.
  - 3) Staffing plan for responding to alarm conditions identifying multiple contacts by name and phone numbers (office, mobile, etc.).
  - 4) A contingency plan to implement in the event the repair, rehabilitation, and/or replacement work has unexpected delays or problems.
  - 5) A schedule of how long the bypass system is to be in operation to allow the repair, rehabilitation, and/or replacement work.
  - 6) Method of noise control for pumps and equipment.
  - 7) A project specific shutdown activities checklist.
- b. As requested by DWR, the bypass/diversion pumping plan submittal shall have sufficient detail to show the following:
  - 1) Staging area for pumps
  - 2) System plugging/damming method and types of plugs
  - 3) Number, size, material, location and method of installation of suction piping
  - 4) Number, size, material, location and method of installation of discharge piping
  - 5) Bypass pump sizes, capacity, number of each size to be onsite and the power requirements
  - 6) System curve design calculations detailing the static lift, friction losses, velocity losses and flow velocities
  - 7) Pump curves with the system curves plotted showing the pump operation range and confirming the pump size, horsepower and impeller required
  - 8) Standby power generator size and location, if utilized
  - 9) Noise control and abatement measures
  - 10) Downstream discharge plan including pipe routing plan and profile views
  - 11) Sections showing suction and discharge pipe depth, embedment, joint

restraints, thrust blocking and backfilling

12) Method of protecting discharge manholes or structures from erosion and damage

13) Location and position, in detail, where pipes cross roadways and driveways

- c. For bypass plans associated with live, continuously flowing systems a Professional Engineer must sign and seal the bypass/diversion plan.
- d. Where feasible, the Contractor shall notify GCDWR 48 hours prior to commencing any plugging/block and/or bypass/diversion pumping.

#### 1.4 QUALITY ASSURANCE

##### A. QUALIFICATIONS

###### 1. Suppliers

- a. Utilize bypass pumping system suppliers who have a minimum of five (5) years of experience providing bypass pumps for similar situations.
- b. Provide field service personnel who can respond to an emergency or alarm condition within one (1) hour of notification.
- c. Provide quality equipment and accessories (hoses, clamps etc.) with no leaks or damage visible.
- d. Demonstrate equipment provided is of good quality and in good working order.
- e. Keep and maintain spare parts for pumps and piping on-site, as required.
- f. Provide quality workmanship in setting up the bypass pumping system.

#### 1.5 FIELD CONDITIONS

##### A. EXISTING CONDITONS

- 1. It is the Contractor's and pump supplier's responsibility to verify the available working area for the bypass pumping system, the hydraulic conditions for the pumping system, and suitable locations for suction and discharge piping.
- 2. It is the Contractor's responsibility to protect the environment around the bypass system and ensure no damage occurs.

### PART 2 - PRODUCTS

#### 2.1 PUMPING EQUIPMENT – STORMWATER SYSTEMS

- A. The bypass pump system shall be of sufficient capacity to handle existing base flows plus additional flow that may occur during periods of rainstorms in a manner that will protect public and private property from damage and flooding and will not interfere with the work.
- B. All pumps used shall be fully automatic self-priming units that do not require the use of

foot-valves or vacuum pumps in the priming system. The pumps may be electric or diesel powered. All service connection pumps shall be trailer mounted. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of stormwater base flows.

- C. Provide the necessary control power for the bypass pumping system.
- D. Make available a 100% redundant pumping system on-site and ready to place into service should the primary system fail to function as required.
- E. Provide, on-site, spare suction and discharge piping, fittings, valves, gaskets, etc. ready to be used if there is a failure within the system.
- F. Provide sound attenuation on the bypass pumps to limit the noise level to a maximum of 70 dBA at 30 feet. Determine the required means of sound attenuation to meet this requirement and submit to GCDWR and/or the Engineer for review. Provide additional measures until noise levels are within acceptable limits.
- G. In the event the Contractor fails to comply with maximum permissible noise level decibels in the operation of the flow bypass pumping system, GCDWR may order the Contractor to restore gravity flow in the system and stop operation of the flow bypass pumping system until such time as specified noise levels are achieved. The termination of the flow bypass pumping system for such reason shall not be the basis for any extension of Contract time nor for any claim for additional compensation.
- H. Steel pipe is permitted for flow diversion.
- I. Polyethylene Pipe is permitted for flow diversion. Polyethylene material shall comply with the requirements for Type III polyethylene, C-S 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 that 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.
- J. 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.
- K. Irrigation type piping is not allowed.
- L. 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 GCDWR.
- M. 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.

- N. If required the Contractor must provide air relief (air relief valves, etc.) on bypass/diversion pumping discharge piping to insure proper operation.

### PART 3 – EXECUTION

#### 3.1 BYPASS PUMPING – STORMWATER SYSTEMS

- A. Prior to commencing each bypass/diversion pumping activity the Contractor must receive written approval from GCDWR.
- B. Ensure that all levels of flow are continuously and effectively handled.
- C. 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.
- D. As requested and at no cost to GCDWR, the Contractor shall carryout a “trial run” of the bypass/diversion arrangement on all systems greater than 48-inches diameter. This trial run must be conducted before GCDWR 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.
- E. All materials used for bypass/diversion pumping shall be pre-approved by GCDWR prior to commencing pumping activities.
- F. Stormwater shall be pumped directly into the nearest available downstream manhole/structure, provided that the existing system has capacity to transport the flow. The Contractor shall request GCDWR 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.
- G. 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. 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, in accordance with GC noise ordinances.
- H. When stormwater flows at the upstream manhole of the main being televised are above the maximum allowable requirements for television inspection, or do not allow the proper system or manhole/structure 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 GCDWR.
- I. In some applications, the stormwater flow may be plugged/blocked and contained within the capacity of the system. This shall only be done when it has been determined by the Contractor and approved by GCDWR that the system can accommodate the surcharging without any adverse impact.
- J. When a storm sewer is being rehabilitated or replaced, the Contractor, at his own expense



and at no cost to GCDWR, shall provide and maintain temporary outlets and connections for all private or public remote connections to or served by the system being rehabilitated or replaced, and where necessary, shall provide adequate pumping facilities; and shall maintain these services until such time as the permanent system and connections are installed and in service.

- K. During construction, flows in sections of the existing system being rehabilitated by removal and replacement shall be accommodated by plugging/blocking or bypass/diversion pumping.
- L. The plan must keep the system flowing without overflows to the system that would endanger private or public property. The Contractor will seek and obtain inspection of each section of newly laid system before removing the flow diversion from service and placing the newly installed or rehabilitated section into service.
- M. All pipe materials utilized in stormwater bypassing shall be in good condition, and free of defects, and leaks. The Contractor, at no cost to GCDWR shall replace any defective material. Upon completion of the job, stormwater bypass materials shall be removed from the site.

### 3.2 STORMWATER SYSTEM PLUGGING AND BLOCKING

- A. The Contractor shall insert a line plug into the line at a manhole/structure upstream from the section being inspected or repaired. The plug shall be so designed that all or any portion of the operation flow can be released. Flows shall be shut off or reduced to within the maximum flow limits specified. Stormwater flow shall be restored to normal following completion of work.

### 3.3 STORMWATER SYSTEM FLOW CONTROL PRECAUTIONS

- A. Where the stormwater flow is plugged/blocked, the Contractor shall be responsible for taking sufficient precautions to protect public health. The storm lines shall also be protected from damage. The following shall apply:
  - 1. No stormwater shall be allowed to back up into any homes or buildings.
  - 2. No stormwater shall overflow any manholes or any other outlet/structure.
  - 3. Customers upstream of the flow control area shall be able to use their 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, which pulls stormwater or any type of material out of the manhole/structure or system, shall discharge the material into another manhole/structure, or appropriate vehicle or container approved by GCDWR. **Under no circumstances shall this material be discharged, stored, or deposited on the ground, swale, road, or open environment, unless the discharge location is a part of the stormwater system.**
- C. The Contractor shall take appropriate steps to ensure that all pumps, piping, and hoses are

protected from traffic. Traffic control shall be performed in accordance with the requirements of the governing agency.

- D. Prior to any stormwater bypass/diversion operations the Contractor will identify the lowest overflow point upstream of the planned plugging/blocking or bypass/diversion. During operations the Contractor will monitor the lowest points to ensure overflow does not occur.
- E. In the event, during any form of “Stormwater Bypassing,” that stormwater is spilled, discharged, leaked, or otherwise deposited in the open environment 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 GCDWR. The Contractor shall also be responsible for notifying GCDWR’s system maintenance personnel and complying with any and all regulatory requirements for cleaning up the spill at no additional cost to GCDWR.
- F. During stormwater bypass/diversion operations, the Contractor shall take proper precautions to prevent damage to existing facilities, flooding, or damage to public or private property.
- G. The Contractor shall make repairs, replacements or rebuilds, as directed by GCDWR, to any portion of the 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 systems, connections, and manholes/structures 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 system, and manholes/structures, etc., which is attributable to his work under this Contract. The Contractor is responsible for the proper disposal of these items.
- J. The Contractor in strict accordance with OSHA and any applicable local safety requirements shall perform all operations. Particular attention is directed to safety regulations for excavations and entering confined spaces.
- K. It is the Contractor’s responsibility to notify GCDWR during the initial Project field survey of remote connection(s) on the system being rehabilitated or replaced. If directed by GCDWR, the GCDWR shall make the final determination if such connections are acceptable, and if not, GCDWR will notify property owners 2 weeks prior to commencing system rehabilitation or replacement.

### 3.4 ATTACHMENTS

- A. The attachments listed below, following “End of Section 33 01 30.74” are a part of this Specification.
  - 1. Bypass Pump System Start-up Checklist

END OF SECTION 33 01 30.74

## Bypass Pump System Start-up Checklist

This form must be completed prior to start-up of any bypass pumping system before Operations shutdown Reason for Shutdown: \_\_\_\_\_

Lowest overflow point (provide location and elevation): \_\_\_\_\_

How long will pump station be off-line? \_\_\_\_\_

### Pre-Start-up of Bypass Pumps

Task	Initials		
	Contractor	GCDWR	Engineer
Contractor to verify pumps have fuel.			
Contractor to verify all control floats properly set.			
Contractor to verify bypass tee isolation valve is open.			
Contractor to verify isolation valves on bypass piping are open.			
Contractor to set up air blower to circulate air into wet well.			
Contractor to check air quality in wet well for man entry.			
Contractor and GCDWR to check for leaks in bypass piping from backpressure on force main.			
Contractor to check safety harness for personnel entering wet well.			

Obtain signatures of designated individuals

Contractor \_\_\_\_\_

GCDWR \_\_\_\_\_

Engineer \_\_\_\_\_

### Start-up of Bypass Pumps & Shutdown

Task	Initials		
	Contractor	GCDWR	Engineer
Contractor to start primary bypass pump.			
Contractor to verify all pumps are in automatic control.			
Contractor to verify plug is fully inserted and at required pressure.			

Contractor to verify primary pump primes and is moving water.			
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Contractor and GCDWR to check bypass piping for leaks.			
Contractor to close force main isolation valve to stop flow from going back to valve vault.			
GCDWR to lockout wet well pumps to prevent from starting.			

Obtain signatures of designated individuals upon completion of all checks.

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
GCDWR

\_\_\_\_\_  
Engin

**Shutdown of Bypass Pumps & Start-up**

Task	Initials		
	Contractor	GCDWR	Engineer
Contractor to verify pumps properly set on base elbows.			
Contractor to open force main isolation valve between bypass tee and valve vault.			
GCDWR to unlock wet well pumps and place in automatic mode.			
Contractor to set up air blower to circulate air into wet well.			
Contractor to check air quality in wet well for man entry.			
Contractor to check safety harness for personnel entering wet well.			
Contractor to deflate plug and remove from wet well.			
Contractor to shut off bypass pumps.			
Contractor to close isolation valve on bypass tee.			
GCDWR to verify wet well pumps start and properly operate.			

