

CONSTRUCTION DOCUMENTS

FOR

CITY OF LAGRANGE

GRANGER PARK – WATER QUALITY POND  
STORMWATER IMPROVEMENT PROJECT

CONTRACT DOCUMENTS & TECHNICAL SPECIFICATIONS

FEBRUARY 13, 2017

Prepared For:



200 RIDLEY AVENUE  
LAGRANGE, GA 30240

Prepared By:



RMA Project R2016-119

# CONTRACT DOCUMENTS & TECHNICAL SPECIFICATIONS

## TABLE OF CONTENTS

<u>Title</u>	<u>Specification No.</u>
<b><i>Contract Documents</i></b>	
Instructions to Bidders and Special Provisions .....	Section No. 1
Bid Proposal.....	Section No. 2
Contract Agreement.....	Section No. 3
Specifications and Exhibits .....	Section No. 4
<b><i>Technical Specifications</i></b>	
Price and Payment Procedures .....	01 20 00
Administrative Requirements.....	01 30 00
Submittal Procedures.....	01 33 00
Quality Requirements.....	01 40 00
Temporary Facilities and Controls .....	01 50 00
Execution and Closeout Requirements .....	01 70 00
Concrete Forming and Accessories .....	03 10 00
Cast in Place Concrete .....	03 30 00
Soils for Earthwork.....	31 05 13
Aggregates for Earthwork .....	31 05 16
Rock Removal.....	31 23 18
Dewatering .....	31 23 19
Erosion Controls.....	31 25 13
Rip Rap .....	31 37 00
Soil Preparation.....	32 91 13
Seeding .....	32 92 19
Sodding.....	32 92 23
Vehicle Barriers.....	34 71 13
<b><i>Appendices</i></b>	
Application for Payment .....	Appendix A
Change Order .....	Appendix B
Lien Waiver .....	Appendix C

CONTRACT DOCUMENTS  
CITY OF LAGRANGE, GEORGIA  
February 13, 2017

- SECTION NO. 1  
    Instructions to Bidders and Special Provisions
- SECTION NO. 2  
    Bid Proposal
- SECTION NO. 3  
    Contract Agreement
- SECTION NO. 4  
    Specifications and Exhibits

1.0 INSTRUCTIONS TO BIDDERS  
AND SPECIAL PROVISIONS

1.1 Advertisement for Bids

The City of LaGrange, Georgia invites bids on the proposal form attached herein to furnish necessary labor, materials, and equipment to perform the following work:

**PROVIDE LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE GRANGER PARK WATER QUALITY POND STORMWATER IMPROVEMENT PROJECT IN LAGRANGE, GEORGIA 30240 IN ACCORDANCE WITH BID DOCUMENTS, SPECIFICATIONS, AND PLANS. PROJECT HIGHLIGHTS INCLUDE THE FOLLOWING:**

- **REMOVAL OF APPROXIMATELY 5,500 CUBIC YARDS OF SEDIMENT FROM THE POND AND WATERSHED.**
- **RESTORE THE ORIGINAL WATER QUALITY PROTECTIONS OF THE POND ON THE DOWNSTREAM RECEIVING WATERS**
- **RESTORE THE FULL STORMWATER DETENTION CAPACITY OF THE POND.**
- **CREATE A HEALTHIER AQUATIC ENVIRONMENTAL FOR THE PLANTS AND ANIMALS THAT RESIDE IN AND AROUND THE POND.**

Bids will be received by the City at: 200 RIDLEY AVENUE, ROOM 301, OFFICE OF PURCHASING, LAGRANGE, GEORGIA 30240 until: 2 P.M. EST, WEDNESDAY, MARCH 15, 2017.

1.2 Definitions

Where the following terms occur, they shall have the following meanings:

"City" shall mean the City of LaGrange, a Municipal Corporation of Troup County, Georgia and shall include its legally designated agents, and/or representatives, who are party of the first part to the following agreement.

"Specifications" shall mean all sections of this document, including instructions to bidders and special provisions, proposal, contract agreement, performance bond, payment bond, and detail specifications.

"Exhibits" shall mean plats, plots, plans, drawings or lists attached hereto or referred to herein and made part of this document.

"Contractor" shall mean the party of the second part to the following agreement, or the legal authorized representative of such party.

1.4 Work to be Done

The work to be done is to comply fully with the detailed specifications, Section No. 4.

1.5 Material Furnished by City

The City shall furnish no labor, materials or equipment, except as listed below: **NONE**

1.6 Time For Completion

The time allowed for completion of all work to be done under this contract shall begin after notification by the City to proceed with the work. The time allowed for this work is: **90 CALENDAR DAYS.**

1.7 Site Examination

The bidder is expected to examine the site of the work to be performed and be fully informed of conditions which may affect the work. The owner will not be responsible for the bidder's bid errors and misjudgement nor for failure to obtain any information on local conditions or general laws or regulations pertaining thereto.

1.8 Exhibits

All exhibits may be obtained from the agency preparing them as listed below, and at the fees indicated. Any bidder in doubt of the true meaning of any exhibit may submit in writing a request to the agency preparing the same for an interpretation thereof. **FEE FOR HARDCOPY IS \$125.00 (NOT INCLUDING SHIPPING). DOWNLOAD OF ELECTRONIC COPY IS FREE. CONTACT RINDT-MCDUFF ASSOCIATES, 334 CHEROKEE STREET, MARIETTA, GA 30060, PHONE 770-427-8123 OR EMAIL AT [RCOX@RINDT-MCDUFF.COM](mailto:RCOX@RINDT-MCDUFF.COM) FOR DIRECTIONS TO DOWNLOAD THE ELECTRONIC PDF COPY OR TO OBTAIN A PRINTED COPY OF PLANS.**

1.10 Proposal

All proposals shall be made on the proposal forms included herein and shall become a part of these specifications. The proposal shall, in all cases, cover the work outlined herein.

1.11 Surety Bonds

Surety bonds attached on the proper forms, duly executed by the Bidder as principal, and having as surety thereon a surety company approved by the City are required as follows:

A bid bond or certified check in an amount equal to **five percent (5%)** of the base bid amount. Such certified check or bid bond will be returned to all but the lowest bidder within thirty days after the opening of bids, and to the lowest bidder after the execution of the attached contract.

A performance bond in an amount equal to **one-hundred percent (100%)** of the base bid amount, the cost of which shall be included in bid **IF SUCH BID EXCEEDS \$100,000.00.**

A payment bond in an amount equal to **one-hundred percent (100%)** of the base bid amount, the cost of which shall be included in bid **IF SUCH BID EXCEEDS \$100,000.00.**

#### 1.12 Right to Reject Bids

The City reserves the right to reject any or all bids and to waive informalities. No bids will be received after the time set for opening proposals. Any conditions, limitations or provisions attached to the Proposal, except as provided herein, will render it informal and may cause its rejection. Any bidder may withdraw their bid, either personally or by written request, at any time prior to the scheduled closing time for receipt of bids.

#### 1.13 Determination of Low Bid

The Contract will be awarded, if it is awarded, to the lowest responsible, responsive bidder as determined by the City of LaGrange. Elements which will be considered in making this determination may include, but is not limited to, the following:

1. Whether the bidder involved, (a) maintains a permanent place of business; (b) has adequate plant equipment to do the work properly and expeditiously; (c) has a suitable financial status to meet obligations incident to the work, (d) has appropriate technical experience, (e) has the relevant experience on similar projects, (f) has the ability to perform the work within the specified time period, (g) has adequate bonding and insurance capacity and (h) has an acceptable safety record.
2. The City has the right to accept the price bid on any equipment approved by the City as equal to that specified, or on equipment on which a bid is required, as a basis for award of contract.
3. The City has the right to apply any or all of the "Alternates" listed in the Proposal for the purpose of making an award.
4. Whenever a material or article required is specified or shown on the plans by using the name of the proprietary product or of a particular manufacturer or vendor, any material or article which will meet the same design criteria and is equal in function and durability, as determined by the City, will be considered acceptable.

#### 1.14 Working Drawings

The contract price shall include the cost of furnishing all working drawings and supplementary data and the Contractor shall be allowed no extra compensation for furnishing such information.

#### 1.15 Construction Stakes

The Contractor shall provide such stakes, materials, and such labor and assistance as the City may require in laying out work, establishing bench marks, and checking and measuring the work. All construction staking or field engineering shall be performed by a person or persons deemed skilled and qualified by the City to execute this work.

#### 1.16 Access Roads

Streets, roads, and drives used by the Contractor for access to and from the site of their work shall be protected from damage in excess of that caused by the normal traffic of vehicles used for, or in connection with, construction work. Any such damage done shall be repaired immediately and left in good condition at the end of the construction period. The Contractor shall take measures to prevent soil, mud, or other foreign materials from being tracked onto existing streets or roads.

1.17 Weather Limitations

Due to weather conditions, the City may direct the work to be stopped. Weather days will be added to the time allowed for completion listed in Section 1.6 above. Weather limitations, if applicable, are more specifically described in Section 6.

1.18 Right-of-Way

The necessary land for the construction of the work will be furnished by the City, and a definite area will be allocated to the Contractor for storage of materials and equipment used in the construction of the work. All operation shall be confined to the assigned area.

1.19 Traffic Control

The Contractor shall furnish and install all necessary traffic control devices for the protection of employees, the public, and equipment as required by local, state, or federal regulations. Devices required may include barricades, traffic cones, certified flagmen, warning signs, and lights at night.

1.20 Construction Housing

Should the Contractor so desire, they may use trailers or build structures for housing, tools, machinery and supplies; such structures will be permitted only at approved places, and their surroundings shall be maintained at all times in a sanitary and satisfactory manner. On or before the completion of the work all such facilities shall be removed, together with all rubbish and trash, at the expense of the Contractor.

1.21 Safety Regulations

The performance of work under this contract shall comply with safety regulations prescribed by the City or required by law. Each bidder shall satisfy themselves as to the character and extent of such regulations. The successful bidder shall submit to the City a copy of their Substance Abuse Policy. **For natural gas projects, the Substance Abuse Policy must comply with D.O.T. Pipeline Safety Regulations Part 191, 192, 199, and 40. The latest statistical data sheet, operators qualification certification (Part 192 subpart N) and substance abuse policy must be approved the City before a notice to proceed will be issued.**

1.22 Sanitary Regulations

Necessary sanitary conveniences for the use of Contractor employees shall be erected and maintained by the Contractor, in such a manner and at such points as shall be approved by the City. Their use shall be strictly enforced.

1.23 Laws and Regulations

The Contractor shall keep themselves fully informed of all laws, ordinances, orders or decrees, and regulations of the Federal, State, City and County Governments in any manner affecting those engaged or employed in the work, or the materials used in the work, or the conduct of the work. If any discrepancy or inconsistency should be discovered in the Specifications herein referred to, in relation to any such law, ordinance, regulation, order or decree, they shall forthwith report the same in

writing to the City. The Contractor shall at all times observe and comply with all existing and future laws, ordinances, and regulations, and shall protect and indemnify the City against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by themselves or by their employees.

1.24 Erosion Control

The Contractor shall comply with all laws and regulations pertaining to erosion control and shall in no event allow water, soil, silt, or other materials to migrate onto other property, public or private, so as to cause damage. All necessary permits shall be obtained prior to starting work.

1.25 Competent Labor

The Contractor shall employ only competent and skilled personnel to carry out the prescribed work. The Contractor shall have a competent supervisor present at all times when the work is in progress with authority to receive orders and execute the work. The Contractor shall, upon demand from the City, immediately remove any workman whom the City may consider incompetent or undesirable.

1.26 Inspection and Control of the Work

The Contractor shall furnish the City with every reasonable facility for ascertaining whether or not the work performed and materials used are in accordance with the requirements and intent of the Specifications. All materials furnished and work done when not in accordance with the Specifications will be rejected and shall immediately be removed and other work done and materials furnished in accordance therewith. If the Contractor fails to correct the work and materials as above ordered within seven days, then the City may have the right and authority to stop the Contractor and their work at once and supply personnel and material, at the cost and expense of the Contractor, to remove correct said work and materials. Failure to reject any defective work or materials shall not in any way prevent later rejection when such defect is discovered, or obligate the City to final acceptance. All work shall be guaranteed against defects in workmanship or materials for a period of one year from the date of final acceptance by the City.

1.27 Disagreement

Should any disagreement or difference arise as to the estimate, quantities or classifications or as to the meaning of the Specifications, the decisions of the City shall be final and conclusive and binding upon all parties to the contract.

1.28 Cooperation of Contractor

The Contractor shall in every way cooperate with the City and other persons or firms performing work on or near the work herein described. This cooperation shall include scheduling of work for the best interest of all concerned. Any work which requires an interruption of service to existing customers shall be performed at a time determined solely by the City.

1.29 Liquidated Damages

The Contractor shall pay to the City as liquidated damages the sum of TWO HUNDRED FIFTY dollars (\$250.00) for each calendar day that they shall be in default of completing the work in this contract within the time limit named in Section 1.6 above.



1.30 Order of Work

The prosecution, order or sequence of the work shall be as provided herein or as approved by the City, which approval, however, shall in no way effect the responsibility of the Contractor.

1.31 Permits and Licenses

Before any work is commenced, all Federal, State, County, and City, or other permits, work orders, or other licenses shall be obtained from the various agencies, private and public, concerned and displayed on the job site as directed.

1.32 Contractor and Subcontractor Insurance

The Contractor shall not commence work under this contract until they have obtained all the insurance required under this paragraph and provided the City with a certificate showing satisfactory proof of carriage of the insurance. The Contractor shall not allow any subcontractor to commence work on their subcontract until all similar insurance required of the subcontractor has been so obtained. The insurance required herein shall provide adequate protection for the Contractor, their subcontractors, and the City against damage claims which may arise from operations under this contract.