Obtain signatures of designated individuals upon completion of all checks.

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
GCDWR

\_\_\_\_\_  
Engineer

SECTION 33 41 13

STORM DRAINAGE PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Flowable Fill
2.2	Aluminum Coated (Type 2) Corrugated Metal Pipe
2.3	Corrugated Polymer Precoat Steel Pipe (Polymer Precoat)
2.4	Corrugated Aluminum Alloy Pipe (Al Alloy)
2.5	Smooth Lined Corrugated High Density Polyethylene Pipe
2.6	Reinforced Concrete Pipe
2.7	Flared End Sections
3.1	Bedding
3.2	Clean-Up
3.3	Connections
3.4	Cutting
3.5	Final Inspection Preceding Acceptance
3.6	Flowable Fill
3.7	Guarantee
3.8	Handling and Distribution
3.9	Installation
3.10	Pipe Invert Paving
3.11	Site Restoration
3.12	Storage

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.
- B. Georgia Department of Transportation Standard Specifications for Road and Bridge Construction, Sections 550 and 573, latest edition.

1.3 WORK INCLUDED

- A. The Contractor shall, under this item, furnish all the materials, perform all necessary excavation, and properly lay and test, at the locations indicated on the Contract Documents and/or Drawings or as directed, all pipe and all pipe specials of the sizes specified or indicated which are necessary for the proper completion of the Work.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to GDOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. Submittals shall show in detail the size and location of all piping and accessories to be used in construction.
- C. The Contractor shall submit for the approval of GCDWR, samples, specifications, and manufacturer's recommendations for making joints he/she proposes to use. No pipe shall be laid until approval has been given by GCDWR.
- D. Transition joints between pipes of different materials shall be accomplished by the use of adapters made especially for that purpose. Shop drawings must be submitted and approved by GCDWR and/or the Engineer prior to the use of any adapter for this purpose.

PART 2 - PRODUCTS

2.1 FLOWABLE FILL

- A. Per Specification 31 23 23.33 "Flowable Fill".

2.2 ALUMINUM COATED (TYPE 2) CORRUGATED METAL PIPE (ASP)

- A. Aluminum coated (Type 2) corrugated metal pipe shall meet the requirements of AASHTO M 274, and the Georgia Department of Transportation Standard Specifications for Road and Bridge Construction, Section 844, latest edition, and shall be fabricated in accordance with AASHTO M 36. A paved invert is required where design velocity exceeds 5 feet per second. Pipe thickness shall be a minimum of 14 gauge. Minimum pipe lengths shall be 20 feet, unless otherwise indicated.
- B. Minimum acceptable combinations of gages, diameters, and corrugation configurations for corrugated aluminum alloy pipe and pipe arches, and for corrugated aluminum coated steel pipe and pipe arches shall conform to Georgia DOT Standard 1030-D, Tables 1 and 1R. Pipe thickness shall be a minimum of 14 gauge.
- C. Bands for joints shall be fabricated from the same material as the pipe. The minimum band gauges for shall be as specified in AASHTO M36, Section 9.
- D. Gaskets may be required as determined by the County in the field, and shall be either sleeve type or O-ring type and shall meet the requirements for gaskets as specified in AASHTO M-36, Section 9.5.

2.3 CORRUGATED POLYMER PRECOAT STEEL PIPE (POLYMER

PRECOAT)

- A. Shall comply with AASHTO M-246 for coating and AASHTO M-245 for fabrication. Pipe thickness shall be a minimum of 14 gauge. Minimum pipe lengths shall be 20 feet.

2.4 CORRUGATED ALUMINUM ALLOY PIPE (Al ALLOY)

- A. Shall comply with AASHTO M-196 for material and fabrication. Pipe thickness shall be a minimum of 14-gauge. Minimum pipe lengths shall be 20- feet.
- B. Bands for joints shall be fabricated from the same material as the pipe. The minimum band gauges shall be as specified in AASHTO M-196, Section 9.
- C. Gaskets may be required as determined by the County in the field, and shall be either sleeve type or O-ring type and shall meet the requirements for gaskets as specified in AASHTO M-36, Section 9.5.

2.5 SMOOTH LINED CORRUGATED HIGH DENSITY POLYETHYLENE PIPE (HDPE)

- A. Smooth Lined Corrugated High Density Polyethylene Pipe shall meet the requirements of AASHTO M 294, Type S, and the Georgia Department of Transportation Standard Specifications for Road and Bridge Construction, Section 845, latest edition.
- B. Joints shall be as recommended by the manufacturer and approved by GCDWR. Connections shall create a soil tight joint at a minimum and shall use a rubber gasket, which conforms to ASTM F-477.
- C. Installation shall be in accordance with GDOT Standard Detail 1030-P. The internal diameter of the barrel shall not be reduced by more than 5% of its base inside diameter when measured not less than 30 days following completion of installation.

2.6 REINFORCED CONCRETE PIPE (RCP)

- A. RCP shall meet the requirements of ASTM C76/AASHTO M 170, and the Georgia Department of Transportation Standard Specifications for Road and Bridge Construction, Section 843, latest edition. RCP shall be minimum of Class III in accordance with GDOT Standard Detail 1030-D, Table No. 1, and shall be provided in lengths of not less than 8 feet each. All joints shall be bell and spigot or tongue and groove type with a rubber gasket conforming to ASTM C-443.
- B. Class of pipe and wall thickness shall conform to Georgia DOT Standard 1030- D, Table 1.
- C. RCP Arch Pipe shall meet the requirements of ASTM C506 and AASHTO M 206. RCP Arch Pipe shall be minimum of Class A-II.

2.7 FLARED END SECTIONS

- A. Flared end sections shall be of the following types:
  - 1. Concrete Flared End Sections shall conform to GDOT Standard Detail



1120.

2. Safety Flared End Sections shall conform to GDOT Standard Detail 1122.
3. Corrugated Metal Flared End Sections shall conform to GDOT Standard Detail 1120.

### PART 3 - EXECUTION

#### 3.1 BEDDING

- A. No pipe shall be brought into position until the preceding length has been thoroughly embedded and secured in place. The supporting of pipe on wood blocks, loose brick, etc., shall not be permitted. Defects due to settlement shall be made good by the Contractor at his/her own expense.
- B. For laying pipe in rock, the trench shall be made to conform to the general dimensions required, and the sub grade shall be brought to the required elevation by use of bedding materials. Sides and bottom of pipes shall be supported by compacting these materials in place so as to ensure an even bearing for the pipe. Particular care shall be taken that pipes are not permitted to rest upon or against solid or projecting portions of rock.
- C. Take care to avoid contact between the pipe and mechanical compaction equipment. Do not use compaction equipment directly over the pipe until sufficient backfill has been placed to assure that such equipment shall not damage or disturb the pipe.
- D. Unless otherwise specified, bedding shall conform to Section 31 23 00 EXCAVATION AND FILL.

#### 3.2 CLEAN-UP

- A. A thorough cleanup shall be made before final acceptance and final payment is made. All excess rock shall be removed, private and public property shall be restored to original condition, and all excess pipe and fittings shall be removed.

#### 3.3 CONNECTIONS

- A. Connect to existing storm drainage structures by coring and drilling the existing structures in accordance with Specification 33 41 13 "Storm Drainage Structures".

#### 3.4 CUTTING

- A. Whenever a pipe requires cutting, the pipe shall be cut in a satisfactory manner so as to leave a smooth end at right angles to the axis of the pipe. The end shall then be beveled in accordance with manufacturer's recommendations for field beveling.

#### 3.5 FINAL INSPECTION PRECEDING ACCEPTANCE

- A. Final inspection may include a visual inspection of each section of pipe by looking from structure to structure with the aid of reflected sunlight or an electric light. Such light used for inspection shall be plainly visible from structure to structure. Light reflected along the pipe walls from structure to structure shall not be considered as plainly visible light and shall be reason for rejection of the section of pipe as not being laid true to line and grade. The pipe shall be true to both line and grade; shall show no leaks, shall be free from cracks and protruding joint materials and contain no deposits of sand, dirt, or other materials. All finished Work shall be neat in appearance of first class workmanship.

### 3.6 FLOWABLE FILL

- A. Per Specification 31 23 23.33 “Flowable Fill”.

### 3.7 GUARANTEE

- A. The Contractor shall guarantee for a period of twelve (12) months from the date of “final acceptance” all lines, appurtenances, trenches, and other disturbed surfaces.
- B. The Contractor shall be responsible for repairs to any leaking pipe, fittings, etc. Should trenches settle, he/she shall promptly furnish and place fill to original grade. Should any leaks or trench settlement occur under the new pavement, the Contractor shall be held responsible for the cost of all repairs, including pavement replacement.

### 3.8 HANDLING AND TRANSPORTATION

- A. Pipe shall be carefully transported, stored, and handled to prevent damage to the pipe. Damaged pipe shall be cause for rejection of the pipe. Pipe shall be stored in such manner as to keep the interior free of dirt or other foreign matter.
- B. Stringing out of pipe more than two (2) days in advance of installation shall not be permitted.

### 3.9 INSTALLATION

- A. The Contractor’s attention is directed to typical detail drawings of pipe bedding. The Contractor must install pipe bedding and backfill in accordance with applicable pipe bedding details.
- B. All pipe shall be thoroughly cleaned before being laid, and shall be kept clean until acceptance of the completed Work. Proper and suitable tools and appliances for the safe and convenient handling and laying of pipes shall be used.
- C. All trenches shall be kept free from water when pipe laying is in progress, and no water shall be allowed to rise within 12 inches of the bottom of the pipe until jointing is completed.
- D. Check vertical and horizontal alignment of the pipe culvert or storm drain pipe barrel by sighting along the crown, invert and sides of the pipe, and by checking

for sagging, faulting and invert heaving. Repair any issues involving incorrect horizontal and/or vertical alignment before backfilling pipe.

E. Jointing

1. When pipes are ready for jointing, bell interior and spigot surface shall be cleaned of all dirt and foreign matter, coated with manufacturer's approved lubricant, and pipes shoved home. Care shall be exercised after laying to prevent deflection or separation of the joint just made. All joints shall be made in the trench, and only one (1) joint shall be made at a time.
2. When the joint is completed, the storm drainage piping shall have a smooth, unobstructed invert, and the pipe shall be true to grade and alignment. If the invert protrudes above the invert of adjacent pipe it shall be removed and replaced.
3. After the pipe has been properly imbedded and joints made, backfill bedding materials shall be carefully tamped on each side and the centerline of the pipe between the walls of the excavation and the pipe before backfilling with excavated earth is done as specified in Specification 31 23 00 "Excavation and Fill".
4. Great care shall be used to prevent damage to or disturbing of joints during backfilling, or at any other time after the pipes have been laid and the joints have been made. There shall be no walking on or working over the pipe except as may be necessary in tamping, until there is cover no less than one (1) foot in depth over the top of the pipe.
5. All joints showing leakage shall be uncovered and the joints remade at the Contractor's expense.
6. Laying Pipe in Freezing Weather: No pipe shall be laid upon a foundation in which frost exists, nor when GCDWR and/or the Engineer deems that there is a danger of the formation of ice or the penetration of frost at the bottom of the excavation.

F. Reinforced Concrete Pipe

1. Lay sections in a prepared trench with the socket ends pointing upstream. Join section using rubber gasket installed according to Georgia DOT Specification 848.2.01 and the manufacturer's recommendations. Pipe and specials shall be laid accurately to required lines and grades and shall be uniformly supported along their entire length. Bottoms of excavations shall be properly trimmed and bell holes dug for joints. Size of bell holes shall be kept to a minimum but shall be large enough to permit the proper making of joints.

G. Aluminum Coated Type 2 Corrugated Metal Pipe

1. Lay pipe sections in a prepared trench, with outside laps of circumferential joints pointing upstream and longitudinal joints at the sides.
2. Join the sections with coupling bands, fastened by two or more bolts.
3. Each end of each pipe section to be joined by a coupling band shall have a minimum of two annular corrugations.
4. Coupling bands shall be so constructed to lap on an equal portion of each of the pipe sections to be joined.
5. The connecting bands shall have a minimum of two annular corrugations

and fully engage, over the entire pipe periphery, one corrugation on each pipe.

6. Before backfilling the structure, repair areas of damaged coatings and exposed base metal according to applicable AASHTO Standard Specification specified in Section 844.

#### H. Corrugated Polyethylene Pipe

1. Lay pipe according to Plan details with the perforations on the underside of the pipe, unless otherwise directed by GCDWR. Lay bell and spigot and tongue and groove pipe with the bell or grooved end upstream and the bells embedded in the classified stone. Firmly connect the joints. Connect pipe and butt joints securely, using the appropriate size and type of band or coupling.

#### I. Smooth Lined Corrugated High Density Polyethylene Pipe, Type S

1. Install smooth-lined corrugated HDPE pipe according to GDOT Standard Detail 1030 and in accordance with ASTM D 2321.
2. Use fitting and couplings that comply with the joint performance criteria of AASHTO Standard Specifications for Highway Bridges, Division II. Ensure all joints are “silt tight” as stated in the AASHTO bridge specifications.
3. The internal diameter of the barrel shall not be reduced by more than 5% of its base inside diameter when measured not less than 30 days following completion of installation.

### 3.10 PIPE INVERT PAVING

- A. Where shown on the Contract Documents and/or Drawings, pave pipe inverts per the following:

1. Minimum paving thickness: 4-inches at pipe invert
2. Taper in thickness towards sides.
3. Concrete invert paving shall cover all pipe areas that are rusted out but shall at a minimum meet minimum thickness stated in Item 3.10.A.1 above.

### 3.11 SITE RESTORATION

- A. Replace or restore lawns and flower beds per requirements of Specification 01 00 00 “General Requirements”, Specification 32 92 00 “Turf and Grasses”, and Specification 32 93 43 “Trees, Shrubs, and Plants”.

### 3.12 STORAGE

- A. Store pipe on a flat surface so the barrel is evenly supported. Do not stack higher than 4 feet. For extended storage, plastic pipe must be covered with an opaque material to shield it from the sun’s rays. Bells must be stacked in opposing directions on alternate rows so they are not supporting the full load.

END OF SECTION 33 41 13

SECTION 33 49 13

STORM DRAINAGE STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Pre-Cast Stormwater Manholes
2.2	Pre-Cast Junction Boxes
2.3	Frames and Covers
2.4	Drop Inlets
2.5	Catch Basins
2.6	Headwalls
2.7	Brick Structures
3.1	Construction
3.2	Materials and Workmanship
3.3	Frames and Covers
3.4	Steps
3.5	Paved Ditches
3.6	Adjusting Drainage Structures to Grade

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall, under this item, furnish all materials, tools, labor, and equipment necessary to install precast concrete manholes, junction boxes, drop inlets, catch basins, headwalls, and appurtenances as detailed on the Contract Documents, Drawings and/or Details, including excavation and foundation cushion, base sections, riser sections, cone and flat top, frame, cover, castings, coring and drilling for connections to existing structures, and all other incidentals required for the proper completion of this Work.
- B. Manhole coring shall include all work to core and drill into an existing manhole or structure. The cost of the piping connection shall be included in the unit price of the pipe that is to be connected. The manhole coring shall not be backfilled until approved by the GCDWR Project Inspector. Manholes must be cored using an industry standard coring machine and shall not be performed using any type of hammer, chisel, jackhammer, or other method.
- C. Manholes in un-maintained areas shall be 18-inches above finish grade and in maintained areas "flush" with ground.

- D. Cast manhole frames and covers shall include all manhole frames, covers, and brick work used in conjunction with pre-cast or cast-in-place concrete manholes or subsurface chambers.
- E. Abandon existing structures by entirely removing and disposing of such structures.

#### 1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item.
- B. Submittals shall show in detail the size, location, dimensions, and accessories of all manholes to be used in construction. Include information for frames, covers, grates, sealants, connectors, waterproofing, steps, grout, and other materials required. The Contractor shall receive approval of same before any material may be delivered at the jobsite.

### PART 2 - PRODUCTS

#### 2.1 PRE-CAST STORMWATER MANHOLES

- A. Pre-cast stormwater manholes shall be in accordance with GDOT Standard Specifications Sections 668 and 866.
- B. Should pre-cast reinforced concrete manhole sections be brought to the site of the Work which are deemed unacceptable in quality by GCDWR, the Contractor shall at once remove the same and shall not offer that item again for inspection. No refurbished or repaired manhole specified herein shall be permitted for installation.

#### 2.2 PRE-CAST JUNCTION BOXES

- A. Pre-cast stormwater junction boxes shall be in accordance with GDOT Standard Specifications Sections 668 and 866.
- B. Should pre-cast, reinforced concrete junction box sections be brought to the site of the Work which are deemed unacceptable in quality by GCDWR, the Contractor shall at once remove the same and shall not offer that item again for inspection. No refurbished or repaired junction box sections specified herein shall be permitted for installation.

#### 2.3 MANHOLE FRAMES AND COVERS

- A. Manhole frames and covers shall be non-traffic rated or traffic rated as called for by GCDWR.
- B. Manhole Frames and Covers shall be in accordance with Gwinnett County P&D Standard Drawing 611 and GDOT Standard Specification Section 854.
- C. Traffic rated frames and covers shall be stamped per Gwinnett County P&D Standard Drawing 611.

## 2.4 PRECAST DROP INLETS

- A. Pre-cast stormwater junction boxes shall be in accordance with GDOT Standard Specifications Sections 668 and 866.
- B. Should pre-cast, reinforced concrete drop inlet sections be brought to the site of the Work which are deemed unacceptable in quality by GCDWR, the Contractor shall at once remove the same and shall not offer that item again for inspection. No refurbished or repaired drop inlet sections specified herein shall be permitted for installation.

## 2.5 PRECAST CATCH BASINS

- A. Pre-cast stormwater catch basins shall be in accordance with GDOT Standard Specifications Sections 668 and 866.
- B. Should pre-cast, reinforced concrete junction box sections be brought to the site of the Work which are deemed unacceptable in quality by GCDWR, the Contractor shall at once remove the same and shall not offer that item again for inspection. No refurbished or repaired catch basin sections specified herein shall be permitted for installation.

## 2.6 HEADWALLS

- A. Headwalls may be precast concrete, cast-in-place concrete, or brick masonry structures as required on the plans or directed by GCDWR.
- B. Precast concrete headwalls shall be fabricated per the following:
  - 1. Concrete: 4000 psi minimum 28 day compressive strength.
  - 2. Reinforcing Bars: ASTM A 615, Grade 60.
  - 3. Reinforcing Wire: AASHTO M 32 and AASHTO M 225, sized per plans or approved shop drawings as applicable.
  - 4. Welded Wire Fabric: AASHTO M 55 and AASHTO M221, sized per plans or approved shop drawings as applicable.
- C. Cast-in-place concrete headwalls shall be constructed to the dimensions as shown on the Contract Documents, Drawings, and/or Details in accordance with Specification 03 30 00 "Cast-In-Place Concrete".
- D. Brick Masonry headwalls shall be constructed to the dimensions as shown on the Contract Documents, Drawings, and/or Details in accordance with Specification 04 21 13 "Brick Masonry".

## 2.7 BRICK STRUCTURES

- A. Brick structures shall conform to the following, as applicable:
  - 1. GDOT Standard Specifications 668 and 608.
  - 2. GDOT Standard Detail 1011a.

# PART 3 - EXECUTION

## 3.1 CONSTRUCTION

- A. Install precast concrete drainage structures in accordance with GDOT Standard Specification Sections 668 and 866, as well as applicable Gwinnett County P&D Development Regulations Standard Drawings.
- B. Install brick structures in accordance with GDOT Standard Specifications 608 and 668, as well as applicable Gwinnett County P&D Development Regulations Standard Drawings.
- C. Construction details shall conform to the Contract Documents, Drawings, and/or Details.

### 3.2 MATERIALS AND WORKMANSHIP

- A. All materials shall be new. All Work shall be performed and finished in a workmanship manor. The precast concrete structures, rings and covers, and other materials shall conform to the standards specified in this section. Structures shall rest on a crushed stone base of a minimum of 12 inch thickness. Structures shall have a proper cut out, shape, and coring to fit valve and pipe.

### 3.3 FRAMES AND COVERS

- A. Traffic rated frames and covers shall be properly set in place in full bed of mortar and adjusted so as to make the top of the frame conform to the finished surfaces when located in street and public highways. In other locations, they shall be so adjusted as to conform to such elevations as are indicated on the Contract Documents and/or Drawings or as required.
- B. Manhole rims in wooded, sloped, or non-maintained areas shall be a minimum of 18 inches above ground level. The cast iron frame shall be cast into the concrete cone. Manhole rims in maintained grass areas shall be flush with the finished grade. Manhole rims on sloped ground in unmaintained areas shall be a minimum of 18 inches above ground on the uphill side of the manhole.

### 3.4 STEPS

- A. Steps equal to MA IND # PS-1-PF shall be built into the pre-cast concrete risers of the manholes. The uppermost step shall not be over twelve (12) inches below the cast iron manhole frame and these steps shall be continued downward along the interior vertical side of the manhole to a point no lower than the crown of the pipe. All steps shall be built into the pre-cast concrete risers in a manner satisfactory to GCDWR, and shall be spaced not more than twelve (12) inches apart. Steps shall be placed directly above each other and not staggered.

### 3.5 PAVED DITCHES

- A. The Contractor shall construct paved ditches with a minimum of 4-inches of Class A Concrete.
- B. Paved ditches shall be reinforced with minimum 6x6 WWF with expansion joints spaced at 30-foot maximum and construction joints at 10-foot maximum.
- C. A drop section shall be constructed on both ends of the ditch to a depth of two (2) feet.
- D. Ditch shall be construction to a minimum of twelve (12) inches depth with 2:1 side slopes or as otherwise shown or directed.



- E. Ditches shall conform to Gwinnett County Standard Drawing 709, "Drainage Ditch Details", as applicable.

3.6 ADJUSTING DRAINAGE STRUCTURES TO GRADE

- A. Where indicated on the Contract documents, drawings, and/or as directed by GCDWR and/or the Engineer, the Contractor shall adjust the elevation of drainage structure to be flush with the proposed finished grade. The Contractor shall use brick and mortar or precast concrete grade rings to raise the drainage structure to the correct elevation and re-grout the frame in place to secure it to the drainage structure. In no case shall more than four courses of brick or four grade rings be used for adjustment. If adjustment requires more than four courses, a new manhole riser section shall be installed below the top section and the drainage structure top adjusted thereafter.

END OF SECTION 33 49 13

SECTION 34 41  
16.10 TRAFFIC  
CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Materials
2.2	Worker Safety Apparel
2.3	Traffic Control Devices
3.1	Maintaining Traffic
3.2	Traffic Control

B. RELATED SECTIONS

The following listed sections do not purport to be all inclusive, as it is the Contractor's responsibility to do all the Work in accordance with the Contract Documents.