(a) Compensation Insurance: The Contractor shall procure and maintain during the life of this contract Workmen's Compensation Insurance for all of the employees to be engaged in work on the project under this contract. In case any class of employees engaged in hazardous work on the project under this contract is not protected under Workmen's Compensation statute, the Contractor shall provide a Workmen's Compensation policy for the protection of such of their employees not otherwise protected. The amount of such insurance shall be **PER ATTACHED SAMPLE CERTIFICATE OF INSURANCE FOR MAJOR CONTRACTORS, SECTION 4.**

(b) Public Liability, Property Damage, and Automobile Liability Insurance: The Contractor shall procure and maintain during the life of the contract such Public Liability and Property Damage Insurance and Automobile Liability Insurance as shall protect them from claims for damage for personal injury including accidental death as well as from claims for property damage, which may arise from operations under this contract, whether such operations are by themselves or by any subcontractor or by anyone directly or indirectly employed by either. The amount of such insurance shall be **PER ATTACHED SAMPLE CERTIFICATE OF INSURANCE FOR MAJOR CONTRACTORS, SECTION 4.**

1.33 Reports, Records and Data

The Contractor and each of their subcontractors shall submit to the City such schedules of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the City may request concerning work performed or to be performed under this contract.

1.34 Subcontracting

(a) The Contractor may utilize the services of specialty subcontractors on parts of the work which, under normal contracting practices, are performed by specialty subcontractors.

(b) The Contractor shall not subcontract the complete work, or any major portion thereof, and shall not award any work to any subcontractor without prior written approval of the City. Approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. Such statement shall contain information as the City may require.

(c) The Contractor shall be as fully responsible to the City for the acts and omissions of their subcontractors, and of persons either directly or indirectly employed by them, as they are for the acts and omissions of persons directly employed by them.

(d) Nothing contained in this contract shall create any contractual relation between any subcontractor and the City.

#### 1.35 Mutual Responsibility of Contractors

If, through acts of neglect on the part of the Contractor, any other contractor or any subcontractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other contractor or subcontractor by agreement or arbitration if such other contractor or subcontractor will so settle. If such other contractor or subcontractor shall assert any claim against the City on account of any damage alleged to have been sustained the City shall notify the Contractor who shall indemnify and save harmless the City against any such claim.

#### 1.36 Accident Prevention

Precautions shall be exercised at all times for the protection of all persons and property, and hazardous conditions shall be guarded against or eliminated. The Contractor shall be responsible for all injuries or damages to persons or property, and shall indemnify and save harmless the City from all damages and costs by reason of injury to person or property, resulting from negligence or carelessness in the performance of the work, or from any improper materials used in its construction, or on account of any act or omission of the Contractor, their agents or employees. Payments due under this contract may be retained by the City until all suits or claims for damages shall have been settled to the satisfaction of the City.

#### 1.37 Changes in Work

The estimated quantities of work to be done and materials to be furnished under this contract shown in any of the documents including the Proposal, are given for use in comparing bids and to indicate approximately the total amount of the contract; and the right is especially reserved to increase or decrease them as may be deemed reasonably necessary or desirable by the City.

Should the Contractor encounter, during the progress of the work subsurface or latent conditions at the site, materially differing from those shown or indicated in the Specifications, or unknown conditions differing materially from those ordinarily encountered in work of the character of this contract, the attention of the City shall be called immediately to such conditions before they are disturbed. The City shall promptly investigate the conditions, and if it finds that they do so materially differ, the contract shall be modified to provide for any increase or decrease of cost or difference in time resulting from such conditions. No changes in work, or claim of payment for such work, shall be made without prior written approval by the City.

The Contractor shall furnish to the City when required an itemized breakdown of the quantities and prices used in computing the value of any change that might be ordered. In figuring changes, instructions for measurement of quantities set forth in the specifications shall be followed.

Charges or credits for the work covered by the approved change shall be determined by one or more of the following methods:

- (a) Unit bid prices stipulated in the Proposal, or as subsequently approved, unit prices shall include allowances for overhead and profit.
- (b) An agreed lump sum.
- (c) The actual cost, by keeping a correct account including all vouchers for labor, materials, equipment ownership or rental costs, utilities, prorata insurance cost, and a fixed fee not to exceed 15 percent of the total for combined overhead and profit.

1.38 Patents

(a) The Contractor and/or sureties shall hold and save the City and its officers, agents, servants, and employees harmless from liability or claims of infringement of any nature or kind on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract unless otherwise specifically stipulated in the Contract Documents.

(b) If the Contractor uses any design, device or materials covered by letters, patent or copyright, they shall provide for such use by suitable agreement with the City of such patented or copyrighted design, device or material. It is mutually agreed and understood, that, without exception, the contract prices shall include all royalties or cost arising from the use of such design, device or materials, in any way involved in the work.

1.39 Inspection and Testing of Materials

Unless otherwise specifically provided in the specifications the inspection and testing of materials and finished articles to be incorporated in the work at the site shall be made by agencies arranged for by the Contractor and approved by the City. The Contractor will pay for all laboratory inspection services as part of the contract. The Contractor shall furnish and deliver all such extra quantities of materials and items as may be required for testing.

Where the detailed specifications call for certified copies of laboratory tests to establish conformance of certain materials with the specifications it shall be the responsibility of the Contractor to assure the delivery of such certifications to the City.

No materials or finished articles shall be incorporated in the work until such materials and finished articles have passed the required tests. The Contractor shall promptly segregate and remove rejected material and finished articles from the site of the work. The testing and approval of materials by an agency approved by the City shall not relieve the Contractor of any of their obligation to fulfill their contract and guarantee of workmanship and materials. The Contractor may, at their option and at their own expense, cause such other tests to be conducted as they may deem necessary to assure suitability, strength and durability of any material or finished article.

In general, materials and testing of materials shall comply with A.S.T.M. Specifications applicable, except as herein otherwise specified.

1.40 Final Acceptance of Work

(a) Clean-up: The Contractor shall plan, coordinate, and prosecute the work such that disruption to personal property and business is held to a practical minimum. All construction areas abutting lawns and yards of residential or commercial property shall be restored promptly. Backfilling of underground facilities, ditches and disturbed areas shall be accomplished on a daily basis as work is completed. Finishing, dressing and grassing shall be accomplished immediately thereafter as a continuous operation within each area being constructed with emphasis placed on completing each individual yard or business frontage. Care shall be taken to provide positive drainage to avoid ponding or concentration of run off. Handwork, including raking and smoothing, shall be required to ensure the removal of roots, sticks, rocks, and other debris in order to provide a neat and pleasing appearance. Grassing, when in season, shall immediately follow in order to establish permanent cover at the earliest date. If grassing is not in season, proper erosion control shall be installed and maintained. The City shall be authorized to stop all work by the Contractor when restoration and cleanup are unsatisfactory and to require appropriate remedial measures.

(b) Liens: Final acceptance of the work will not be granted and the retained percentage will not be due or payable until the Contractor has furnished the City proper and satisfactory evidence that all claims for labor and material employed or used in the construction of the work under this contract has been settled and that no legal claims can be filed against the City for such labor or material.

1.41 Fair Labor Standards

The Contractor shall conform to all applicable "Fair Labor Standards Provisions", which are hereto made a part of this Section by reference.

1.42 Equal Opportunity Clause

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The Contractor will comply with all provisions of Executive Order No. 11246, will furnish all information and reports required by Executive Order No. 11246, and will permit access to their books, records, and accounts by the contracting agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(d) In the event of the Contractor's non-compliance with the non-discrimination clause of this section, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in and

such other sanctions as may be imposed and remedies invoked as provided in said order or as otherwise provided by law.

(e) The Contractor will include the provisions of this section in every subcontract or purchase order unless exempted so that such provisions will be binding upon each subcontractor or vendor.

In accordance with regulations of the Secretary of Labor, the rules, regulations, orders, instructions, designations, and other directives issued by the President's Committee on Equal Employment Opportunity and those issued by the heads of various departments or agencies under or pursuant to any of the Executive Orders superseded by Executive Order 11246, shall, to the extent that they are not inconsistent with Executive Order 11246, remain in full force and effect unless and until revoked or superseded by appropriate authority. References in such directives to provisions of the superseded orders shall be deemed to be references to the comparable provisions of Executive Order No. 11246.

2.0 BID PROPOSAL

Submitted: \_\_\_\_\_, 2017

Proposal of: \_\_\_\_\_ (hereafter referred to as "Bidder"), a contractor organized and existing under the laws of the State of \_\_\_\_\_.

To: City of LaGrange, Georgia (hereafter referred to as "City"). Work to be performed:

**PROVIDE LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE GRANGER PARK WATER QUALITY POND STORMWATER IMPROVEMENT PROJECT IN LAGRANGE, GEORGIA 30240 IN ACCORDANCE WITH BID DOCUMENTS, SPECIFICATIONS, AND PLANS.**

The undersigned, as Bidder, hereby declares that the only person or persons interested in the Proposal as principals are named herein; that this Proposal is made without connection with any other person, company or parties making a bid or Proposal; and that it is in all respects fair and in good faith without collusion or fraud.

The bidder further declares that they have examined the site of the work and informed themselves fully in regard to all conditions pertaining to the place where the work is to be done; that they have examined the Specifications for the work and contractual documents relative thereto; has read all Instructions to Bidders and Special Provisions furnished prior to the opening of bids; and that they have satisfied themselves relative to the work to be performed.

The Bidder proposes and agrees, if this Proposal is accepted, to contract with the City in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of the work in full and complete accordance with the shown, noted, described, and reasonably intended requirements of the Specifications to the full and entire satisfaction of the City, with a definite understanding that no money will be allowed for extra work except as set forth in the Contract Documents.

The Bidder declares that they understand that the quantities shown in the Proposal are subject to adjustment by either increase or decrease, and that should the quantities of any of the items of work be increased, the undersigned proposes to do the additional work at the unit prices stated herein; and should the quantities be decreased, they also understand that payment will be made on actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in the quantities and that actual quantities will be determined upon completion of work, at which time adjustment will be made to the contract amount by direct increase or decrease.

The Bidder further proposes and agrees hereby to commence work under this contract on a date to be specified in a written order of the City, and shall fully complete all work thereunder within the time specified. the undersigned further agrees that, in case of failure on their part to execute the said Contract and surety bonds within 10 calendar days after written notice being given of the award of the Contract, the Check or Bid Bond accompanying this bid, and the monies payable thereon, shall be paid to the City, as liquidated damages for such failure; otherwise, the Check or Bid Bond accompanying this Proposal shall be returned to the undersigned.

Attached hereto in accordance with the Instructions to Bidders and Special Provisions is a bid bond or certified check on the:

\_\_\_\_\_ of \_\_\_\_\_ in the amount of  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

The full name and residence of persons or parties interested in the foregoing bids, as principals, are named as follows:

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

The Bidder shall state here what work they have done of similar nature and give references that will afford the City Opportunity to judge as to experience, skill, business and financial competence.

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

The following project specifics are to be performed in accordance with the contract documents:

1. All work shall be done between the hours of 7 AM and 7 PM.
2. Contractor shall install and maintain construction exit, erosion control devices, BMPs, and safety measures.
3. Contractor to provide inspection of BMPs and sampling of water at designated outfalls for turbidity.
4. Contractor to remove a portion of the existing fence and sidewalk as shown on the Drawings and protect items indicated to remain.
5. Contractor to submit pond draining and dewatering plan to Engineer for approval.
6. Contractor to dredge pond sediment to restore original pond bottom.
7. Contractor to haul dredged material offsite to designated location.
8. Contractor install new sidewalk, fence, and gate.
9. Contractor to install permanent erosion control measures and restore disturbed area to original conditions.

<u>DESCRIPTION</u>	<u>TOTAL</u>
<u>PRICE</u>	
Mobilization/Signs/Traffic Control	\$
Construction Exit, Erosion Control, BMP's, Required Safety Measures	\$
Demolition and Protection of Items to Remain	\$
Pond Draining and Dewatering	\$
Haul Off of Dredged Material	\$
Install New Fence and Gate	\$
Install New Sidewalk	\$
Clean Up and Demobilization	\$
<b>GRAND TOTAL</b>	<b>\$</b>

ALL WORK SHALL BE COORDINATED WITH CITY STREET DIVISION SUPERINTENDENT

ESTIMATED TIME FOR COMPLETION: \_\_\_\_\_ EST. START DATE OF MARCH \_\_\_\_, 2017



DATE, TITLE & SIGNATURE OF PERSON PREPARING BID:

---

NAME, ADDRESS, EMAIL ADDRESS, PHONE & FAX NUMBER OF BIDDING ORGANIZATION:

---

---

(Signed)\_\_\_\_\_ L.S.

By:\_\_\_\_\_ L.S.

Title:\_\_\_\_\_

### 3.0 CONTRACT AGREEMENT

This Agreement made and entered into on the \_\_\_\_ day of \_\_\_\_\_, 2017 by and between the City of LaGrange, Georgia, a Municipal Corporation of Troup County, party of the first part (hereinafter called the "City") and

\_\_\_\_\_ party of the second part (hereinafter called the "Contractor") to perform the following work:

#### **PROVIDE LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE GRANGER PARK WATER QUALITY POND STORMWATER IMPROVEMENT PROJECT IN LAGRANGE, GEORGIA 30240 IN ACCORDANCE WITH BID DOCUMENTS, SPECIFICATIONS, AND PLANS.**

##### WITNESSETH:

That the Contractor, for the consideration hereinafter fully set out, hereby agrees with the City as follows:

1. That the Contractor for the sum of \_\_\_\_\_ will furnish all equipment, tools, materials, skill and labor of every description, necessary to carry out and to complete in a good, firm, substantial and workmanlike manner all of the work specified in the foregoing Proposal made by the Contractor, Instructions to Bidders and Special Provisions, this Agreement, Performance and Payment Bonds, Specifications, and Exhibits which form essential parts of this Agreement as attached hereto.

2. The City shall make partial payments to the Contractor on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the Contractor, including materials delivered to the site, less TEN percent (10%) of the amount of such estimate which is to be retained by the City until all work has been performed strictly in accordance with this Agreement, and until such work has been accepted by the City. The City shall make payment within fifteen (15) days after receipt of the approved invoice. The terms of this contract are intended to supersede all provisions of the Prompt Pay Act.

3. Upon submission by the Contractor of evidence satisfactory to the City that all payrolls, material bills and other costs incurred by the Contractor in connection with the construction of the work have been paid in full, and final acceptance of the work by the City, final payment on account of this Agreement shall be made within thirty (30) days.

4. It is further mutually agreed between the parties hereto that if, at any time after the execution of this Agreement and the surety bonds hereto attached for its faithful performance, the City shall deem the surety or sureties upon such bonds to be unsatisfactory, or if, for any reason, such bonds cease to be adequate to cover the performance of the work, the Contractor shall, at their expense, within five (5) days after the receipt of notice from the City, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the City. In such event no further payment to the Contractor shall be deemed to be due under this Agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the City.