1. Submittal Procedures (01 33 00).
2. Exploratory Excavations (02 32 19).
3. Paving Removal (02 41 13.13)
4. Utility Line Removal (02 41 13.23)
5. Removal of Construction Material (02 42 11)
6. Clearing and Grubbing (31 11 00)
7. Excavation and Fill (31 23 00).
8. Erosion and Sedimentation Controls (31 25 00).
9. Asphalt Paving (32 12 16)
10. Sidewalks, Curbs, and Gutters (32 16 13)
11. Roadway Construction (34 71 00)

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

The Contractor shall furnish all materials, equipment, and labor (including employment of off-duty Gwinnett County Police Officer(s)), necessary to maintain traffic control during construction. This Work shall consist of furnishing, installing, maintaining, and removing necessary traffic signs, pedestrian signs, barricades, lights, signals, cones, pavement markings, and other traffic control devices, as specified by MUTCD,

indicated on the Drawings, or as directed by the Engineer or GCDWR; and shall include flagging and other means for guidance and protection of vehicular, worker, and pedestrian traffic, and shall include both maintaining existing devices and installing additional devices through the Work Zone.

B. Major Traffic Control :

1. Major Traffic Control includes, but is not limited to, maintenance of traffic that warrants the use of detour plans or overnight protection, the use of barricades, barrels, portable electronic message boards, crash trucks, arrow boards, changes to normal traffic flow of duration longer than a normal working day. All work zones in the following conditions shall be considered Major Traffic Control:
  - a. Road Closures requiring planned detours.
  - b. State Routes.
  - c. On all roadways designated as Major Collector and above per the Gwinnett County DOT Classification.
  - d. Closures requiring flaggers.
2. Steel plates used to open travel lanes are to be included as incidental in the work of Major Traffic Control.
3. All Major Traffic control must be preapproved by a DWR representative.

1.4 SUBMITTALS

- A. Submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES all working drawings and schedules of materials and methods proposed to be followed in the execution of the Work under this item.
- B. Submittals shall show in detail, the type, number, and location of all traffic control measures to be used in the execution of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Unless otherwise specified, all materials furnished for traffic control shall meet the requirements of the Georgia Department of Transportation Standard Specifications, Construction of Roads and Bridges, Sections 148 and 150, latest edition; Georgia Department of Transportation, Special Provision, Section 150-Traffic Control, latest edition; and the Manual on Uniform Traffic Control Devices (MUTCD), latest edition.

## 2.2 WORKER SAFETY APPAREL

- A. All workers within the right-of-way who are exposed to traffic or to work vehicles and construction equipment shall wear high-visibility safety apparel that meets the Performance Class for the risk exposure.

## 2.3 TRAFFIC CONTROL DEVICES

- A. All traffic control devices used during the execution of the Work shall meet the Standards utilized in the Manual on Uniform Traffic Control Devices (MUTCD), latest edition.

# PART 3 - EXECUTION

## 1.1 MAINTAINING TRAFFIC

- A. All working operations of the Contractor, Subcontractors, and/or their agents or employees must be subordinated to the free and unobstructed use of the highway, and structures encountered in the prosecution of the Work under this item.

The Contractor shall proceed with the Work in such manner as shall permit regular transaction of business by the GCDOT and/or property owner without delay or danger to life or property, and shall place necessary barricades, warning signs, signals, lights, and if necessary, flaggers or Police Officer(s) for the protection of the traveling public.

- B. Whenever it is necessary to cross, obstruct, or close roads, driveways, and walks, whether public or private, Contractor shall provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give a minimum of twenty-four (24) hour notice to owner(s)/tenant(s) of private drives before interfering with them.
- C. In making open-cut street crossings, Contractor shall not block more than one-half (1/2) of the street at a time. Whenever possible, Contractor shall widen the shoulder on the opposite side of the street to facilitate traffic flow.

## 1.2 TRAFFIC CONTROL

- A. Contractor's proposed plan of operation shall supplement the approved traffic control plan as specified, as indicated on the Drawings, or as directed by the Engineer or GCDWR.
- B. All traffic control devices shall be in an acceptable condition when first installed on the Project and shall be maintained throughout the construction period. All unacceptable traffic control devices shall be replaced within twenty-four (24) hours.
- C. In the execution of the Work, if it becomes necessary to remove any existing signs, markers, etc., they shall be removed, stored and reinstalled as directed by the Engineer or GCDWR, to line and grade in the same condition as when removed.

- D. All temporary traffic control devices shall be removed within seven (7) calendar days after completion of construction.
- E. When necessary to provide a safe work zone for the Contractor and GCDWR employees, off-duty Police Officer(s) may be utilized to assist in maintaining safe traffic control. Use of Police Officer(s) shall be used when safety necessary, in areas of high traffic volume, installation in roadways, road closures and lane closures, or in areas of low visibility. The Contractor shall contact the Gwinnett County Police Department Uniform Division Office at (770) 513-5820 to schedule an off-duty Police Officer(s). Arrangements for Police Officer(s) must be made a minimum of forty-eight (48) hours prior to the Work to allow time for Police Officer(s) to be scheduled. Depending on the situation, the Police Officer(s) onsite may request additional Police Officer(s), if needed.

END OF SECTION 34 41 16.10

SECTION 34 71 00  
ROADWAY CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

<u>Section</u>	<u>Title</u>
1.2	References
1.3	Work Included
1.4	Submittals
2.1	Materials
3.1	General Conditions
3.2	Materials and Workmanship
3.3	Restoring Curbs, Gutters, and Sidewalks
3.4	Restoring Driveway and Parking Area Pavements
3.5	Roadway Permits
3.6	Restoring Roadway Pavements
3.7	Roadway Appurtenances

1.2 REFERENCES

- A. Drawings and general provisions of the Contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this section.

1.3 WORK INCLUDED

- A. The Contractor shall furnish all materials for, and properly restore to the satisfaction of GCDWR, all pavements, parking areas, driveways, sidewalks and curbs, of whatever construction and irrespective of the type, which may be required to be removed, damaged or disturbed in the progress of Work required under this Contract.
- B. These items shall include in general, but without limitation, all necessary concrete, reinforcing steel, stone, gravel, asphalt and other bituminous material necessary for the proper completion of the Work as may be required, directed, or as specified herein.

1.4 SUBMITTALS

- A. The Contractor shall submit for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES and to Georgia DOT when work is within a state road right-of-way, all working Contract documents and/or drawings and schedules of materials and methods proposed to follow in the execution of the Work under this item
- B. The Contractor shall furnish samples, manufacturer's product data, test reports, and material certifications as required in reference sections for concrete, joint fillers, and sealers.

PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. For asphalt and other bituminous paving, refer to Specification SECTION 32 12 16 ASPHALT PAVING, PART 2 – PRODUCTS.
- B. For concrete paving, sidewalks, curbs, and gutters, refer to Specification SECTION 32 16 13 SIDEWALKS, CURBS, AND GUTTERS.

## PART 3 - EXECUTION

### 3.1 GENERAL CONDITIONS

- A. The Contractor's attention is directed to the provisions of the Specifications for the Section titled Excavation and Fill, requiring special backfill material and tamping of backfill under areas to be paved. Any settlement which may occur during the guarantee period of one (1) year shall be corrected at the Contractor's expense including repaving and/or replacing of streets, curbs, gutters, parking areas, and driveways which settle during the guarantee period.
- B. The Unit Prices Bid for all paving and curbing items, shall include bituminous concrete repaving and/or relaying of roadways, parking areas, driveways, curbs, gutters, and sidewalks which settle during the guarantee period.
- C. The Contractor shall repave all areas over excavations in public streets as defined in the Paragraph 3.6 "Restoring Roadway Pavements" below promptly after completion of backfill to provide full use of the street with a minimum of delay.
- D. No additional payment shall be made for excavation or disposal of excavated material required for placement or removal of backfill placed above the foundation of the pavement and for preparation of sub grade, and the cost thereof shall be considered as being included in the Unit Prices Bid for paving and curbing items.
- E. Should settlements, cracks, or other indications of failure appear in adjoining pavements, the adjoining paving shall be removed per provisions of SECTION 02 41 13.13 PAVING REMOVAL, Paragraph 3.1 TRENCH PAVING REMOVAL, to the extent necessary to secure firm, undisturbed bearing, and shall be repaved to Standards as specified, as indicated on the Contract Documents and/or Drawings, or as directed by the Engineer or GCDWR construction material testing representative.
- F. When directed by GCDWR, the Contractor shall backfill the entire excavation under a paved surface with crusher run material.
- G. Where necessary to cut a sidewalk, driveway, or parking area, entire slabs or squares shall be removed and replaced to an edge of paving or joint, unless otherwise directed by GCDWR.
- H. The Contractor shall replace all sidewalks removed or disturbed by the Contractor in the process of the Work in accordance with SECTION 32 16 13 SIDEWALKS, CURBS, AND GUTTERS. Sidewalks shall be constructed to the same dimensions and materials as were originally placed. The sub-base shall be thoroughly rolled or tamped and shall be wet just before, if necessary, the concrete is placed but shall show no pools of water.
- I. The Contractor shall restore all curbs, combination curbs, and gutters which have been

removed or disturbed in the progress of the Work in accordance with SECTION 32 16 13 SIDEWALKS, CURBS, AND GUTTERS. Curbs and gutters shall be made to conform accurately in size, line, grade, and materials with the adjoining. In restoring curbs and gutters, the subsoil and foundation material shall be well compacted so as to prevent any settlement of concrete curbing and guttering.

- J. In paved areas, the Contractor shall adjust all utility structures (manhole frame/cover, vault tops, valve boxes, etc.) to final grade.

### 3.2 MATERIALS AND WORKMANSHIP

- A. Materials to be used in the repair and restoration of pavements, drives, sidewalks, and curbs shall be as specified above in this section in Paragraph 2.1 MATERIALS. All materials removed during the excavation of the Work shall be disposed of by the Contractor per provisions of SECTION 02 42 11 REMOVAL OF CONSTRUCTION MATERIAL. All workmanship shall be first class. All concrete shall be 3,000 psi.

### 3.3 RESTORING CURBS, GUTTERS, AND SIDEWALKS

#### A. PREPARATION

- 1. Excavate and compact the subgrade as specified in Section 31 23 00.3.2.E, true to the indicated grade and cross section.
- 2. Place forms or extrusion machine guides to exact elevation and location required. Visually check forms and machine guides and adjust where necessary to ensure smooth curves and transitions in grade. Provide close spacing on curves to maintain a smooth curve.

#### B. JOINTS

- 1. Expansion Joints: Install expansion joints at intervals as indicated, but not exceeding 40 feet for walks and curbs, and wherever new concrete abuts existing construction. Additional joints are to be placed at tangent points of circular curbs and other places where stresses may develop.
- 2. Contraction (Control) Joints:
  - a. Sidewalks: Cut joints with a saw immediately after concrete reaches adequate hardness to allow sawing. . Contraction joints in sidewalks shall be 3/4 inch deep and spaced at a distance equal to the width of the walk.
  - b. Curb and Gutter: For formed work, use full depth steel forms to achieve contraction joints. For extruded work, cut contraction joints with a saw immediately after concrete reaches adequate hardness to allow sawing. Contraction joints in curb and gutters shall be 1 1/2 inch deep and spaced at 10 feet intervals.
  - c. Concrete flatwork: Cut joints with a saw immediately after concrete reaches adequate hardness to allow sawing. . Contraction joint depth shall be 1/4 of the concrete thickness. Spacing and pattern shall be as shown on plans or determined by GCDWR and/or the Engineer.
- 3. Premolded expansion joint filler must be cut to full cross section of the proposed construction and shall extend the full depth, width, and length of the construction.



Trim expansion joint material protruding after the concrete has been finished as directed by GCDWR and/or the Engineer. All longitudinal expansion joints shall be placed as indicated on the Contract documents and/or drawings.

C. FINISHES

1. Pedestrian and Wheelchair Ramps: Non-slip finish.
2. All others: Broom finish.

D. CONSTRUCTION

1. Place forms true to line, grade, and cross section.
2. Brace forms adequately before placing the concrete. Place concrete in forms and thoroughly tamp, vibrate or work it into all corners, removing air pockets. Allow forms to remain in place until the concrete has set sufficiently to hold its shape.
3. Begin each phase of screed, float, trowel and finish work as soon as the concrete can be properly worked. Completely finish sidewalks and flat work with forms in place.
4. Remove forms on the front face of curbs as soon as the concrete will hold its shape and finish the face. For gutters, a strike-off template of the form and shape of the gutter shall be used to shape the top surface of the gutter. Round top edges of curb and edges of gutter using a radius tool matching the radius shown on the Contract documents and/or drawings. Finish the edges where templates have been removed or expansion joint material has been placed with an edging tool with a radius of not over 1/4- inch and then all lines or marks removed with a wet brush.
5. Remove all tool marks with a wetted brush or wooden float, and the finished surface shall present a uniform and smooth appearance.
6. All Concrete shall conform to Specification SECTION 03 30 00 CAST-IN-PLACE CONCRETE, Paragraph 2.1 CONCRETE .

3.4 RESTORING DRIVEWAY AND PARKING AREA PAVEMENTS

- A. The Contractor shall restore driveway and parking area pavements removed or disturbed during construction. After the pipe has been laid, appurtenant work constructed and backfill completed, the Contractor shall furnish, place and maintain wherever the pavements have been removed or damaged in the pursuit of the Work, bituminous concrete surfaces, stone surfaces, concrete surfaces as indicated or shown on the Contract Documents and/or Drawings. Driveways and parking areas shall be constructed to the thickness of the existing, but concrete shall not be less than 4 inches thick. Surface finish is to match existing; edges to be sawn vertically; expansion joints to be used as directed. In general, Concrete driveways shall be replaced ten (10) feet from back of curb or to the closet expansion joint. The limits of this restoration shall be approved/agreed upon by the GCDWR Project Inspector for payment quantities.
- B. All Concrete shall conform to Specification SECTION 03 30 00 CAST-IN-PLACE CONCRETE, Paragraph 2.1 CONCRETE .
- C. If the Contractor chooses to use uncased bores for crossing driveways, without the prior written approval of the GCDWR Inspector, compensation will be made using the unit

price bid for Driveway Cut Restoration based on the allowable trench width for the respective size pipe installed.

### 3.5 ROADWAY PERMITS

- A. The Contractor's attention is called to the requirements that he/she must obtain all road opening permits from the GCDOT, and must assist the owner in obtaining all permits required by the State Department of Transportation.
- B. All fees shall be borne by the Contractor.

### 3.6 RESTORING ROADWAY PAVEMENTS

- A. The Contractor shall restore roadway pavements removed or disturbed during construction. After work in excavated paved areas is complete, appurtenant work constructed, and backfill completed, the Contractor shall furnish, place, restore and maintain wherever the pavements or road surfaces have been removed or damaged in the pursuit of the Work, bituminous concrete roadways, stone road surfaces, bituminous concrete over concrete base, and complete bituminous concrete roadway resurfacing as indicated or shown on the Contract Documents and/or Drawings.
- B. All roadway restoration shall be done in accordance with the lawful requirements of the authorities within whose jurisdiction such pavement is located. All highway utilities and traffic controls are to be maintained, and Work shall conform to the rules and regulations of the County, including the use of standard signs. The Contractor shall provide all such bonds or checks, which may be required by the highway authorities to insure proper restoration of paved areas, at no cost to the Owner. All road closures and detours must be submitted and approved with the authorities within whose jurisdiction they are located.
- C. The Contractor shall resurface the entire street from curb to curb, or any other area designated by GCDWR. Bituminous concrete paving shall conform to the requirements of Section 32 12 16 – Asphalt Paving, of these specifications.
- D. If, prior to the expiration of the period of maintenance, the bituminous concrete pavements or stone road surfaces within the lines of excavation or adjacent thereto, shall have been damaged or injured, due to undermining, or for any other cause which may be attributed to the Work of the Contractor, then the Contractor shall remove such damaged or injured surfaces, foundations of same, and all loose earth. He/she shall then backfill with sand properly rammed and furnish, place, and maintain a bituminous concrete pavement or stone road surface until such time as the final acceptance of the Work.
- E. Bituminous concrete pavements or stone road surfaces, which the Contractor is required to replace shall, at the expiration of the period of maintenance be in at least as good condition as at the time of awarding the Contract.
- F. Work which the Contractor may do in connection with opening up or replacing of pavements, or stone road surfaces, shall be done at his/her expense, in accordance with the rules and requirements of the authority within whose jurisdiction such pavement is located, and in accordance with the additional requirements of the Specifications, and the Contractor shall furnish evidence to GCDWR that the Work has been completed to the satisfaction of such authority. Payment for replacing of pavements or stone road surfaces shall not be made until such evidence is presented.

- G. All cuts shall be made by channeling machine, by pneumatic tools, or by such other methods as shall furnish a clean cut in the pavement and pavement base without undue shattering.

3.7 ROADWAY APPURTENANCES

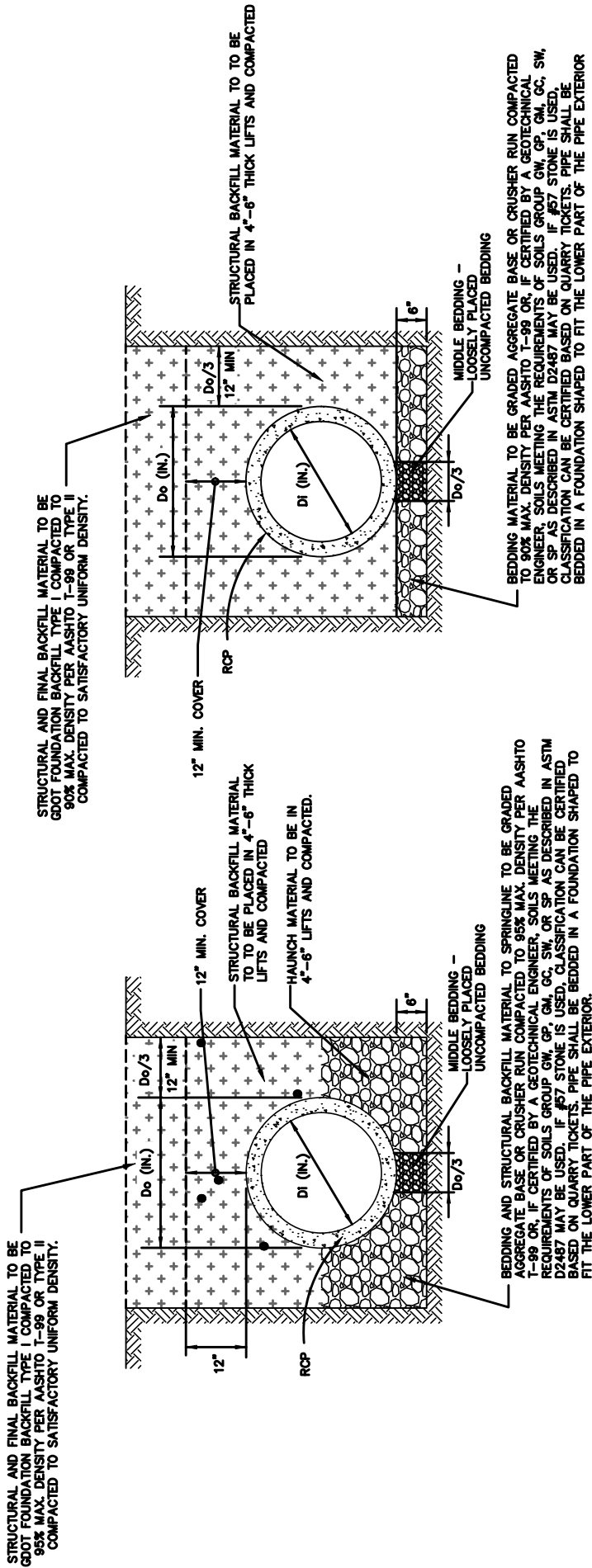
- A. Guardrail: Conforming to GDOT Standard Specification 641 and 859, as called for on the Contract Documents and/or Drawings or otherwise specified.
- B. Guardrail Anchors: Conforming to GDOT Standard Specification 641 and 859, as called for on the Contract Documents and/or Drawings or otherwise specified.
- C. Resetting Highway Signs: The Contractor shall reset all disturbed highway signs in accordance with the applicable GDOT and Gwinnett County standards and specifications. The Contractor shall preserve and protect all disturbed signs during construction. Any damage to signs shall be either repaired at the Contractor's expense, or the damaged signs replaced in like and kind with new materials at no additional cost to the Owner.
- D. Traffic Striping, General and Gore Area: The Contractor shall restripe all disturbed pavements to meet preconstruction conditions. Striping shall be thermoplastic materials conforming to the applicable GDOT specifications or as otherwise called for in the Contract Documents.
- E. Raised Traffic Markers: The Contractor shall replace all disturbed raised traffic markers in like and kind with new materials.

END OF SECTION 34 71 00

# Appendix A

## Attachments

# STANDARD PIPE BEDDING AND BACKFILL DETAIL RCP



**DETAIL 1**

(HIGHER RISK LOCATIONS—SEE ATTACHMENT F)

**DETAIL 2**

(LOWER RISK LOCATIONS – SEE ATTACHMENT F)