5. Any notice to any Contractor from the City relative to any part of this contract shall be in writing and considered delivered when said notice is posted by registered mail to the Contractor at their last given address, or delivered in person to said Contractor or their authorized representative on the work, or is deposited in the regular United States mail in a sealed, postage prepaid envelope and the receipt thereof is acknowledged by the Contractor.

6. All papers required to be delivered to the City shall be delivered to the City, and any notice to or demand upon the City shall be sufficiently given if delivered to the office of their business address or if deposited in the United States mail in a sealed, postage prepaid envelope addressed to the City and the receipt thereof is acknowledged by the City.

7. Upon notice from the Contractor that work is completed, the City will make a final inspection of the work, and shall notify the Contractor of all instances where their work fails to comply with the Specifications, and to the satisfaction of the City. Final payment will be held until complete acceptance by the City of all work.

8. For a period of at least one year after the completion of the contract and acceptance by City, the Contractor warrants the fitness of all work done and materials and equipment put in place under this Contract and neither the final certificate of payment nor any provision in the contract documents nor partial or entire occupancy of the premises by the City shall constitute acceptance of work not done in accordance with the contract documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting there from which shall appear within a period of one year from the date of final acceptance of the work unless a longer period is specified.

9. Pursuant to the Georgia Security and Immigration Compliance Act of 2006 the Contractor is required to comply with the requirements of O.C.G.A Section 13-10-91 and Georgia Administrative Code Rule 300-10-1-.02, regarding participation in the federal work authorization program, as a condition of this contract. In the event the Contractor employs or contracts with any subcontractor(s) in connection with this contract, the Contractor will secure from said subcontractor(s) proof of the subcontractor's compliance with O.C.G.A. Section 13-10-91 and Georgia Administrative Code Rule 300-10-1-.02 by the subcontractor's execution of an affidavit which conforms substantially to the form attached hereto as Exhibit \_\_\_\_\_. The Contractor shall require any such subcontractor affidavit to be made a part of the Contractor/Subcontractor agreement, and shall also maintain such record for inspection by the City at any time.

10. Contractor states that it has the following number of employees:

- \_\_\_\_\_ 500 or more employees
- \_\_\_\_\_ 100 or more employees
- \_\_\_\_\_ Fewer than 100 employees

11. In addition to any other exhibits attached to this contract, the Contractor Affidavit and Agreement submitted to the City in conjunction with the Contractor's bid shall be and is made a part of this contract.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement under their respective seals on the day and date first above written.

**CONTRACTOR: \_\_\_\_\_ (SEAL)**

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

Name and Title: \_\_\_\_\_

ATTEST: \_\_\_\_\_

Name and Title: \_\_\_\_\_

**CITY OF LAGRANGE, GEORGIA (SEAL)**

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

Name and Title: MEG KELSEY, CITY MANAGER

ATTEST: \_\_\_\_\_

Name and Title: TERESA TAYLOR, ASSISTANT CITY MANAGER

#### 4.0 SPECIFICATIONS AND EXHIBITS

The following forms are to be submitted with the Bid Proposal and are attached hereto:

- 1.) Certificate of Liability Insurance
- 2.) Bid Bond or Certified Check
- 3.) Contractor Affidavit and Agreement
- 4.) Subcontractor Affidavit

The following additional forms are to be submitted upon Award and are attached hereto:

- 5.) Performance Bond
- 6.) Payment Bond

<See attached>

**ACORD CERTIFICATE OF LIABILITY INSURANCE** DATE (MM/DD/YY)

PRODUCER   INSURED  <p style="text-align: center;"><b>SAMPLE - LARGE CONTRACTORS</b></p>	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.  <p style="text-align: center;"><b>INSURERS AFFORDING COVERAGE</b></p> INSURER A: INSURER B: INSURER C: INSURER D: INSURER E:
---	---

**COVERAGES**

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS								
	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC				EACH OCCURRENCE <b>\$1,000,000</b> FIRE DAMAGE (Any one fire) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY <b>\$1,000,000</b> GENERAL AGGREGATE <b>\$1,000,000</b> PRODUCTS - COMP/OP AGG <b>\$1,000,000</b>								
OR	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input checked="" type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident) <b>\$1,000,000</b> BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$								
	GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EA ACC \$ AGG \$								
	EXCESS LIABILITY <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE DEDUCTIBLE RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$								
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">WC STATU-TORY LIMITS</td> <td style="width: 50%;">OTH-ER</td> </tr> <tr> <td>E.L. EACH ACCIDENT</td> <td><b>\$1,000,000</b></td> </tr> <tr> <td>E.L. DISEASE - EA EMPLOYEE</td> <td><b>\$1,000,000</b></td> </tr> <tr> <td>E.L. DISEASE - POLICY LIMIT</td> <td><b>\$1,000,000</b></td> </tr> </table>	WC STATU-TORY LIMITS	OTH-ER	E.L. EACH ACCIDENT	<b>\$1,000,000</b>	E.L. DISEASE - EA EMPLOYEE	<b>\$1,000,000</b>	E.L. DISEASE - POLICY LIMIT	<b>\$1,000,000</b>
WC STATU-TORY LIMITS	OTH-ER												
E.L. EACH ACCIDENT	<b>\$1,000,000</b>												
E.L. DISEASE - EA EMPLOYEE	<b>\$1,000,000</b>												
E.L. DISEASE - POLICY LIMIT	<b>\$1,000,000</b>												
	OTHER												

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

CERTIFICATE HOLDER  <p style="text-align: center;"><b>CITY OF LAGRANGE</b></p>	ADDITIONAL INSURED; INSURER LETTER: _____	CANCELLATION  SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL <b>30</b> DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.
--	---	--

**CONTRACTOR AFFIDAVIT AND AGREEMENT**

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm, or corporation which is contracting with the CITY OF LAGRANGE, GEORGIA 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 of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to this contract with CITY OF LAGRANGE, contractor will secure from such subcontractor(s) similar verification of compliance with O.C.G.A. 13-10-91 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 CITY OF LAGRANGE at the time the subcontractor(s) is retained to perform such service.

\_\_\_\_\_  
EEV / Basic Pilot Program\* User Identification Number

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

\_\_\_\_\_  
BY: Authorized Officer or Agent  
(Contractor Name)

\_\_\_\_\_  
Date

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

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

SUBSCRIBED AND SWORN BEFORE ME ON THIS  
THE \_\_\_\_ DAY OF \_\_\_\_\_, 2017.

\_\_\_\_\_  
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 the "EEV / Basic Pilot Program" 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).

**(End of Form)**

## SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with \_\_\_\_\_  
\_\_\_\_\_ (name of contractor) on behalf of **CITY OF LAGRANGE** 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 of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

\_\_\_\_\_  
EEV / Basic Pilot Program\* User Identification Number

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

\_\_\_\_\_  
BY: Authorized Officer or Agent  
(Subcontractor Name)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title of Authorized Officer or Agent of Subcontractor

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

SUBSCRIBED AND SWORN BEFORE ME ON  
THIS THE \_\_\_\_ DAY OF \_\_\_\_\_, 2017.

\_\_\_\_\_  
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 the "EEV / Basic Pilot Program" 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).

**(End of Form)**

**PERFORMANCE BOND**

STATE OF GEORGIA        }  
COUNTY OF TROUP       } ss.  
CITY OF LAGRANGE       }

KNOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_

as Principal, and \_\_\_\_\_  
as surety, are held and firmly bound unto the City of LaGrange in the full sum

of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for  
payment of which well and truly be made, we bind ourselves, our heirs, executors, administrators, successors and assigns,  
jointly and severally, by these presents.

WHEREAS, the above bound Principal has entered into a contract with the City of LaGrange, Georgia dated the \_\_\_\_\_ day of  
\_\_\_\_\_, 2017, for the construction of \_\_\_\_\_

NOW, THEREFORE, the conditions of this obligation are such that if terms and conditions of said contract and such alterations or  
additions as made be made therein or in the plans and specifications, and shall indemnify and save the City of LaGrange, Georgia harmless  
against any claims for using any form of material, process, composition or anything which is patented, and likewise indemnify and save the  
owner or to the City, if the City is not the Owner, harmless against all claims damages by reason of any default or negligence, want of skill  
or care on part of said Principal or Agents in and about the performance of said of contract, and shall comply with all laws pertaining to  
said work, and shall comply with and perform any guarantee provided for in said contract, then this obligation shall be void, otherwise of  
full force and effect.

And the surety of this bond, for value received, agrees that no change, extensions of time, alterations or additions to the terms of the  
contract or to the work to be performed thereunder or the specifications accompanying the same shall in any wise affect its obligations on  
this bond, and it does hereby waive notice of such change, extension of time, alterations or additions to the terms of the contract or the  
work or to the plans and specifications.

IN WITNESS WHEREOF, the Principal and the surety have caused these presents to be duly signed and sealed this \_\_\_\_\_ day of  
\_\_\_\_\_, 2017

(As to Principal) \_\_\_\_\_ L.S.  
PRINCIPAL

Signed, sealed and delivered in the presence of:

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

(As to surety) \_\_\_\_\_  
SURETY

Signed, sealed and delivered in the presence of :

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



**PAYMENT BOND**

STATE OF GEORGIA)

COUNTY OF TROUP } ss: CITY OF LAGRANGE} KNOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ as Principal, and \_\_\_\_\_

\_\_\_\_\_, as surety, are held and firmly bound unto the City of LaGrange, Georgia in the full sum of \_\_

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the use and protection of said owner or city if the City is not the owner, and all subcontractors and all persons supplying labor, materials, machinery and equipment for the performance of the work provided for in the contract hereinafter referred to, for the payment of which well and truly to be made we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the above bound Principal has entered into a contract with the City of LaGrange, Georgia dated the \_\_\_\_\_ day of \_\_\_\_\_, 2017, for the construction of \_\_\_\_\_

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

NOW THEREFORE, the conditions of this obligation are such that if the above bound Principal shall promptly pay all subcontractors and all other persons supplying labor, materials, machinery and equipment furnished for the performance of the work provided for by said contract and such alterations or additions as may be made therein or in the plans and specifications, then this bond to be void; otherwise, of full force and effect.

And the surety of this bond, for value received, agrees that no change, extensions of time, alterations or additions to the terms of this contract or to the work to be performed thereunder or the specifications accompanying the same shall in any wise 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 the work or to the plans and specifications.

It is agreed that this bond is executed pursuant to and in accordance with the provisions of Sections 13-10-1 et seq. of the Code of Georgia, as amended, and is intended to be and shall be construed to be a bond in compliance with the requirements thereof.

IN WITNESS WHEREOF, the Principal and the surety have caused these presents to be duly signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 2017.

(As to Principal)

\_\_\_\_\_ L.S.  
Principal

Signed, sealed and delivered in the presence of:  
  
\_\_\_\_\_  
\_\_\_\_\_

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

(As to surety)

\_\_\_\_\_  
Surety

Signed, sealed and delivered in the presence of:  
  
\_\_\_\_\_  
\_\_\_\_\_

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

## SECTION 01 20 00

### PRICE AND PAYMENT PROCEDURES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Scope of Work.
- B. Lump sum items.
- C. Allowances.
- D. Schedule of values.
- E. Applications for payment.
- F. Change procedures.
- G. Defect assessment.

##### 1.2 SCOPE OF WORK

- A. Only quantities listed in the bid schedule shall be measured for payment, unless the Owner has approved extra work in accordance with the Contract Documents and has so advised the Contractor before the work was actually performed.
- B. Any and all other materials, labor, etc., furnished and required shall be considered as incidental to the items to be measured.
- C. The unit or lump sum prices bid for the various items shall be full compensation for furnishing all materials, tools, equipment, labor and incidentals necessary and required to complete the work as shown on the plans and called for in the specifications.
- D. The quantities to be paid for shall be determined by actual measurement of the amounts placed. The Owner shall make all measurements and the Contractor shall make certain all work has been measured before concealing; otherwise, Contractor may be required to uncover or make accessible any work so concealed in order to receive payment for such items.

##### 1.3 LUMP SUM ITEMS

- A. All items shown on the drawings or called for in the specifications and not specifically shown in the bid schedule will be paid for at the lump sum price shown in the bid. Lump sum items will be paid for based on approved construction schedules and percentage of lump sum item actually completed at time of pay request.
- B. Include all items required for normal construction in the lump sum bid.

#### 1.4 ALLOWANCES

- A. NONE

#### 1.5 SCHEDULE OF VALUES

- A. Submit printed schedule on Contractor's standard form or electronic media printout.
- B. Submit Schedule of Values in duplicate within fifteen (15) days after date of the Contract.
- C. Format: Utilize Table of Contents of this Project Manual.
- D. Revise schedule to list approved Change Orders, with each Application for Payment.

#### 1.6 APPLICATIONS FOR PAYMENT

- A. Submit three (3) copies of each application on Appendix A - Contractor's Application for Payment.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Submit updated construction schedule with each Application for Payment.
- D. Payment Period: Submit at intervals stipulated in the Contract, normally monthly.
- E. Include a cover letter identifying the following:
  - 1. Project.
  - 2. Application number and date.
  - 3. Detailed list of enclosures.
  - 4. For stored products:
    - a. Description of specific material.
- F. Substantiating Data: When the Owner requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
  - 1. Current construction photographs.
  - 2. Partial release of liens from major subcontractors and vendors.
  - 3. Record documents for review by the Owner which will be returned to Contractor.
  - 4. Affidavits attesting to off-site stored products.
  - 5. Construction progress schedules, revised and current.

#### 1.7 CHANGE PROCEDURES

- A. Submittals: Submit name of individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. The Owner will advise of minor changes in the Work not involving adjustment to Contract Price or Contract Time by issuing work directives.

- C. The Engineer may issue a Proposal Request including a detailed description of proposed change with supplementary or revised Drawings and specifications, and a change in Contract Time for executing the change.
- D. Contractor may propose changes by submitting a request for change to the Owner, describing proposed change and its full effect on the Work. Include a statement describing reason for the change, and effect on Contract Price and Contract Time. Changes proposed by Contractor must be included within a Change Order, which must be approved by the Owner before it becomes effective.
- E. Stipulated Price Change Order: Based on Proposal Request or Contractor's request for Change Order as approved by the Owner.
- F. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under Work Directive Change. Changes in Contract Price or Contract Time will be computed as specified for Time and Material Change Order.
- G. Work Directive Change: Engineer may issue directive signed by the Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Price or Contract Time. Promptly execute change.
- H. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. The Owner will determine change allowable in Contract Price and Contract Time as provided in Contract Documents.
- I. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
- J. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.
- K. Change Order Forms: Appendix B - Change Order.
- L. Execution of Change Orders: the Owner will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
- M. Correlation Of Contractor Submittals:
  1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Price.
  2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
  3. Promptly enter changes in Project Record Documents.