**GENERAL NOTES:**

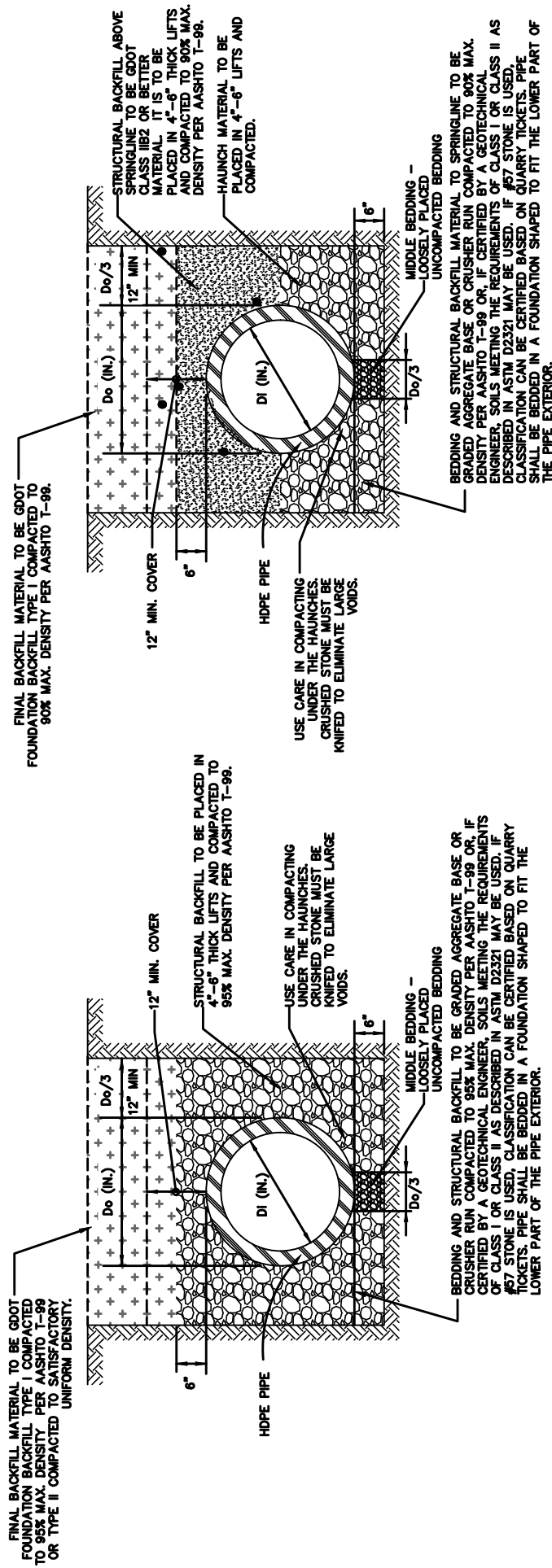
- 1.) TRENCH BOTTOMS SHOULD BE FREE OF LARGE STONES, CLUMPS OF SOIL, FROZEN SOIL AND DEBRIS. WHERE AN INCOMPRESSIBLE FOUNDATION EXISTS, EXCAVATE AN ADDITIONAL 6", WHERE AN UNSTABLE FOUNDATION IS ENCOUNTERED, EXCAVATE AN ADDITIONAL DEPTH AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER AND BACKFILL WITH GDOT FOUNDATION BACKFILL TYPE II.
- 2.) GROUNDWATER MAY CAUSE MIGRATION OF FINES WHEN COARSE AND OPEN-GRADED MATERIAL IS PLACED ADJACENT TO A FINER MATERIAL. USE GEOTEXTILE FILTER FABRIC TO MINIMIZE SUCH MIGRATION.
- 3.) BELL HOLES SHALL BE EXCAVATED IN THE BEDDING WHEN INSTALLING PIPE WITH EXTENDED BELLS SO THAT THE PIPE IS SUPPORTED BY THE BARREL AND NOT BY THE BELLS.

**PAY ITEM DETAIL**

- 1.) PIPE LINE ITEMS INCLUDE ALL ITEMS SHOWN IN DETAIL 1 OR 2.
- 2.) ADDITIONAL EXCAVATION WILL BE PAID FOR COVER GREATER THAN 10' ABOVE TOP OF PIPE.

# STANDARD PIPE BEDDING AND BACKFILL DETAIL

## HDPE



DETAIL 1

(HIGHER RISK LOCATIONS-SEE ATTACHMENT F)

DETAIL 2

(LOWER RISK LOCATIONS-SEE ATTACHMENT F)

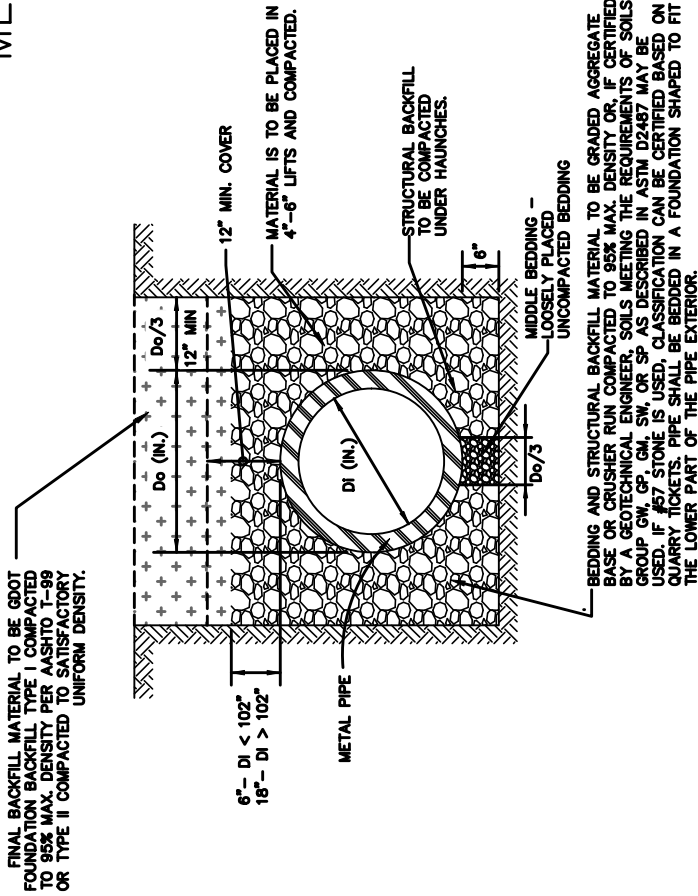
### GENERAL NOTES:

- 1.) TRENCH BOTTOMS SHOULD BE FREE OF LARGE STONES, CLUMPS OF SOIL, FROZEN SOIL AND DEBRIS. WHERE AN INCOMPRESSIBLE FOUNDATION EXISTS, EXCAVATE AN ADDITIONAL 6". WHERE AN UNSTABLE FOUNDATION IS ENCOUNTERED, EXCAVATE AN ADDITIONAL AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- 2.) GROUNDWATER MAY CAUSE MIGRATION OF FINES WHEN COARSE AND OPEN-GRADED MATERIAL IS PLACED ADJACENT TO A FINER MATERIAL. USE GEOTEXTILE FILTER FABRIC TO MINIMIZE SUCH MIGRATION.

### PAY ITEM DETAIL

- 1.) PIPE LINE ITEMS INCLUDE ALL ITEMS SHOWN IN DETAIL 1 OR 2.
- 2.) ADDITIONAL EXCAVATION WILL BE PAID FOR COVER GREATER THAN 10' ABOVE TOP OF PIPE.

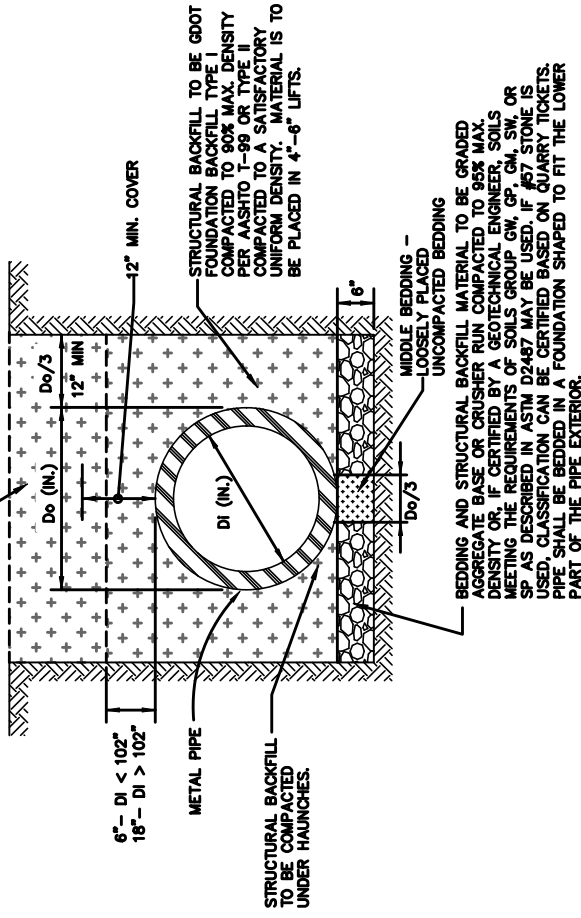
# STANDARD PIPE BEDDING AND BACKFILL DETAIL METAL PIPE



DETAIL 1

( HIGHER RISK LOCATIONS -- SEE ATTACHMENT F)

FINAL BACKFILL MATERIAL TO BE GOOD FOUNDATION BACKFILL TYPE I COMPACTED TO 90% MAX. DENSITY PER AASHTO T-99 OR TYPE II COMPACTED TO SATISFACTORY UNIFORM DENSITY.



DETAIL 2

(LOWER RISK LOCATIONS -- SEE ATTACHMENT F)

## GENERAL NOTES:

- 1.) TRENCH BOTTOMS SHOULD BE FREE OF LARGE STONES, CLUMPS OF SOIL, FROZEN SOIL AND DEBRIS. WHERE AN INCOMPRESSIBLE FOUNDATION EXISTS, EXCAVATE AN ADDITIONAL 6". WHERE AN UNSTABLE FOUNDATION IS ENCOUNTERED, EXCAVATE AN ADDITIONAL DEPTH AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- 2.) GROUNDWATER MAY CAUSE MIGRATION OF FINES WHEN COARSE AND OPEN-GRADED MATERIAL IS PLACED ADJACENT TO A FINER MATERIAL. USE GEOTEXTILE FILTER FABRIC TO MINIMIZE SUCH MIGRATION.
- 3.) IF USING DETAIL 2, AND 90% STANDARD PROCTOR CANNOT BE OBTAINED, THEN DETAIL 1 MUST BE USED.
- 4.) SOIL pH MUST BE GREATER THAN OR EQUAL TO 5.0 AND LESS THAN OR EQUAL TO 9.0. SOIL RESISTIVITY MUST BE GREATER THAN OR EQUAL TO 1500 OHM-CM. METAL PIPE MAY NOT BE USED IN LOCATIONS THAT RETURN TEST RESULTS OUTSIDE OF THESE PARAMETERS.

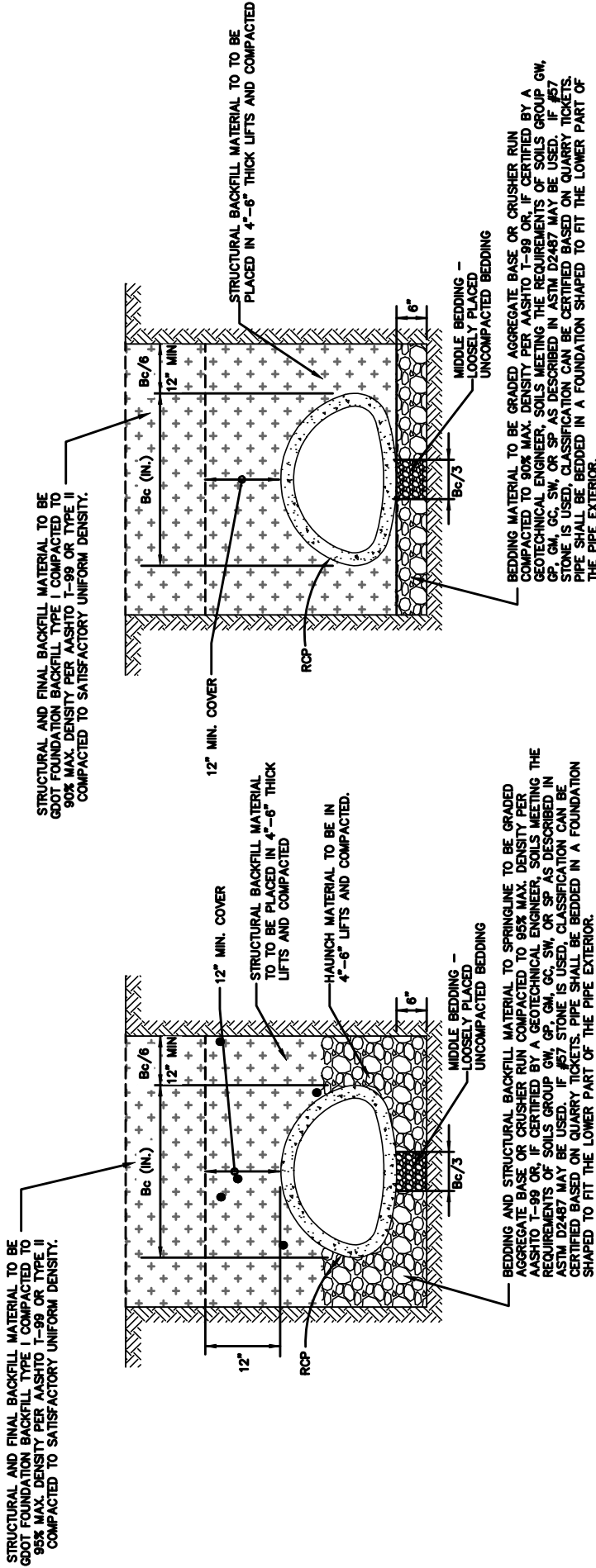
## PAY ITEM DETAIL

- 1.) PIPE LINE ITEMS INCLUDE ALL ITEMS SHOWN IN DETAIL 1 OR 2.
- 2.) ADDITIONAL EXCAVATION WILL BE PAID FOR COVER GREATER THAN 10' ABOVE TOP OF PIPE.

# ATTACHMENT C

# STANDARD ARCH PIPE BEDDING AND BACKFILL DETAIL

## RCP



DETAIL 1

(HIGHER RISK LOCATIONS--SEE ATTACHMENT F)

DETAIL 2

(LOWER RISK LOCATIONS - SEE ATTACHMENT F)

**GENERAL NOTES:**

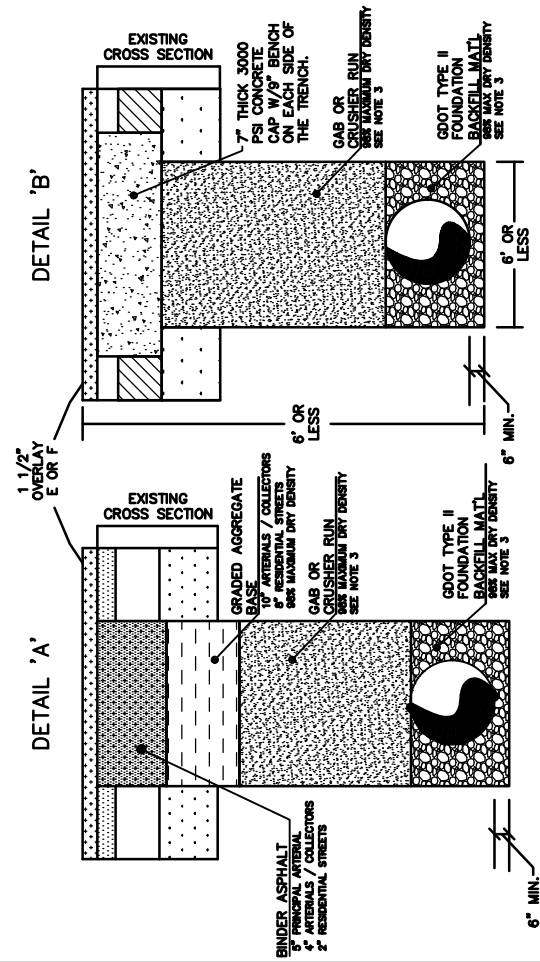
- 1.) TRENCH BOTTOMS SHOULD BE FREE OF LARGE STONES, CLUMPS OF SOIL, FROZEN SOIL AND DEBRIS. WHERE AN INCOMPRESSIBLE FOUNDATION EXISTS, EXCAVATE AN ADDITIONAL 6". WHERE AN UNSTABLE FOUNDATION IS ENCOUNTERED, EXCAVATE AN ADDITIONAL DEPTH AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER AND BACKFILL WITH GDOT FOUNDATION BACKFILL TYPE II.
- 2.) GROUNDWATER MAY CAUSE MIGRATION OF FINES WHEN COARSE AND OPEN-GRADED MATERIAL IS PLACED ADJACENT TO A FINER MATERIAL. USE GEOTEXTILE FILTER FABRIC TO MINIMIZE SUCH MIGRATION.
- 3.) BELL HOLES SHALL BE EXCAVATED IN THE BEDDING WHEN INSTALLING PIPE WITH EXTENDED BELLS SO THAT THE PIPE IS SUPPORTED BY THE BARREL AND NOT BY THE BELLS.

**PAY ITEM DETAIL**

- 1.) ARCH PIPE LINE ITEMS INCLUDE ALL ITEMS SHOWN IN DETAIL 1 OR 2.
- 2.) ADDITIONAL EXCAVATION WILL BE PAID FOR COVER GREATER THAN 10' ABOVE TOP OF PIPE.



# GWINNETT COUNTY D.O.T. UTILITY CUT DETAILS



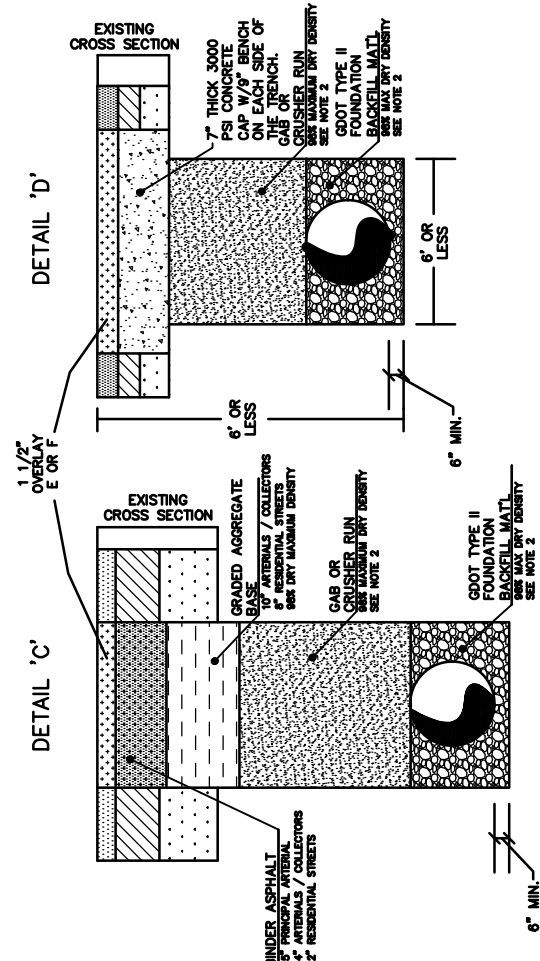
**LONGITUDINAL CUT**  
 GREATER THAN 6 FOOT DEPTH  
 GREATER THAN 6 FOOT WIDTH TRENCH

**LONGITUDINAL CUT**  
 6 FOOT OR LESS DEPTH  
 6 FOOT OR LESS WIDTH TRENCH

**NOTES:**

- 1.) ON MULTILANE ROADS (MORE THAN TWO) THE LANE THAT WILL BE USED FOR THE LONGITUDINAL CUT WILL BE MILLED 1 1/2 INCHES TO ACCOMMODATE THE OVERLAY
- 2.) ALL EDGES WILL BE SAW CUT AND TACKED ON REPAVING
- 3.) GAB/CRUSHER RUN & TYPE II FOUNDATION MATERIAL TO BE INCLUDED IN THE PRICE OF THE PIPE.
- 4.) COST FOR CONCRETE CAP TO BE INCLUDED IN PRICE OF THE PIPE.

## LONGITUDINAL ROAD CUTS



**PERPENDICULAR CUT**  
 GREATER THAN 6 FOOT DEPTH  
 GREATER THAN 6 FOOT WIDTH TRENCH

**PERPENDICULAR CUT**  
 6 FOOT OR LESS DEPTH  
 6 FOOT OR LESS WIDTH TRENCH

**NOTES:**

- 1.) ALL EDGES WILL BE SAW CUT AND TACKED ON REPAVING
- 2.) GAB/CRUSHER RUN & TYPE II FOUNDATION MATERIAL TO BE INCLUDED IN THE PRICE OF THE PIPE.
- 3.) COST FOR CONCRETE CAP TO BE INCLUDED IN THE PRICE OF THE PIPE.

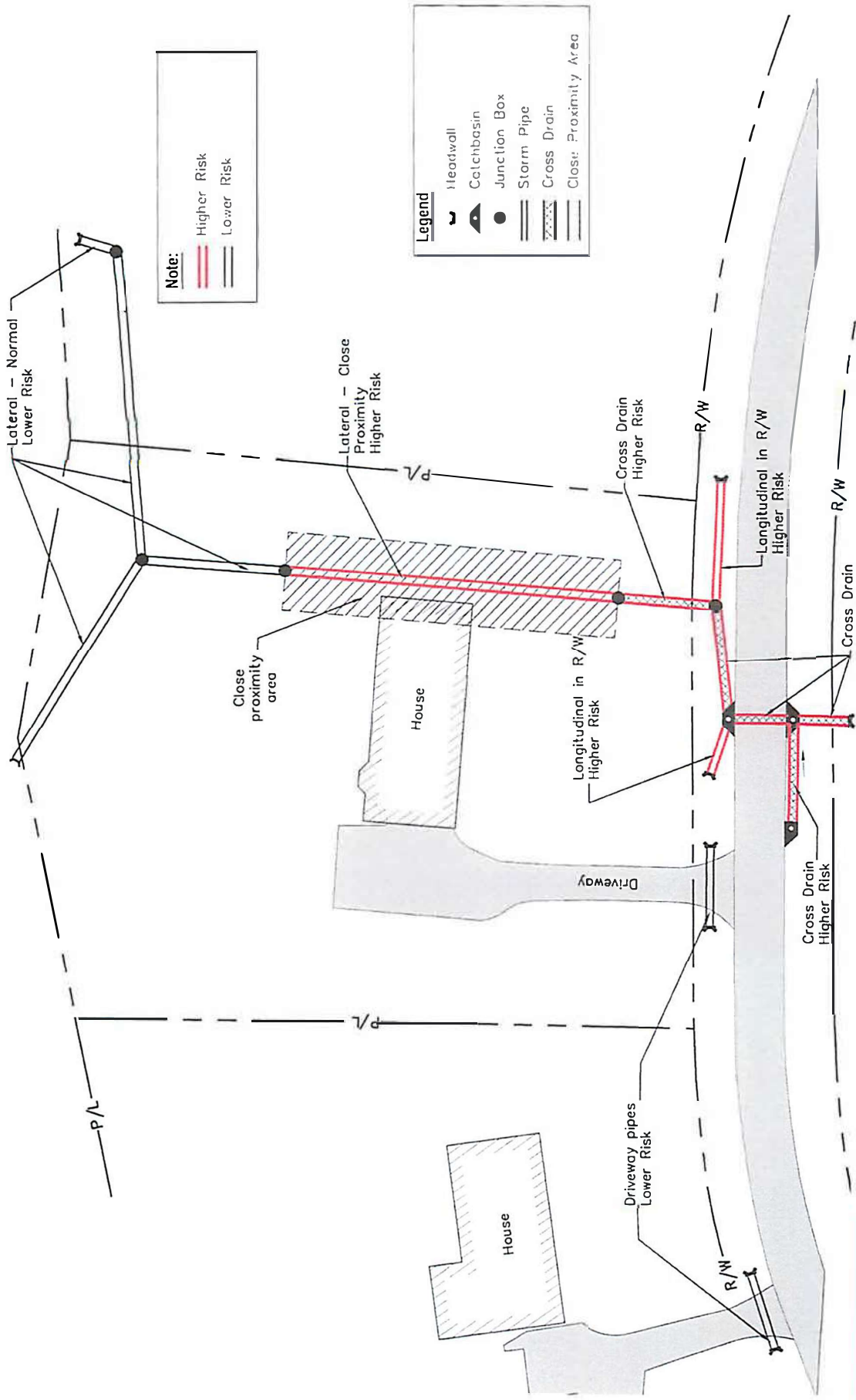
## PERPENDICULAR ROAD CUTS

**PAY ITEM DETAIL**

- 1.) PIPE/CULVERT LINE ITEMS INCLUDE ALL ITEMS SHOWN IN DETAIL 1 PER ATTACHMENTS A-D.
- 2.) ADDITIONAL EXCAVATION WILL BE PAID FOR COVER GREATER THAN 10' ABOVE TOP OF PIPE/CULVERT.
- 3.) ADDITIONAL STRUCTURAL AND FINAL BACKFILL MATERIAL TO ACCOMPLISH THIS DETAIL WILL BE PAID AS CLASSIFIED STONE.