## 1.8 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Owner, it is not practical to remove and replace the Work, the Owner will direct appropriate remedy or adjust payment.
- C. The defective Work may remain, but unit price will be adjusted to new at discretion of the Owner.
- D. Defective Work will be partially repaired to instructions of the Owner, and unit price will be adjusted to new price at discretion of the Owner.
- E. Individual specification sections may modify these options or may identify specific formula or percentage price reduction.
- F. Authority of Owner to assess defects and identify payment adjustments is final.
- G. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
  - 1. Products wasted or disposed of in a manner that is not acceptable.
  - 2. Products determined as unacceptable before or after placement.
  - 3. Products not completely unloaded from transporting vehicle.
  - 4. Products placed beyond lines and levels of required Work.
  - 5. Products remaining on hand after completion of the Work.
  - 6. Loading, hauling, and disposing of rejected products.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

## SECTION 01 30 00

### ADMINISTRATIVE REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Field engineering.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.

##### 1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

##### 1.3 FIELD ENGINEERING

- A. Employ Land Surveyor registered in State of Georgia and acceptable to the Owner.
- B. Engineer will furnish coordinate positions of all key components to allow Land Surveyor to properly lay out the work. Promptly notify Engineer of discrepancies discovered.

- C. Control datum for survey is that shown on Drawings.
- D. Verify set-backs and easements; confirm drawing dimensions and elevations.
- E. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- F. Submit copy of certificate signed by Land Surveyor certifying elevations and locations of the Work are in conformance with Contract Documents.
- G. Maintain complete and accurate log of control and survey work as Work progresses.
- H. On completion of foundation walls and major site improvements, prepare certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.
- I. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- J. Promptly report to Engineer relocation required because of changes in grades or other reasons.
- K. Make no changes without prior written notice to Engineer.

#### 1.4 PRECONSTRUCTION MEETING

- A. The Owner will schedule meeting after Notice of Award.
- B. Attendance Required: The Owner, Contractor and affected utility companies.
- C. Agenda:
  1. Execution of the Contract.
  2. Submission of executed bonds and insurance certificates.
  3. Distribution of Contract Documents.
  4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
  5. Designation of personnel representing parties in Contract.
  6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  7. Scheduling.
  8. Scheduling activities of Geotechnical Engineer.
- D. Record minutes and distribute copies within five (5) days after meeting to participants, with copies to the Owner and those affected by decisions made.

#### 1.5 SITE MOBILIZATION MEETING

- A. The Owner will schedule meeting at Project site prior to Contractor occupancy.
- B. Attendance Required: The Owner, and Contractor, Contractor's Superintendent, and major Subcontractors.
- C. Agenda:

1. Use of premises by Owner and Contractor.
2. Owner's requirements and occupancy.
3. Construction facilities and controls.
4. Temporary utilities.
5. Survey and layout./
6. Security and housekeeping procedures.
7. Schedules.
8. Application for payment procedures.
9. Procedures for testing.
10. Procedures for maintaining record documents.
11. Requirements for start-up of equipment.
12. Inspection and acceptance of equipment put into service during construction period.

- D. Record minutes and distribute copies within five (5) days after meeting to participants, with copies to the Owner and those affected by decisions made.

## 1.6 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- C. Attendance Required: Job superintendent, major subcontractors and suppliers, the Owner, as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

- E. Record minutes and distribute copies within five (5) days after meeting to participants, with copies to the Owner and those affected by decisions made.



PART 2 PRODUCTS - Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

## SECTION 01 33 00

### SUBMITTAL PROCEDURES

#### PART 1 GENERAL

##### 1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

##### 1.2 SUMMARY:

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work: including;
  - 1. Contractor's construction schedule.
  - 2. Shop Drawings.
  - 3. Product Data.
- B. Administrative Submittals: Refer to other Contract Document Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
  - 1. Application for payment.
  - 2. Performance and payment bonds.
  - 3. Insurance certificates.

##### 1.3 SUBMITTAL PROCEDURES:

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
- B. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
- C. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
- D. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- E. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals.
- F. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Engineer will

promptly advise the Contractor when a submittal being processed must be delayed for coordination.

- G. If an intermediate submittal is necessary, process the same as the initial submittal.
  - H. Allow two weeks for reprocessing each submittal.
  - I. No extension of Contract Time will be authorized because-of failure to transmit submittals to the Engineer sufficiently in advance of the Work to permit processing.
  - J. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
  - K. Provide two spaces each approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's and the Engineer's review and approval markings and the action taken.
  - L. Include the following information on the label for processing and recording action taken.
    - 1. Project name.
    - 2. Date.
    - 3. Name and address of Engineer.
    - 4. Name and address of Contractor.
    - 5. Name and address of subcontractor.
    - 6. Name and address of supplier.
    - 7. Name of manufacturer.
    - 8. Number and title of appropriate Specification Section.
    - 9. Drawing number and detail references, as appropriate.
  - M. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Engineer using a transmittal form. Submittals received from sources other than the Contractor will be returned without action. Submittals received by facsimile transmission will not be accepted for processing and must be followed by transmittal via U. S. mail or similar delivery.
  - N. On the transmittal Record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.
- 1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE:
- A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit finalized schedule prior to submission of the first Application for Payment.

- B. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the Schedule of Values
- C. Within each time bar indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate actual Completion.
- D. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period but no wider than 36".
- E. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
- F. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
- G. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Engineer's procedures necessary for certification of Substantial Completion.
- H. Cost Correlation: At the head of the schedule, provide a two item cost correlation line, indicating "precalculated" and "actual" costs. On the line show dollar-volume of Work performed as of the dates used for preparation of payment requests.
- I. Refer to Section "Applications for Payment" for cost reporting and payment procedures.
- J. Distribution: Following response to the initial submittal, print and distribute duplicate copies to the Engineer, and single copies to the Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the temporary field office, if provided.
- K. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- L. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made.

## 1.5 SHOP DRAWINGS:

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation, drawing, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
  - 1. Dimensions
  - 2. Identification of products and materials included.
  - 3. Compliance with specified standards.
  - 4. Notation of coordination requirements.
  - 5. Notation of dimensions established by field measurement.
- C. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 24" x 36".
- D. Submittals: Submit 5 blue- or black-line prints for the Engineer's review plus the number of reviewed copies required by the Contractor. Where a submittal requires resubmission, only two copies of the initial submittal will be returned.
- E. One of the prints returned shall be marked-up and maintained as a "Record Document".
- F. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

## 1.6 PRODUCT DATA:

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."
- B. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
  - 1. Manufacturer's printed recommendations.
  - 2. Compliance with recognized trade association standards
  - 3. Compliance with recognized testing agency standards
  - 4. Application of testing agency labels and seals
  - 5. Notation of dimensions verified by field measurement
  - 6. Notation of coordination requirements

- C. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
- D. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.
- E. Submittals: Submit 5 copies plus the number of copies required by the Contractor of each required submittal. The Engineer will retain 3, and will return the others marked with action taken. If corrections or modifications are required and a re-submittal is necessary, only two copies will be returned.
- F. Unless significant noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
- G. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
- H. Do not proceed with installation until an applicable copy of Product Data is in the installer's possession.
- I. Do not permit use of unmarked copies of Product Data in connection with construction.

1.7 ENGINEER'S ACTION:

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Engineer will review each submittal, mark to indicate action taken, and return promptly.
- B. Compliance with specified characteristics is the Contractor's responsibility.
- C. Action Stamp: The Engineer will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

<b>SHOP DRAWING REVIEW</b>	
REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS. NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS.	
NO EXCEPTIONS TAKEN	
MAKE CORRECTIONS NOTED	
AMEND & RESUBMIT	
REJECTED - SEE REMARKS	
<b>RINDT-McDUFF ASSOCIATES, INC.</b>	
Date	_____
By	_____

- D. Final Unrestricted Release: Where submittals are marked "NO EXCEPTIONS TAKEN," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
- E. Final-But-Restricted Release: When submittals are marked "MAKE CORRECTIONS NOTED," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
- F. Returned for Re-submittal: When submittal is marked "AMEND & RESUBMIT", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark. Do not permit submittals marked "AMEND & RESUBMIT," to be used at the Project site, or elsewhere where Work is in progress.
- G. Return for Re-submittal: When submittal is marked "REJECTED - SEE REMARKS", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Submittal has missed the intent of the plans and specifications and new product(s) may need to be resubmitted.
- G. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required".

PART 2 PRODUCTS (Not Applicable.)

PART 3 EXECUTION (Not Applicable.)

END OF SECTION

SECTION 01 40 00  
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality control and control of installation.
- B. Tolerances.
- C. References.
- D. Labeling.
- E. Testing and inspection services.
- F. Manufacturers' field services.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. 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.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.



- C. Adjust products to appropriate dimensions; position before securing products in place.

#### 1.4 REFERENCES

- A. For products or workmanship specified by association, trades, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for receiving bids, date of the Contract when there are no Bids, except where specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. Neither contractual relationships, duties, responsibilities of parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.

#### 1.5 LABELING

- A. Attach label from agency approved by authority having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:
  - 1. Model number.
  - 2. Serial number.
  - 3. Performance characteristics.

#### 1.6 TESTING AND INSPECTION SERVICES

- A. Contractor will employ services of an independent firm to perform testing and inspection. Contractor shall pay for services from lump sum items specified in Section 01 20 00 - Price and Payment Procedures.
- B. Independent firm will perform tests, inspections and other services specified in individual specification sections and as required by the Owner.
  - 1. Laboratory: Authorized to operate in State of Georgia.
  - 2. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing as required by Engineer or the Owner.
- D. Frequency of soil or granular compaction tests:
  - 1. Test every 6" lift of granular backfill (A1) every 10 linear feet along centerline of trench.

2. Test every 6" lift of select backfill (S2) every 10 linear feet along centerline of trench under roadway.
  3. Test every 6" lift of select backfill (S2) every 20 linear feet along centerline of trench outside roadway.
- E. Reports will be submitted by independent firm to Engineer, Contractor, and the Owner, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
1. Submit final report indicating correction of Work previously reported as non-compliant.
- F. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
1. Notify the Owner and independent firm 24 hours prior to expected time for operations requiring services.
  2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- G. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- H. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Engineer or the Owner. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Price.
- I. Agency Responsibilities:
1. Test samples of mixes submitted by Contractor.
  2. Provide qualified personnel at site. Cooperate with the Owner and Contractor in performance of services.
  3. Perform specified sampling and testing of products in accordance with specified standards.
  4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  5. Promptly notify the Owner and Contractor of observed irregularities or non-conformance of Work or products.
  6. Perform additional tests required by the Owner.
  7. Attend preconstruction meetings and progress meetings.
- J. Agency Reports: After each test, promptly submit two copies of report to the Owner, Contractor, and authority having jurisdiction. When requested by the Owner, provide interpretation of test results. Include the following:
1. Date issued.
  2. Project title and number.
  3. Name of inspector.
  4. Date and time of sampling or inspection.
  5. Identification of product and specifications section.
  6. Location in Project.
  7. Type of inspection or test.
  8. Date of test.
  9. Results of tests.

10. Conformance with Contract Documents.

K. Limits On Testing Authority:

1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
3. Agency or laboratory may not assume duties of Contractor.
4. Agency or laboratory has no authority to stop the Work.

1.7 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment, and to initiate instructions when necessary.
- B. Submit qualifications of observer to the Owner thirty (30) days in advance of required observations. Observer subject to approval of the Owner.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

## SECTION 01 50 00

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Temporary Utilities:
  - 1. Temporary electricity.
  - 2. Temporary lighting for construction purposes.
  - 3. Temporary sanitary facilities.
- B. Construction Facilities:
  - 1. Vehicular access.
  - 2. Parking.
  - 3. Progress cleaning and waste removal.
  - 4. Project identification sign.
  - 5. Traffic regulation.
  - 6. Fire prevention facilities.
- C. Temporary Controls:
  - 1. Barriers.
  - 2. Enclosures and fencing.
  - 3. Security.
  - 4. Water control.
  - 5. Dust control.
  - 6. Erosion and sediment control.
  - 7. Noise control.
  - 8. Pest control.
  - 9. Pollution control.
- D. Removal of utilities, facilities, and controls.

##### 1.2 TEMPORARY ELECTRICITY

- A. Provide and pay for power service required from utility source as needed for construction operation.

##### 1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain adequate artificial lighting for construction operations when natural light is not adequate for work.

##### 1.4 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide facilities at time of project mobilization.

- B. Contractor shall pay all costs for installation, maintenance, and removal of temporary sanitary facilities.

#### 1.5 VEHICULAR ACCESS

- A. Provide adequate detour signage and notification to residents for full road closure.
- B. Obtain permission from appropriate agency and Owner for full road closure prior to any construction activity.
- C. Provide and maintain all temporary traffic control devices for traffic detouring per construction plans.
- D. Maintain 20 feet wide driveways with turning space between and around combustible materials.
- E. Provide and maintain access to fire hydrants and control valves free of obstructions.
- F. Provide means of removing mud from vehicle wheels before entering streets.
- G. Use existing on-site roads for construction traffic. Contractor to get permission from appropriate agency.

#### 1.6 PARKING

- A. Provide temporary gravel surface parking areas to accommodate construction personnel.
- B. Locate as approved by Engineer.
- C. When site space is not adequate, provide additional off-site parking.
- D. Do not allow heavy vehicles or construction equipment in parking areas.
- E. Do not allow parking of construction equipment on existing pavement.
- F. Maintenance:
  - 1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
  - 2. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.
- G. Removal, Repair:
  - 1. Remove temporary materials and construction before Substantial Completion.
  - 2. Repair existing facilities damaged by use to original condition.
- H. Mud from Site Vehicles: Provide means of removing mud from vehicle wheels before entering streets. Clear roadway of any debris at the end of each workday.