# ATTACHMENT E

# HIGHER & LOWER RISK LOCATIONS



**Note:**  
 Higher Risk  
 Lower Risk

**Legend**  
 Headwall  
 Catchbasin  
 Junction Box  
 Storm Pipe  
 Cross Drain  
 Close: Proximity Area

**NOTE**  
 This is a schematic representation of higher and lower risk locations.

**Other Higher Risk Locations**  
 -Perennial streams  
 -Pass through pipes

Higher Risk - Bedding + Backfill Detail 1  
 Lower Risk - Bedding + Backfill Detail 2

Attachment G			Gwinnett DWR PACP Inspection Header Field Requirements		
Field Name	Data Type	Field Size	Required*	Sample	Description/Instructions
Surveyed_By	Text	20	Y	all UC User's First Initial and Last Name - DBLACKARD	Name of individual conducting survey
Certificate_Number	Text	15	Y	T-03-1284	NASSCO PACP # of Surveyor
Owner	Text	30	Y	GWINNETT DWR	Owner of collection system surveyed
Customer	Text	30	Y	Map Landlot number	Entity commissioning the survey
Drainage_Area	Text	15	Y	10 ch limit- Basin Name- 2 ch assigned	Abbreviated Name of Basin- see attached list
PO_Number	Text	15	Y	Contract Number	Contract number you are working under M&E- M-0154-01-3-03 VIS- M-0154-07-3-03
Pipe_Segment_Reference	Text	25	Y	Pipe ID	Alternate Pipe ID in GBA
Date	Date/Time	N/A	Y	YYYYMMDD	Inspection Date
Time	Date/Time	N/A	Y	Military Time format	Time Inspection Started
Street	Text	64	Y	Number and Street Name - all UC	Enter nearest street number and name if not known, enter nearest place name and general description
City	Text	64	Y	City name - all UC	City name where sewer located
Location_Details	Text	64/255*	Y	Example: BACK YARD IN MULCHED FLOWER BED - or BIG DOG - all UC	Descriptive explanation of sewer location
Upstream_MH	Text	25	Y	USMH ID	Client provided designation for upstream manhole
Up_Rim_to_Invert	Number	Single	Y	Ft and 10th's of ft. Measure rim to invert of pipe being surveyed. If rim not level, measure from lowest point on top of frame.	Distance (ft and tenths of ft) or (meters to 2 decimal places max) from rim to invert of upstream manhole
Up_Grade_to_Invert	Number	Single	Y	Ft and 10th's of ft. Measure depth between ground level and invert of pipe being surveyed. If ground not level, measure from ground space above pipe being surveyed.	Distance (ft and tenths of ft) or (meters to 2 decimal places max) from average grade to invert of upstream manhole
Up_Rim_to_Grade	Number	Single	Y	Ft and 10th's of ft. Measure distance between Rim and and ground level. If ground not level, measure from ground space above pipe being surveyed. If rim not level, measure from lowest point of rim.	Distance (ft and tenths of ft) or (meters to 2 decimal places max) from rim to average grade of upstream manhole
Downstream_MH	Text	25	Y	DSMH ID	Client provided designation for downstream manhole
Down_Rim_to_Invert	Number	Single	Y	Ft and 10th's of ft. Measure rim to invert of pipe being surveyed. If rim not level, measure from lowest point on top of frame.	Distance (ft and tenths of ft) or (meters to 2 decimal places max) from rim to invert of downstream manhole
Down_Grade_to_Invert	Number	Single	Y	Ft and 10th's of ft. Measure depth between ground level and invert of pipe being surveyed. If ground not level, measure from ground space above pipe being surveyed.	Distance (ft and tenths of ft) or (meters to 2 decimal places max) from average grade to invert of downstream manhole
Down_Rim_to_Grade	Number	Single	Y	Ft and 10th's of ft. Measure distance between Rim and and ground level. If ground not level, measure from ground space above pipe being surveyed. If rim not level, measure from lowest point of rim.	Distance (ft and tenths of ft) or (meters to 2 decimal places max) from rim to average grade of downstream manhole
Sewer_Use	Text	List-defined	Y	See Valid List - Sanitary	Purpose of sewer
Direction	Text	List-defined	Y	Upstream or Downstream	Direction of survey, Upstream or Downstream. All inspections should be performed Downstream where possible.
Flow_Control	Text	List-defined	Y	See Valid List- Not controlled, Dewatered, Plugged If WL is 25% or greater, level must be controlled. No inspection should occur in an line with more than 25% water level.	Type restriction of flow used
Height	Number	Integer	Y	Diameter	Diameter of sewer (or height if non-circular) to nearest inch(999) or nearest mm (99999)
Width	Number	Integer	Y	required for non-circular sewers	Width of non-circular sewer to nearest inch(999) or nearest mm (99999)
Shape	Text	List-defined	Y	See Valid List - Circular	Sewer shape
Material	Text	List-defined	Y	See Valid List, Polyvinyl Chloride	Type of pipe material
Lining_Method	Text	List-defined	Y	See Valid List, Cured in Place	Type of process used to line the host pipe
Pipe_Joint_Length	Number	Single	Y	Nearest 10th of a ft	Length of pipe joint sections measured to one decimal place whether in feet or meter
Total_Length	Number	Single	Y	Estimated distance/wheeled or GIS estimate	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
Length_Surveyed	Number	Single	Y	Actual length surveyed	If the survey is abandoned, enter the actual length surveyed to one decimal place whether it is feet or meter
Year_Laid	Number	Integer		4 digit year	Year sewer surveyed was constructed
Year_Renewed	Number	Integer		4 digit year	Year sewer surveyed was renewed
Media_Label	Text	64	Y	Directory location of video file - DVD Name or Harddrive Name	Unique identifier for tape/media
Purpose	Text	List-defined	Y	See Valid List- M&E to use G- Capital Improvement Program Assessment and VIS to use A - Maintenance Related. If Reverse.	Reason for conducting survey
Sewer_Category	Text	List-defined			Importance of sewer, to be provided by client
Pre-Cleaning	Text	List-defined	Y	See Valid List- J-Jetting, H - Heavy Clean	Type of preparatory cleaning conducted prior to survey
Date_Cleaned	Date/Time	N/A		YYYYMMDD	Date when sewer was cleaned prior to survey
Weather	Text	List-defined	Y	See Valid List - 1-Dry	Weather conditions when survey conducted
Location_Code	Text	List-defined	Y	See Valid List - D- Easement. Do not include easement as part of the Street Name and Number. Remember, if any portion of the pipe crosses underneath a road, enter codes A,B or C. Otherwise, enter code that best describes predominant ground cover.	General description of ground cover of surveyed segment
Additional_Info	Text	255	Y	Any necessary additional information regarding pipe or inspection	Supplemental info regarding survey or segment
Video_Location	Text	64/255*	Y	Name of inspection video/See Media Naming convention list	For digital recordings, path of video file relative to corresponding data file
* If bold, NASSCO Req'd field. If not Bold, DWR required field.					
Persistent Video Display should be at the bottom of the screen. USMH and DSMH should be displayed, along with Footage counter.					

**Attachment H - Gwinnett Basin Name Abbreviations**

<b>Basin Name</b>	<b>Work Order Abbreviation</b>	<b>Used</b>
Buford South	BS	
Level Creek	LE	
Alcovy Pump	AL	
Beaver Ruin	BR	
Big Haynes	BH	*
Brushy Fork	BF	*
Crooked Creek	KK	
East Park Place	EP	
Ezzard Road	EZ	*
Hog Mountain	HO	
Ivy Creek (Suwanee)	IV	*
Jack's Creek	JK	
Jackson Creek	JA	
No Business Creek	NB	*
Norris Lake	NL	
North Chattahoochee	NH	
North Fork Peachtree	NF	
Patterson	PA	
Suwanee Creek	SU	*
Wolf Creek	WO	
Yellow River	YR	

## Attachment I Manhole Inspection Template[2]

<b>FacilityID</b>	<b>InspectionFirm</b>	<b>Crew</b>	<b>InspectType</b>	<b>FlowBasin</b>	<b>InspectionDate</b>
1141610	Joe	jl/dm	Found	Ivy Creek	8/18/07
<b>NearestBuildingNo</b>	<b>StDir</b>	<b>StreetName</b>	<b>StreetType</b>	<b>StDir2</b>	<b>StructureType</b>
3208		buford	DR	NE	1
<b>StructureClass</b>	<b>MHGrade</b>	<b>MHDiameter</b>	<b>MHWidth</b>	<b>MHDepth</b>	<b>Liner</b>
1		48		9.1	
<b>NoPipesIN</b>	<b>NoPipesOUT</b>	<b>NoDropsIN</b>	<b>NoDropsOUT</b>	<b>Floodplain</b>	<b>Location</b>
0	1		0		6
<b>SurfaceType</b>	<b>Debris</b>	<b>CoverType</b>	<b>HolesinCover</b>	<b>PondingDepth</b>	<b>CoverPonding</b>
4		3			
<b>CoverCondition</b>	<b>CoverFlow</b>	<b>FrameType</b>	<b>FrameCondition</b>	<b>FrameFlow</b>	<b>FrameOffset</b>
1	1	1	0	0	2
<b>FrSealCondition</b>	<b>FrSealFlow</b>	<b>GradeAdjustment</b>		<b>GradeAdjDepth</b>	<b>GradeAdjCondition</b>
0	0	1			
<b>GradeAdjFlow</b>	<b>ConeType</b>	<b>ConeShape</b>	<b>ConeCondition</b>	<b>ConeFlow</b>	<b>WallType</b>
	2	2	0	0	1
<b>WallCondition</b>	<b>WallFlow</b>	<b>WallHoles</b>	<b>WallJoints</b>	<b>BenchType</b>	<b>BenchCondition</b>
0	0	0	2	1	0
<b>BenchFlow</b>	<b>PipeSeal</b>	<b>PipeSealCondition</b>	<b>PipeSealFlow</b>	<b>StepType</b>	<b>StepCondition</b>
0	2	0	0	3	1
<b>Surcharge</b>	<b>MHCorrosion</b>	<b>MHRoots</b>	<b>Comments</b>	<b>USMH1ID</b>	
	0	0	1svc		
<b>RimToInv1</b>	<b>Offset1</b>	<b>USMH2ID</b>	<b>RimToInv2</b>	<b>Offset2</b>	<b>USMH3ID</b>
<b>RimToInv3</b>	<b>Offset3</b>	<b>USMH4ID</b>	<b>RimToInv4</b>	<b>Offset4</b>	<b>USMH5ID</b>
<b>RimToInv5</b>	<b>Offset5</b>	<b>DSMHID</b>	<b>X</b>	<b>Y</b>	
9.1		200470	2349880.066	1478198.712	