## 1.7 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
- B. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.

## 1.8 PROJECT IDENTIFICATION

- A. NONE

## 1.9 TRAFFIC REGULATION

- A. Provide traffic control devices conforming to the latest Manual for Uniform Traffic Control (MUTCD) standards.
- B. Conform to the Georgia Department of Transportation (GDOT) Construction Details and Specifications latest revision.
- C. Traffic Control Devices:
  - 1. Signs and their supports, signals, pavement markings, barricades with sandbags, channelized devices, warning lights, arrowboards, flaggers, or any other device used for the purpose of regulating, warning or guiding traffic through the construction zone or detour route.
  - 2. Must be in proper, acceptable condition when in use. Devices which are unclear, damaged, or not correctly positioned shall be promptly restored to fully operational condition.
- D. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.
- E. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
- F. Haul Routes:
  - 1. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
  - 2. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.
- G. Traffic Signs And Signals:
  - 1. Provide signs at approaches to site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
  - 2. Provide, operate, and maintain [automatic] traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
  - 3. Relocate as Work progresses, to maintain effective traffic control.
- H. Removal:
  - 1. Remove equipment and devices when no longer required.

2. Repair damage caused by installation.
3. Remove post settings to depth of 2 feet.

#### 1.10 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to allow for Owner's use of Site, and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.
  1. Protect areas within drip lines from traffic, parking, storage, dumping, chemically injurious materials and liquids, ponding, and continuous running water.
  2. Provide 6-foot high barriers around drip line, with access for maintenance.
  3. Replace trees and plants damaged by construction operations.
- C. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.

#### 1.11 SECURITY

- A. Security Program:
  1. Protect Work from theft, vandalism, and unauthorized entry.
  2. Initiate program at project mobilization.
  3. Maintain program throughout construction period until Owner acceptance precludes need for Contractor security.
- B. Entry Control:
  1. Restrict entrance of persons and vehicles to Project Site.
  2. Allow entrance only to authorized persons with proper identification.
  3. Coordinate access of Owner's personnel to Site in coordination with Owner's security forces.

#### 1.12 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment if needed.
- B. Protect site from puddles or running water.

#### 1.13 DUST CONTROL

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

#### 1.14 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize surface area of bare soil exposed at one time.

- C. Provide temporary measures including berms, dikes, and drains, and other devices to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- F. Comply with sediment and erosion control plan indicated on Drawings.
- G. Comply with any federal, state, or local requirements for working within drainage ditches and/or streams.
  - 1. United States Army Corps of Engineers (USACE) latest rules and regulations for culvert installation.
  - 2. Georgia Environmental Protection Division (GA EPD) and the Environmental Protection Agency (EPA) latest rules and regulation for construction measures within state and local stream buffers.
- H. Additional best management practices (BMP's) may be needed that are not shown on the construction plans. Provide any additional erosion control measures needed to minimize soil runoff.

#### 1.15 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.

#### 1.16 PEST CONTROL

- A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work.

#### 1.17 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
- B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

#### 1.18 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.



PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

## SECTION 01 70 00

### EXECUTION AND CLOSEOUT REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Project record documents.
- C. Operation and maintenance data.
- D. Spare parts and maintenance products.
- E. Product warranties and product bonds.
- F. Examination.
- G. Preparation.
- H. Execution.
- I. Cutting and Patching.
- J. Protecting installed construction.
- K. Final cleaning.

##### 1.2 CLOSEOUT PROCEDURES

- A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
  - 1. Submit maintenance manuals, Project record documents, digital images of construction photographs, and other similar final record data in compliance with this Section.
  - 2. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
  - 3. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
  - 4. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
  - 5. Make final change-over of locks and transmit keys directly to Owner. Advise Owner's personnel of change-over in security provisions.

6. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
  7. Perform final cleaning according to this Section.
- B. Substantial Completion Inspection:
1. When Contractor considers Work to be substantially complete, submit to the Owner the following:
    - a. A written notice stating the work, or designated portion thereof, is substantially complete.
    - b. List of items to be completed or corrected (initial punch list).
    - c. A request for a date of inspection.
  2. Within seven days after receipt of request for Substantial Completion, Owner will make inspection to determine whether Work or designated portion is substantially complete.
  3. Should Owner determine that Work is not substantially complete:
    - a. Owner will promptly notify Contractor in writing, stating reasons for its opinion.
    - b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Owner.
    - c. Owner will reinspect Work.
    - d. Redo and Inspection of Deficient Work: Repeated until Work passes Owner's inspection.
  4. When Owner finds that Work is substantially complete, Owner will:
    - a. Prepare Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Engineer and Owner (final punch list).
    - b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
  5. After Work is substantially complete, Contractor shall:
    - a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
    - b. Complete Work listed for completion or correction within time period stipulated.
- C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
1. When Contractor considers Work to be complete, submit written certification that:
    - a. Contract Documents have been reviewed.
    - b. Work has been examined for compliance with Contract Documents.
    - c. Work has been completed according to Contract Documents.
    - d. Work is completed and ready for final inspection.
  2. Submittals: Submit following:
    - a. Final punch list indicating all items have been completed or corrected.
    - b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
    - c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
    - d. Accounting statement for final changes to Contract Sum.
    - e. Contractor's affidavit of payment of debts and claims.
    - f. Contractor affidavit of release of liens.
    - g. Consent of surety to final payment.
  3. Perform final cleaning for Contractor-soiled areas according to this Section.

- D. Final Completion Inspection:
  - 1. Within seven days after receipt of request for final inspection, Owner will make inspection to determine whether Work or designated portion is complete.
  - 2. Should Owner consider Work to be incomplete or defective:
    - a. Owner will promptly notify Contractor in writing, listing incomplete or defective Work.
    - b. Contractor shall remedy stated deficiencies and send second written request to Owner that Work is complete.
    - c. Owner will reinspect Work.
    - d. Redo and Inspection of Deficient Work: Repeated until Work passes Owner's inspection.

### 1.3 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed Shop Drawings, Product Data, and Samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Product substitutions or alternates utilized.
  - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
  - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements, or located by GPS to sub-meter accuracy.
  - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  - 3. Field changes of dimension and detail.
  - 4. Details not on original Contract drawings.
- G. Submit documents to Owner with claim for final Application for Payment.

### 1.4 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, after completion of applicable item of work.

- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include Table of Contents and assemble in three D side ring binder with durable cover.
- F. Submit prior to final Application for Payment.
- G. Time Of Submittals:
  - 1. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
  - 2. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

## PART 2 PRODUCTS - Not Used

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that 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 that utility services are available with correct characteristics and in correct locations.

### 3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.
- 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.

### 3.3 EXECUTION

- A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.

- B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.
- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
  - 1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
  - 2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
  - 3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Engineer for final decision.
- E. Allow for expansion of materials and building movement.
- F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
  - 1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
  - 2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.
- G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.
  - 1. Refer questionable mounting heights choices to Engineer for final decision.
  - 2. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.
- H. Adjust operating products and equipment to ensure smooth and unhindered operation.
- I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

### 3.4 CUTTING AND PATCHING

- A. Employ skilled and experienced installers to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
  - 1. Structural integrity of element.
  - 2. Integrity of weather-exposed or moisture-resistant elements.
  - 3. Efficiency, maintenance, or safety of element.
  - 4. Visual qualities of sight-exposed elements.
  - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching to complete Work and to:
  - 1. Fit the several parts together, to integrate with other Work.
  - 2. Uncover Work to install or correct ill-timed Work.

3. Remove and replace defective and nonconforming Work.
  4. Remove samples of installed Work for testing.
  5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.
  - E. Cut masonry and concrete materials using masonry saw or core drill.
  - F. Restore Work with new products according to requirements of Contract Documents.
  - G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.
  - H. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
  - I. Identify hazardous substances or conditions exposed during the Work to Owner for decision or remedy.

### 3.5 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- C. Prohibit traffic from landscaped areas.

### 3.6 FINAL CLEANING

- A. Execute final cleaning prior to final Project assessment.
  1. Employ experienced personnel or professional cleaning firm.
- B. Clean Site; sweep paved areas, rake clean landscaped surfaces.
- C. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION

## SECTION 03 10 00

### CONCRETE FORMING AND ACCESSORIES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Formwork for cast-in place concrete.
  - 2. Shoring, bracing, and anchorage.
  - 3. Openings for other affected work.
  - 4. Form accessories.
  - 5. Form stripping.
- B. Related Sections:
  - 1. Section 03 30 00 - Cast-In-Place Concrete.

##### 1.2 REFERENCES

- A. American Concrete Institute:
  - 1. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
  - 2. ACI 301 - Specifications for Structural Concrete.
  - 3. ACI 318 - Building Code Requirements for Structural Concrete.
  - 4. ACI 347 - Guide to Formwork for Concrete.
- B. ASTM International:
  - 1. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
  - 2. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

##### 1.3 DESIGN REQUIREMENTS

- A. Design, engineer and construct formwork, shoring and bracing in accordance with ACI 318 to conform to design and applicable code requirements to achieve concrete shape, line and dimension as indicated on Drawings.
  - 1. Indicate design data for formwork.
  - 2. Indicate loads transferred to structure during process of concreting, shoring and reshoring.
  - 3. Include structural calculations to support design.

##### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 318.
- B. For wood products furnished for work of this Section, comply with American Forest and Paper Association (AF&PA).



## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver void forms and installation instructions in manufacturer's packaging.
- B. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

## 1.6 COORDINATION

- A. Coordinate this Section with other sections of work, requiring attachment of components to formwork.

## PART 2 PRODUCTS

### 2.1 FORM MATERIALS

- A. Lumber Forms:
  - 1. Application: Use for edge forms and unexposed finish concrete.
  - 2. Boards: "Standard" Grade Douglas Fir; straight, dressed all sides, uniform width and thickness, free from surface defect and of a sufficient grade to support the designed loads.
- B. Plywood Forms:
  - 1. Application: Use for exposed finish concrete.
  - 2. Forms: waterproof, resin-boned, exterior type Douglas Fir.
- C. Prefabricated Steel Forms: Will be of sufficient quality to assure the structure will meet all code requirements.

### 2.2 FORMWORK ACCESSORIES

- A. Form Ties: Snap-off type, galvanized metal, adjustable length, cone type, with waterproofing washer, free of defects capable of leaving holes larger than 7/8 inch in concrete surface.
- B. Spreaders: Standard, non-corrosive metal form clamp assembly, of type acting as spreaders and leaving no metal within 1 inch of concrete face. Wire ties, wood spreaders or through bolts are not permitted.
- C. Form Anchors and Hangers:
  - 1. Do not use anchors and hangers exposed to concrete leaving exposed metal at concrete surface.
  - 2. Symmetrically arrange hangers supporting forms from structural steel members to minimize twisting or rotation of member.
  - 3. Penetration of structural steel members is not permitted.
- D. Form Release Agent: Colorless mineral oil that will not stain concrete, or absorb moisture. Manufactured by Richmond "Rich Cote" or L & M "Debond", or equal.
- E. Vapor Retarder: Where indicated on Drawings, 8 mil thick polyethylene sheet.

- F. Bituminous Joint Filler: ASTM D1751.
- G. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Size, strength and character to maintain formwork in place while placing concrete.
- H. Water Stops: Rubber or Polyvinyl chloride, minimum 1,750 psi tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.
- I. Fillets for Chamfered Corners: 3/4 inch wood strips.

## 2.3 COATINGS

- A. Coatings for Aluminum: Polyamide epoxy finish coat with paint manufacturer's recommended primer for aluminum substrate. Apply one coat primer and one coat finish.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify lines, levels, and centers before proceeding with formwork. Verify dimensions agree with Drawings.
- C. When formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Engineer.

### 3.2 INSTALLATION

- A. Earth Forms:
  - 1. Earth forms are not permitted.
- B. Formwork - General:
  - 1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless it can be demonstrated that top forms can be omitted.
  - 2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
  - 3. Camber forms where necessary to produce level finished soffits unless otherwise shown on Drawings.
  - 4. Carefully verify horizontal and vertical positions of forms. Correct misaligned or misplaced forms before placing concrete.
  - 5. Complete wedging and bracing before placing concrete.
- C. Forms for Smooth Finish Concrete:
  - 1. Use steel, plywood or lined board forms.
  - 2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.

3. Install form lining with close-fitting square joints between separate sheets without springing into place.
  4. Use full size sheets of form lines and plywood wherever possible.
  5. Tape joints to prevent protrusions in concrete.
  6. Use care in forming and stripping wood forms to protect corners and edges.
  7. Level and continue horizontal joints.
  8. Keep wood forms wet until stripped.
- D. Forms for Surfaces to Receive Membrane Waterproofing: Use plywood or steel forms. After erection of forms, tape form joints to prevent protrusions in concrete.
- E. Framing, Studding and Bracing:
1. Space studs at 16 inches on center maximum for boards and 12 inches on center maximum for plywood.
  2. Size framing, bracing, centering, and supporting members with sufficient strength to maintain shape and position under imposed loads from construction operations.
  3. Construct beam soffits of material minimum of 2 inches thick.
  4. Distribute bracing loads over base area on which bracing is erected.
  5. When placed on ground, protect against undermining, settlement or accidental impact.
- F. Erect formwork, shoring, and bracing to achieve design requirements, in accordance with requirements of ACI 318.
- G. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- H. Obtain Engineer's approval before framing openings in structural members not indicated on Drawings.
- I. Install fillet and chamfer strips on external corners of beams, joists, and columns.
- J. Install void forms in accordance with manufacturer's recommendations.

### 3.3 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Reuse and Coating of Forms: Thoroughly clean forms and reapply form coating before each reuse. For exposed work, do not reuse forms with damaged faces or edges. Apply form coating to forms in accordance with manufacturer's specifications. Do not coat forms for concrete indicated to receive "scored finish". Apply form coatings before placing reinforcing steel.

### 3.4 INSTALLATION - INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Install formed openings for items to be embedded in or passing through concrete work.

- B. Locate and set in place items required to be cast directly into concrete.
- C. Coordinate with Work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.
- D. Install accessories straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- E. Install water stops continuous without displacing reinforcement. [Heat seal joints watertight.]
- F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.
- H. Form Ties:
  - 1. Use sufficient strength and sufficient quantity to prevent spreading of forms.
  - 2. Place ties at least 1 inch away from finished surface of concrete.
  - 3. Leave inner rods in concrete when forms are stripped.
  - 4. Space form ties equidistant, symmetrical and aligned vertically and horizontally unless otherwise shown on Drawings.
- I. Arrangement: Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.
- J. Construction Joints:
  - 1. Install surfaced pouring strip where construction joints intersect exposed surfaces to provide straight line at joints.
  - 2. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.
  - 3. Show no overlapping of construction joints. Construct joints to present same appearance as butted plywood joints.
  - 4. Arrange joints in continuous line straight, true and sharp.
- K. Embedded Items:
  - 1. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, water stops, and other features.
  - 2. Do not embed wood or uncoated aluminum in concrete.
  - 3. Obtain installation and setting information for embedded items furnished under other Specification sections.
  - 4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
  - 5. Verify conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 for size and location limitations.
- L. Openings for Items Passing Through Concrete:
  - 1. Frame openings in concrete where indicated on Drawings. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.

2. Coordinate work to avoid cutting and patching of concrete after placement.
3. Perform cutting and repairing of concrete required as result of failure to provide required openings.

M. Screeds:

1. Set screeds and establish levels for tops of concrete slabs and levels for finish on slabs.
2. Slope slabs to drain where required or as shown on Drawings.
3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms. Remove freestanding water.

N. Screed Supports:

1. For concrete over waterproof membranes and vapor retarder membranes, use cradle, pad or base type screed supports which will not puncture membrane.
2. Staking through membrane is not be permitted.

O. Cleanouts and Access Panels:

1. Provide removable cleanout sections or access panels at bottoms of forms to permit inspection and effective cleaning of loose dirt, debris and waste material.
2. Clean forms and surfaces against which concrete is to be placed. Remove chips, saw dust and other debris. Thoroughly blow out forms with compressed air just before concrete is placed.

### 3.5 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
- C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
- D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

### 3.6 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads and removal has been approved by Engineer.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.
- D. Leave forms in place for minimum number of days as specified in ACI 347.

### 3.7 ERECTION TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 318.

### 3.8 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.
- C. Notify Engineer after placement of reinforcing steel in forms, but prior to placing concrete.

Schedule concrete placement to permit formwork inspection before placing concrete.

END OF SECTION

## SECTION 03 30 00

### CAST-IN-PLACE CONCRETE

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes cast-in-place concrete for the following:
  - 1. Slabs on grade.
  - 2. Control, expansion and contraction joint devices.
  - 3. Thrust blocks.
  - 4. Manholes.
- B. Related Sections:
  - 1. Section 03 10 00 - Concrete Forming and Accessories.

##### 1.2 REFERENCES

- A. American Concrete Institute:
  - 1. ACI 301 - Specifications for Structural Concrete.
  - 2. ACI 305 - Hot Weather Concreting.
  - 3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
  - 4. ACI 308.1 - Standard Specification for Curing Concrete.
  - 5. ACI 318 - Building Code Requirements for Structural Concrete.
- B. ASTM International:
  - 1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  - 2. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
  - 3. ASTM C33 - Standard Specification for Concrete Aggregates.
  - 4. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
  - 5. ASTM C42/C42M - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
  - 6. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
  - 7. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
  - 8. ASTM C150 - Standard Specification for Portland Cement.
  - 9. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
  - 10. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
  - 11. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
  - 12. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
  - 13. ASTM C845 - Standard Specification for Expansive Hydraulic Cement.
  - 14. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
  - 15. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.

16. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
17. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
18. ASTM C1218/C1218M - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
19. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.
20. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
21. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
22. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
23. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
24. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

### 1.3 PERFORMANCE REQUIREMENTS

- A. Vapor Retarder Permeance: Maximum 0.3perms when tested in accordance with ASTM E96/E96M, water method.

### 1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on joint devices, attachment accessories and admixtures.
- C. Design Data:
  1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
    - a. Hot and cold weather concrete work.
    - b. Air entrained concrete work.
  2. Identify mix ingredients and proportions, including admixtures.
  3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.
- D. Manufacturer's Installation Instructions: Submit installation procedures and interface required with adjacent Work.

### 1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Accurately record actual locations of embedded utilities and components concealed from view in finished construction.



## 1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 318.
- B. Conform to ACI 305 when concreting during hot weather.
- C. Conform to ACI 306.1 when concreting during cold weather.
- D. Acquire cement and aggregate from one source for Work.
- E. Fire Rated Construction:
  - 1. Tested Rating: Determined in accordance with ASTM E119.

## 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Maintain concrete temperature after installation at minimum 50 degrees F (10 degrees C) for minimum 7 days.

## 1.8 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

## PART 2 PRODUCTS

### 2.1 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal
- B. Normal Weight Aggregates: ASTM C33.
  - 1. Coarse Aggregate Maximum Size: In accordance with ACI 318.
- C. Water: ACI 318; potable, without deleterious amounts of chloride ions.

### 2.2 ADMIXTURES

- A. Furnish materials in accordance with Georgia Department of Transportation.
- B. Air Entrainment: ASTM C260.
- C. Chemical: ASTM C494/C494M.
- D. Silica Fume: ASTM C1240.
- E. Slag: ASTM C989; ground granulated blast furnace slag.
- F. Plasticizing: ASTM C1017/C1017M.

## 2.3 ACCESSORIES

- A. Bonding Agent: Two component epoxy.
  - 1. Manufacturers:
    - a. Euco Epoxy Model #463.
    - b. Euclid Chemical Company Model #615.
    - c. Sika Chemical Corporation Model #615.
- B. Vapor Retarder: ASTM E1745; 6 mil thick clear polyethylene film.
- C. Non-Shrink Grout: ASTM C1107/C1107M; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days.

## 2.4 JOINT DEVICES AND FILLER MATERIALS

- A. Joint Filler Type C: ASTM D1751; Premolded Resilient Bituminous Types.
- B. Construction Joint Devices: formed to tongue and groove profile.
- C. Expansion and Contraction Joint Devices: ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
- D. Sealant: ASTM D6690, Type I.

## 2.5 CONCRETE MIX

- A. Select proportions for concrete in accordance with ACI 318.
- B. Provide concrete to the following Georgia Department of Transportation (GDOT) criteria:
  - 1. Class AA1 – Normal Weight 4,500 psi @ 28 days
  - 2. Class AA – Normal Weight 3,500 psi @ 28 days
  - 3. Class A – Standard Weight 3,000 psi @ 28 days
  - 4. Class B – Normal Weight 2,200 psi @ 28 days
- C. Admixtures: Include admixture types and quantities indicated in concrete mix designs only when approved by Engineer.
  - 1. Use accelerating admixtures in cold weather. Use of admixtures will not relax cold weather placement requirements.
  - 2. Do not use calcium chloride nor admixtures containing calcium chloride.
  - 3. Use set retarding admixtures during hot weather.
  - 4. Add air entrainment admixture to concrete mix for work exposed to freezing and thawing.
- D. Average Compressive Strength Reduction: Not permitted.
- E. Ready Mixed Concrete: Mix and deliver concrete in accordance with ASTM C94/C94M.
- F. Site Mixed Concrete: Mix concrete in accordance with ACI 318.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

### 3.2 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Remove laitance, coatings, and unsound materials.
- B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- C. Remove debris and ice from formwork, reinforcement, and concrete substrates.

### 3.3 PLACING CONCRETE

- A. Place concrete in accordance with ACI 318.
- B. Notify testing laboratory and Engineer minimum 24 hours prior to commencement of operations.
- C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.
- D. Deposit concrete at final position. Prevent segregation of mix.
- E. Place concrete in continuous operation for each panel or section determined by predetermined joints.
- F. Consolidate concrete.
- G. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- H. Place concrete continuously between predetermined expansion, control, and construction joints.
- I. Do not interrupt successive placement; do not permit cold joints to occur.
- J. Placing during non-daylight hours
  - 1. Concrete shall be placed during daylight hours unless otherwise approved by the Engineer. Placing of concrete in a portion of work shall not be started unless that portion of the work can be completed during daylight. Daylight is defined as the period one hour before sunrise to one hour after sunset.

2. If it is desired by the Contractor to place concrete during non-daylight hours, the Contractor shall provide an adequate lighting system approved by the Engineer. Approval of the placing of concrete during non-daylight hours shall in no way lessen the responsibility of the Contractor as related to the Work.

### 3.4 CONCRETE FINISHING

- A. Provide formed concrete with finish as Scheduled in this section.
- B. Finish concrete floor surfaces in accordance with ACI 318.
- C. Wood float surfaces with full bed setting system.
- D. Steel trowel surfaces receiving resilient flooring.
- E. Steel trowel surfaces which are indicated to be exposed.
- F. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains.

### 3.5 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
  1. Protect concrete footings from freezing for minimum 5 days.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Cure floor surfaces in accordance with ACI 318.
- D. Ponding: Maintain 100 percent coverage of water over floor slab areas continuously for 7 days.
- E. Spraying: Spray water over floor slab areas and maintain wet for 7 days.

### 3.6 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Perform field inspection and testing in accordance with ACI 318.
- C. Provide free access to Work and cooperate with appointed firm.
- D. Submit proposed mix design of each class of concrete to Engineer for review prior to commencement of Work.
- E. Concrete Inspections:
  1. Continuous Placement Inspection: Inspect for proper installation procedures.
  2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.

- F. Strength Test Samples:
  - 1. Sampling Procedures: ASTM C172.
  - 2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, standard cured.
  - 3. Sample concrete and make one set of three cylinders for every 75 cu yds or less of each class of concrete placed each day and for every 5,000 sf of surface area for slabs and walls.
  - 4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
  - 5. Make one additional cylinder during cold weather concreting, and field cure.
  
- G. Field Testing:
  - 1. Slump Test Method: ASTM C143/C143M.
  - 2. Air Content Test Method: ASTM C173/C173M.
  - 3. Temperature Test Method: ASTM C1064/C1064M.
  - 4. Measure slump and temperature for each compressive strength concrete sample.
  - 5. Measure air content in air entrained concrete for each compressive strength concrete sample.
  
- H. Cylinder Compressive Strength Testing:
  - 1. Test Method: ASTM C39/C39M.
  - 2. Test Acceptance: In accordance with ACI 318.
  - 3. Test one cylinder at 7 days.
  - 4. Test two cylinders at 28 days.
  - 5. Dispose remaining cylinders when testing is not required.
  
- I. Core Compressive Strength Testing:
  - 1. Sampling and Testing Procedures: ASTM C42/C42M.
  - 2. Test Acceptance: In accordance with ACI 318.
  - 3. Drill three cores for each failed strength test from concrete represented by failed strength test.
  
- J. Water Soluble Chloride Ion Concentration Test Method: ASTM C1218/C1218M; tested at 28 days.
  
- K. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

### 3.7 PATCHING

- A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.
- C. Patch imperfections as directed by Engineer in accordance with ACI 318.

### 3.8 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by Engineer.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

END OF SECTION

SECTION 31 05 13  
SOILS FOR EARTHWORK

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Subsoil materials.
  - 2. Topsoil materials.
  
- B. Related Sections:
  - 1. Section 31 05 16 - Aggregates for Earthwork.
  - 2. Section 31 37 00 - Riprap.
  - 3. Section 32 92 19 – Seeding.
  - 4. Section 32 92 23 - Sodding.

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials:
  - 1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
  
- B. ASTM International:
  - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
  - 2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
  - 3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.3 SUBMITTALS

- A. Not Required.

1.4 QUALITY ASSURANCE

- A. Furnish each subsoil material from single source throughout the Work.
  
- B. Perform Work in accordance with Public Work's standard.

## PART 2 PRODUCTS

### 2.1 SUBSOIL MATERIALS

- A. Subsoil Type S2:
  - 1. Excavated and re-used material.
  - 2. Graded.
  - 3. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.

### 2.2 TOPSOIL MATERIALS

- A. Topsoil Type S4:
  - 1. Excavated and reused material.
  - 2. Graded.
  - 3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
    - a. Screening: Single screened.
- B. Topsoil Type S5:
  - 1. Imported borrow.
  - 2. Friable loam.
  - 3. Reasonably free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.
    - a. Screening: Single screened.
  - 4. Acidity range (pH) of 5.5 to 7.5.
  - 5. Containing minimum of 4 percent and maximum of 25 percent inorganic matter.

### 2.3 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing and Inspection Services Testing and analysis of soil material.
- B. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D698 and ASTM D1557.
- C. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D698.
- D. When tests indicate materials do not meet specified requirements, change material and retest.
- E. Furnish materials of each type from same source throughout the Work.

## PART 3 EXECUTION

### 3.1 EXCAVATION

- A. Excavate subsoil and topsoil from areas designated. Strip topsoil to full depth of topsoil in designated areas.



- B. Stockpile excavated material meeting requirements for subsoil materials and topsoil materials.
- C. Remove excess excavated materials not intended for reuse, from site.
- D. Remove excavated materials not meeting requirements for subsoil materials and topsoil materials from site.

### 3.2 STOCKPILING

- A. Stockpile materials on site designated by Owner/Engineer.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Stockpile topsoil 6 feet high maximum.
- E. Prevent intermixing of soil types or contamination.
- F. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- G. Stockpile unsuitable materials on impervious material and cover to prevent erosion and leaching, until disposed of.

### 3.3 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

## SECTION 31 05 16

### AGGREGATES FOR EARTHWORK

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Coarse aggregate materials.
- B. Related Sections:
  - 1. Section 31 05 13 - Soils for Earthwork: Fill and grading materials.
  - 2. Section 31 37 00 - Riprap.
  - 3. Section 32 11 23 - Aggregate Base Courses.
  - 4. Section 33 31 00 - Sanitary Utility Sewerage Piping.

##### 1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials:
  - 1. AASHTO M147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.
  - 2. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. ASTM International:
  - 1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - 2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
  - 3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
  - 4. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
  - 5. ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

##### 1.3 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.
- B. Perform Work in accordance with the Georgia Department of Transportation standards and specifications.

## PART 2 PRODUCTS

### 2.1 COARSE AGGREGATE MATERIALS

- A. Coarse Aggregate: Granite or Limestone type; irregular shaped rock; free of shale, clay, friable material and debris; graded in accordance with the GDOT Specification Section 800 – Coarse Aggregates.

1. Size No. 4

Sieve Size	Percent Passing
2 inch	100
1-1/2 inch	90 to 100
1 inch	20 to 55
3/4 inch	0 to 15
3/8 inch	0 to 5

2. Size No. 57

Sieve Size	Percent Passing
1-1/2 inch	100
1 inch	95 to 100
1/2 inch	25 to 60
No. 4	0 to 10
No. 8	0 to 5

3. Size No. 89

Sieve Size	Percent Passing
1/2 inch	100
3/8 inch	90 to 100
No. 4	20 to 55
No. 8	0 to 15
No. 16	0 to 10
No. 50	0 to 5

- B. Graded Aggregate Base

1. GDOT Group 1 Aggregates (Limestone, dolomite, marble, or any combination thereof)

Sieve Size	Percent Passing
2 inch	100
1 1/2 inch	97 to 100
3/4 inch	60 to 95
No. 10	25 to 50
No. 60	10 to 35
No. 200	7 to 15

2. GDOT Group 2 Aggregates (Slag, gravel, granitic and gneissic rocks, quartzite, synthetic aggregate, or any combination thereof)

Sieve Size	Percent Passing
2 inch	100
3/8 inch	90 to 100
No. 4	20 to 55
No. 8	0 to 15
No. 16	0 to 10
No. 50	0 to 5

## 2.2 FINE AGGREGATE MATERIALS

- A. Fine Aggregate: graded in accordance with the GDOT Specification Section 801– Fine Aggregates.

Size	Percent by Weight
Passing No. 4 (4.75 mm) sieve	100
Passing No. 16 (1.18 mm) sieve	25 to 75
Passing No. 100 (150 µm) sieve	0 to 25

## 2.3 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing and inspection services.
- B. Perform periodic compaction testing as seen in Drawings.
- C. Coarse Aggregate Material - Testing and Analysis: Perform in accordance with ASTM D1557.
- D. When tests indicate materials do not meet specified requirements, change material and retest.

## PART 3 EXECUTION

### 3.1 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

## SECTION 31 23 18

### ROCK REMOVAL

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Removing discovered rock during excavation.
  - 2. Explosives to assist rock removal.
- B. Related Sections:
  - 1. Section 31 37 00 - Riprap.

##### 1.2 REFERENCES

- A. National Fire Protection Association:
  - 1. NFPA 495 - Explosive Materials Code.
- B. Occupational Safety and Health Administration
  - 1. OSHA 2207 - Construction Industry Standards, Subpart T - Demolition.

##### 1.3 DEFINITIONS

- A. Rock: Solid mineral material with a volume in excess of 1/2 cu yd that cannot be broken down and removed by use of heavy construction equipment, such as a Caterpillar D8K or equivalent, bulldozer equipped with single tooth hydraulic ripper, 3/4 cu yd capacity power shovel, rooters, etc., and without drilling or blasting. Materials which can be loosened with a pick, hard pan, boulders less than 1/2 cu yd in volume, chert, clay, soft shale, soft and disintegrated rock and any similar material shall not be considered as rock. (All materials to be considered unclassified or common excavation)

##### 1.4 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Rock Excavation: No separate measurement and payment will be made for rock excavation. All cost for rock excavation shall be included within the unit price item for the applicable pipeline or appurtenant item.

##### 1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate proposed method of blasting, delay pattern, explosive types, type of blasting mat or cover, and intended rock removal method.
- C. Survey Report: Submit survey report on conditions of buildings near locations of rock removal.

## 1.6 QUALITY ASSURANCE

- A. Seismic Survey Firm: Licensed company specializing in seismic surveys with five years documented experience.
- B. Explosives Firm: The Contractor shall subcontract all drilling and blasting to a Company specializing in explosives for disintegration of subsurface rock with a minimum of five years documented experience. Blasters shall have their license and blasting permit on the job site at all times and shall present them for examination by any official that may have jurisdiction.
- C. Geotechnical Testing Agency: The Contractor shall subcontract all seismic testing to an independent testing agency qualified according to ASTM E329 Standard Specification for Agencies Engaged in Construction Inspection and/or Testing to conduct soil materials and rock-definition testing as documented according to ASTM D3740 Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- D. Comply with all codes, laws, ordinances, and regulations of governmental authorities having jurisdiction over this part of the work.
- E. Comply with applicable requirements of NFPA 495, "Explosive Materials Code."

## 1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable code for explosive disintegration of rock.
- B. Obtain permits from authorities having jurisdiction before explosives are brought to site or drilling is started.
- C. All explosives shall be stored securely in compliance with all laws and ordinances, and all such storage places shall be clearly marked DANGEROUS EXPLOSIVES. Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents. Locked storage shall be provided, which is never closer than 1000 feet from any road, building, or camping area.

## 1.7 PROJECT CONDITIONS

- A. Conduct survey and document conditions of buildings near locations of rock removal, prior to blasting, and photograph existing conditions identifying existing irregularities.
- B. Advise owners of adjacent buildings or structures in writing, prior to executing seismographic survey. Explain planned blasting and seismic operations.
- C. Obtain seismic survey prior to rock excavation to determine maximum charges that can be used at different locations in area of excavation without damaging adjacent properties or other work.

## 1.8 SCHEDULING

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Schedule Work to avoid disruption to occupied buildings nearby.
- C. Conduct blasting operations between hours of 8:00 A.M. and 5:00 P.M. only.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Explosives: Type recommended by explosive firm following seismic survey and required by authorities having jurisdiction. Explosives shall be suitable for intended purposes.
- B. Delay Device: Type recommended by explosives firm to be used as accessory to explosives.
- C. Mechanical Disintegration Compound: Grout mix of materials that expand on curing.
- D. Blasting Mat: When the use of explosives is necessitated during prosecution of the WORK, use blasting mats of type recommended by explosives firm to lessen the danger of projectiles occasionally resultant from blasting of rock.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify site conditions and note subsurface irregularities affecting Work of this section.

### 3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.

### 3.3 ROCK REMOVAL BY MECHANICAL METHOD

- A. Excavate and remove rock by mechanical method.
  - 1. Drill holes and use expansive tools or wedges to fracture rock.
- B. Cut away rock at bottom of excavation to form level bearing.
- C. Remove shaled layers to provide sound and unshattered base for footings.
- D. In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter.
- E. Remove excavated materials from site.

- F. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section 31 23 23.

### 3.4 ROCK REMOVAL BY BLASTING

- A. When rock is uncovered requiring explosives method for rock disintegration, notify Engineer.
- B. Provide seismographic monitoring during progress of blasting operations.
- C. Blasting procedures shall conform to all applicable local, state, and federal laws and ordinances and shall be performed in accordance with OSHA Standard 29 CFR part 1910.109, Explosives and Blasting Agents, GADOT Rules for Transporting Explosives, and local Fire Department Regulations. Prior to any blasting, a blasting permit shall be obtained. The approval of the Owner's Representative and/or Engineer shall be obtained before any blasting takes place and Owner's Representative and/or Engineer may fix the hours of blasting if he/she deems it to be necessary. The use of explosives shall be in accordance with approved methods that safeguard lives and property. Explosives shall only be handled, placed, and detonated by persons licensed in this work. It is the responsibility of the Contractor to provide proper notification to appropriate parties.
- D. The minimum insurance coverage for blasting shall be as annotated in Section 00800, Supplementary Conditions. The coverage shall include explosion and collapse. If blasting occurs within 200 feet of any underground structure or utility, underground coverage will be required. The owner and the property owners shall be named as "additional insured."
- E. Storage: Store explosives in accordance with the Occupational Safety and Health Act and with other Federal, State and Local ordinances and regulations. The Contractor shall keep explosive materials that are on the job site in special constructed boxes provided with locks. These boxes shall be plainly identified as to their contents. Failure to comply with this specification shall be grounds for suspension of blasting operations until full compliance is made. No blasting shall be allowed unless a galvanometer is employed to check cap circuits.
- F. Owner's Representative and/or Engineer may prohibit blasting when the method of detonation or the means of protection provided are inadequate. Blasting conducted with or without direct supervision of Owner's Representative and/or Engineer will not relieve the Contractor of the responsibilities stipulated herein.
- G. Blasters shall not explode or attempt to explode blasting powder or high explosives unless it is performed with a suitable electric blasting machine. Electric current from batteries, telephone, or power lines shall not be used for detonation.
- H. A minimum of 3 minutes prior to the detonation, the blaster shall inform competent flagmen, equipped with red flags, stationed at reasonable distances from the blast area at every avenue of approach, to warn all persons.
- I. Immediately after the loading and tamping of the drill hole and before fixing the blast, the material to be blasted shall be covered on all exposed sides with blasting mats, or other



approved protective material. After the protection has been applied, the blast shall be fired without unnecessary delay.

### 3.5 BLASTING PROCEDURE

- A. The Contractor shall provide a blast warning signal system. The blast warning signal system shall consist of one or more air horns located at the blast site. The air horn(s) shall be audible a minimum of 1 mile from the blast site. The signals shall be one long horn 5 minutes prior to the blast, one short horn 1 minute prior to the blast, and one long horn after the blast to signal all clear. The Contractor shall erect two clear and legible blast warning signal signs at locations determined by Owner's Representative and/or Engineer. The signs shall list the blast warning signal system, the Contractor Superintendent's name and telephone number, and the Owner representative's name and telephone number.
- B. The Contractor shall notify in writing all property Owners within 300 feet of the proposed blast at least 1 week prior to the proposed blast and verbally on the day of the scheduled blast.
- C. Blasting shall be limited to mid-morning hours on days of clear-to-partly cloudy skies with increasing surface temperature and light wind. The Contractor shall provide monitoring equipment to monitor all blasting. A copy of monitor record shall be given to Owner's Representative daily.
- D. The use of unconfined explosives shall be prohibited.
- E. The maximum allowable peak particle velocity shall be 1.25 inches per second for all structures located 0 to 300 feet from the blasting site. The maximum allowable peak particle velocity shall be 1.00 inch per second for all structures located 301 to 5,000 feet from the blasting site. The maximum allowable peak particle velocity shall be 0.75 inch per second for all structures located 5,001 feet and beyond from the blasting site.
- F. To minimize vibration, minimum scaled distance (SD) of 50 shall be used to determine maximum explosive weight per delay. A test blast shall be conducted to verify the scaled distance. The maximum explosive weight per delay shall not exceed the distance from the blast to the nearest structure divided by 50 squared. Maximum explosive weight per delay may be revised pending outcome of test blast. The recommendations indicated for blasting criteria in no way relieves the Contractor of his liability.
- G. The peak overpressure of air blast shall not exceed 0.015 pound per square inch or 138 decibels.
- H. Pre-blast meetings may be scheduled with Owner's Representative and/or Engineer to document hole depths and spacing, charge weight per delay, shot scheduling, and weather conditions. The Contractor shall obtain accurate measured distances from structures to center of blast area prior to determining the safe maximum charge-weight per delay and loading blast holes.
- I. Pre-blast and post blast surveys will be obtained by the Contractor using a "Third Party" Firm as described in Section 1.04B. The Contractor may review the results of these surveys and supplement it as he sees fit by conducting a separate survey of their own after written permission is obtained from the property Owners. In this event, the written permission shall be submitted to Owner's Representative prior to entering upon private

property. The pre-blast and post blast surveys will include all occupied and vacant buildings and other Structures within 300 feet of the blasting area. The Contractor is strongly encouraged to have a representative present during these surveys. Any pre-blast and post blast surveys performed by Owner or the property owner in no way relieve the Contractor of his liability.

### 3.6 MONITORING REQUIREMENTS

- A. The contractor shall retain a “third party” geotechnical firm to perform monitoring and testing for blasting procedures. The firm selected by the Contractor will be evaluated by the Engineer and Owner for approval as the official “third party”. The “Third Party” Firm shall obtain written permission from the property owners and submit a copy or copies to the Owner's Representative prior to entering upon private property.
- B. Monitoring of Blast-Related Earthborne Vibrations.
1. Pre-Construction Condition Assessment: The third party geotechnical engineering firm shall perform a pre-construction condition assessment to document the conditions of the nearby buildings and other sensitive nearby structures prior to the beginning of construction. The assessment shall be performed on all properties adjacent to the project site and any other properties as directed by the engineer or owner. The assessment shall include full color video and photographic documentation of all exteriors including building foundations and installation of crack monitors on façade cracks that might propagate due to blasting vibrations. All documentation of existing building conditions and information concerning the type and location of crack monitors shall be presented to the Owner's Representative in a report prior to construction.
  2. Crack Monitoring During Blasting: During blasting operations, the geotechnical firm shall perform periodic readings of sufficient frequency of the crack monitors that were installed during the pre-construction condition assessment to assess/monitor the effects of the blasting operations. All readings shall be provided to the Owner's Representative within 48 hours of taking the reading. If the crack readings suggest that blasting vibrations are contributing to crack width, then the geotechnical firm shall immediately notify the Owner's Representative and review the blasting operations. The geotechnical firm and the contractor shall then submit a detailed plan for repair, the contractor shall perform the repair at no cost to the Owner and develop and submit for review a revised blasting plan to address the vibration problems and minimize further damage and complaints.
  3. Vibration Monitoring During Blasting: The geotechnical firm shall monitor vibrations at no less than two locations at the closest structures to the project during all blasting activities. The locations shall be selected by the geotechnical firm based on the location of the blasting activities and their relative position to nearby structures. Prior to blasting, a plan of the monitoring locations shall be submitted to the Owner's Representative for approval. The location of the vibration monitors shall be adjusted during construction with approval by Engineer and Owner. The vibration monitors shall be established at the site so that background vibrations may be determined prior to beginning construction and blasting. The sensitivity range of the seismograph shall be selected so that the recording is initiated below the maximum allowable particle velocity and extends above the highest expected intensity. Specific activities of the vibration source shall be indexed in time to allow correlation with the arrivals on the vibration.

4. Project Vibration Criteria: The maximum allowable particle velocity is as indicated in Section 3.01.1 E. If the data from the monitors indicate that vibrations are exceeding the established criteria, then the geotechnical firm shall immediately notify the Owner's Representative and suspend the blasting operations which are generating the earthborne vibrations, until the geotechnical firm and Contractor have developed a revised blasting plan to resolve the problem. The problem shall be resolved by the Contractor at no additional cost to the Owner.
5. Instrumentation: The vibration monitors shall consist of digital seismographs that display the particle velocities and associated frequencies plotted against the criteria for this project. Each seismograph shall contain geophones with response capability in three mutually perpendicular axes or components; one vertical and two horizontal (radial and transverse). The frequency response of the geophones shall be linear from at least 4 Hz to more than 200 Hz. The sensitivity shall range from less than 0.02 in/sec to more than 5.0 in/sec. The Blastmate III by InstanTel is one type of seismograph that is suitable for this project.
6. Calibration and Instrument Use: The geotechnical firm shall field calibrate the vibration monitors before the start of each recording period. The transducer shall be positioned with the longitudinal axis toward the vibration source. Transducers must be adequately coupled with the ground. Operation of all vibration monitors shall be in accordance with the instrument manufacturer's instructions and recommendations. Vibration records shall be collected in waveform plot or strip chart plot. The peak vector sum of the particle velocity in longitudinal, transverse, and vertical planes shall be shown along with the respective dominant or principal frequencies. The highest recorded particle velocity (i.e., the vector sum of the three orthogonal directions), when indexed to a particle vibration event, shall be reported as the peak particle velocity. The recorded peak particle velocity shall be compared to criteria appropriate for the subject of concern.
7. Complaints – In the event of a complaint, the geotechnical firm shall immediately contact the Owner's Representative and review those blasting activities that are introducing vibrations into the earth. The geotechnical firm shall prepare a report documenting all relevant data such as the time and date presented in the complaint, a description of the blasting activities during the subject time/date, data from the monitoring instruments for the subject time/date, complaint information and a description (including photographs, if possible) of the alleged damage. The geotechnical firm and Contractor shall then submit for review a detailed plan for repair, and revised blasting plan to address the complaints. The Contractor will be required to perform the necessary repairs at no cost to the owner.
8. Additional Requirements – In addition to the pre-construction condition assessment report, the geotechnical firm shall also provide monthly reports, as required, containing the results of the crack monitors and vibration monitors during the blasting procedures. The reports shall document that the geotechnical firm is providing the work described by this specification. The geotechnical firm shall submit a final report after the completion of the blasting operation that contains all previous reports in one document. The final report shall contain an "executive" summary of the various reports.

### 3.7 ROCK REMOVAL

- A. Disintegrate rock and remove from excavation.
- B. Remove rock at excavation bottom to form level bearing.

- E. Remove shaled layers to provide sound and unshattered base for footings.
- F. In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter.
- J. Remove excavated material from site.
- K. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section 31 23 23 to directions of Engineer.

### 3.8 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements, 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Request visual inspection of foundation bearing surfaces by Engineer before installing subsequent work.

END OF SECTION

## SECTION 31 23 19

### DEWATERING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Dewatering system.
  - 2. Water disposal.
- B. Related Sections:
  - 1. Section 31 25 13 - Erosion Controls

##### 1.2 REFERENCES

- A. ASTM International:
  - 1. ASTM C33 - Standard Specification for Concrete Aggregates.

##### 1.3 DEFINITIONS

- A. Dewatering includes the following:
  - 1. Lowering of ground water table and intercepting horizontal water seepage to prevent ground water from entering [trenches].
  - 2. Disposing of removed water.
- B. Surface Water Control: Removal of surface water within open excavations.

##### 1.4 SYSTEM DESCRIPTION

- A. Provide dewatering and surface water control systems to permit Work to be completed on dry and stable subgrade.
  - 1. Install pumps to dewater trench to remove groundwater or construct berms to divert surface water.

##### 1.5 PERFORMANCE REQUIREMENTS

- A. Design dewatering systems to:
  - 1. Lower water table within areas of excavation below bottom of excavation to permit Work to be completed on dry and stable subgrade.
  - 2. Prevent loss of fines, quick condition, or softening of foundation subgrade.
  - 3. Maintain stability of sides and bottoms of trenches.
- B. Design surface water control systems to:
  - 1. Collect and remove surface water and seepage entering excavation.

## 1.6 QUALITY ASSURANCE

- A. Comply with authorities having jurisdiction for the following:
  - 1. Water discharge and disposal from pumping operations.

## PART 2 PRODUCTS

### 2.1 DEWATERING EQUIPMENT

- A. Contractor shall provide dewatering equipment sufficient to keep trench free of water.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Protect existing adjacent buildings, structures, and improvements from damage caused by dewatering operations.
- B. Locate system components to allow continuous dewatering operations without interfering with installation of permanent Work and existing public rights-of-way, sidewalks, and adjacent buildings, structures, and improvements.

### 3.2 SURFACE WATER CONTROL SYSTEM

- A. Provide ditches, berms, and other devices to divert and drain surface water from excavation area as specified in Section 31 25 13.
- B. Divert surface water and seepage water within excavation areas into sumps and pump water into drainage channels or storm drains in accordance with requirements of agencies having jurisdiction.
- C. Control and remove unanticipated water seepage into excavation.

### 3.2 SYSTEM OPERATION AND MAINTENANCE

- A. Operate dewatering system continuously until backfill is minimum 2 feet above normal ground water table elevation.
- B. Conduct daily observation of dewatering system and monitoring system. Make required repairs and perform scheduled maintenance.
- C. When dewatering system cannot control water within excavation, notify Architect/Engineer and stop excavation work.
  - 1. Supplement or modify dewatering system and provide other remedial measures to control water within excavation.
  - 2. Demonstrate dewatering system operation complies with performance requirements before resuming excavation operations.

D. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.

E. Do not discontinue dewatering operations without Engineer's approval.

## 2.2 WATER DISPOSAL

A. Discharge water into existing storm sewer system or drainage channels.

## 2.3 SYSTEM REMOVAL

A. Remove dewatering and surface water control systems after dewatering operations are discontinued.

B. Repair damage caused by dewatering and surface water control systems or resulting from failure of systems to protect property.

END OF SECTION

## SECTION 31 25 13

### EROSION CONTROLS

#### PART 1 GENERAL

##### 1.1 SUMMARY

###### A. Scope of Work:

1. Erosion control measures shall be designed for a 25-year, 24-hour rain event.
2. Erosion control shall be employed during the construction period and shall include all measures required to prevent soil erosion from the site until permanent erosion control measures are installed. Work shall be accomplished through, but not limited to, the use of berms, dikes, sediment barriers, sediment traps, sediment basins, silt fences, temporary grasses, check dams, mulching, construction exits and slope drains.
3. Erosion control measures described herein shall be continued until such time as permanent planting and restoration of natural areas is effectively in control of erosion from project site.
4. Failure to install and maintain temporary erosion control measures throughout the construction period may be cause to halt construction by governing authorities until such measures are correctly installed and operational.

###### B. Related Sections:

1. Section 03 10 00 - Concrete Forming and Accessories.
2. Section 03 30 00 - Cast-In-Place Concrete.
3. Section 31 00 00 - Earthwork.
4. Section 31 37 00 – Riprap.
5. Section 32 92 19 – Seeding
6. Section 32 92 23 - Sodding

##### 1.2 REFERENCES

###### A. American Association of State Highway and Transportation Officials:

1. AASHTO T88 - Standard Specification for Particle Size Analysis of Soils.
2. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

###### B. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.

###### C. ASTM International:

1. ASTM C127 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).



3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
  4. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
  5. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- D. Precast/Prestressed Concrete Institute:
1. PCI MNL-116S - Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.
- E. "Manual for Erosion and Sediment Control in Georgia" published by the State Soil and Water Conservation Committee of Georgia – Current Edition
- F. State of Georgia Erosion and Sedimentation Control Act of 1975, current amendment.

### 1.3 SUBMITTALS

- A. Submit proposed schedule for installation, maintenance and removal of all temporary and permanent erosion and sediment control measures. The schedule should reflect the requirements below and show the anticipated starting and completion dates for all land development activities including:
1. Installation of temporary and permanent sediment control structures.
  2. Stormwater management facilities.
  3. Timber salvage operations.
  4. Clearing operations.
  5. Grubbing operations.
  6. Rough and finished grading.
  7. Building construction.
  8. Landscaping, including all seeding and sodding.
  9. Removal of temporary sediment control structures.

### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with "Manual for Erosion and Sediment Control in Georgia" published by the State Soil and Water Conservation Committee of Georgia – Current Edition.

### 1.5 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

### 1.6 SEQUENCE OF CONSTRUCTION OF TEMPORARY SEDIMENT CONTROL MEASURES

- A. Install all erosion and sediment control structures specified herein and shown in the Contract Documents, or as directed by the Engineer, as the first item of work within a

given drainage area. Construction and installation of all sediment control structures shall begin downgradient of the area to be disturbed and proceed upgradient. Contractor shall at all times maintain all soil erosion and sediment control structures and practices throughout construction and until permanent grass cover is established.

## PART 2 PRODUCTS

### 2.1 CONSTRUCTION EXIT

- A. Rock: Granite type; crushed irregular shaped stone; solid and nonfriable; 1.5 inch minimum size, 3.5 inch maximum size.
- B. Geotextile Fabric: Furnish in accordance with State of Georgia Department of Transportation standards.
- C. Construct as indicated on Drawings.

### 2.2 TEMPORARY SEDIMENT BARRIERS (SILT FENCE)

- A. Filter fabric for silt fences shall be pervious synthetic polymer filaments forming a stable network so that fibers retain their relative positions. Filter fabric shall be of the type recommended by its manufacturer for the intended application. The filter fabric shall meet the following requirements:
  - 1. Minimum Grab Strength: 150 lbs. (by ASTM D1682)
  - 2. Elongation: 25%
  - 3. Retention Efficiency: 75%
- B. Silt fence shall be constructed in accordance with details shown on Drawings or may be a prefabricated proprietary type subject to approval by Engineer.

### 2.3 TEMPORARY SEDIMENT BARRIERS (HAY BALES)

- A. Hay bales shall be well compacted straw, standard size, wire bound. Hay bales may be used as an alternate to silt fence as approved by Engineer.

### 2.4 RIP RAP

- A. Riprap: Granite or Limestone type; as specified in Section 31 37 00, Rip Rap.

### 2.5 MULCHING (DS1)

- A. Spread dry straw or hay, free of weeds and seeds, at 2-1/2 tons per acre.
- B. Spread wood waste, chips, sawdust, or bark, 2 to 3 inches deep (6 to 9 tons per acre).
- C. Apply erosion control matting or netting according to manufacturer's requirements or recommendations.

2.6 TEMPORARY GRASSING (DS2)

- A. Grass seed for temporary erosion control shall be applied at the rates and dates indicated in the following table:

Species	Rate per 1,000 sq ft	Rate per acre	Planting Dates		
			Mountains Limestone Valley	Piedmont	Coastal
Rye	4.0 lbs	3 bushels	July 15 - Dec 1	Aug 15 - Jan 1	Sep 1 - Mar 1
Ryegrass	1.0 lbs	40 lbs	Aug 1 - May 1	Aug 1 - Apr 15	Aug 15 - Apr 1
Weeping Lovegrass	0.1 lbs	4 lbs	Mar 15 - Jun 15	Mar 15 - Jun 15	Feb 15 - Jun 15
Sudangrass	1.4 lb	60 lbs	Apr 1 - Sep 1	Apr 1 - Sep 1	Mar 1 - Aug 1
Browntop Millet	1.0 lb	40 lbs	Apr 1 - Jul 1	Apr 1 - Jul 1	Apr 1 - Jul 1
Wheat	4.0 lbs	3 bushels	Sep 1 - Jan 1	Sep 1 - Jan 1	Sep 15 - Feb 1

- B. Install Work in accordance with "Manual for Erosion and Sediment Control in Georgia" published by the State Soil and Water Conservation Committee of Georgia - Current Edition.

2.7 PERMANENT GRASSING (DS3)

- A. Grass seed for permanent erosion control in accordance with details shown on Drawings.
- B. Maintain seeded areas until Work is complete.
- C. Mow at least four weeks apart during growing season.

2.8 FERTILIZER

- A. Commercial grass fertilizer with a 10N-10P-10K proportion.
- B. Agricultural lime to be applied at a rate of one (1) ton per acre.

PART 3 EXECUTION

3.1 GENERAL

- A. Temporary erosion control shall be directed toward and have the purpose of controlling soil erosion at its potential source. Downstream sediment entrapment measures shall be employed, but only as a backup to primary control at the source.

- B. A continuing program of installation and maintenance of sediment control measures shall be employed during the construction period.
- C. Erosion Control Schedule:
  - 1. Prior to the pre-construction conference, Contractor shall submit to the Engineer his proposed erosion control plan for the project in accordance with requirements of this section. The plan shall be based on an analysis of the project conditions and shall be in written form. This plan shall specifically indicate the sequence of clearing and grubbing, earthwork operations, including trenching and backfilling, construction of permanent erosion control features and the proposed uses of temporary erosion control features.
  - 2. Plan shall also include proposed methods to prevent pollution of streams, lakes and rivers and other water resources.
  - 3. Contractor shall outline his proposed methods of controlling erosion and preventing pollution on public and construction access roads, staging areas and waste disposal areas.
  - 4. No work shall be started until the aforementioned plans have been approved by Engineer. Contractor will be responsible for accomplishment of work in accordance with approved plans. Engineer may approve changes made necessary by unforeseen circumstances which are beyond the control of Contractor.
- D. Owner and Engineer have the authority to limit the surface area of erodible earth materials exposed by clearing and grubbing, the surface area of erodible earth exposed by excavation and backfill operations and to direct Contractor to provide immediate permanent or temporary erosion and pollution control measures to prevent contamination of adjacent streams or other water courses.
- E. Clearing and grubbing operations shall be so scheduled and performed that grading operations and permanent erosion control features can immediately follow thereafter, if the project conditions permit, otherwise temporary erosion control measures will be required between successive construction stages.
- F. Owner and Engineer will require Contractor to limit the area of excavation, trenching and pipe laying operations in progress commensurate with Contractor's capability and progress in keeping finish grading, mulching, seeding and other permanent and/or temporary measures current with accepted schedule.

### 3.2 TEMPORARY GRASSING AND MULCHING

- A. Where staged construction or other conditions beyond the control of the Contractor prohibit the completion of work in a continuous manner, Owner and Engineer may order Contractor to apply temporary seeding or temporary mulch to an erodible area.
- B. Temporary grass shall consist of sowing a quick growing species of grass suitable to the area and season. Seeding rates shall be in accordance with Paragraph 2.6. Ground preparation will be limited to blading the area to the amount deemed practical by the Owner and Engineer for a seed bed and the elimination of water pockets. Fertilizer shall be applied at a rate of 14 pounds per 1,000 square feet.

- C. Areas to be mulched need not be to finished grade. The mulched areas may be placed on slopes as steep as 2:1 using a tractor to imbed the mulch into the slope.
- D. Spread wood waste uniformly on slopes that are 3:1 and flatter. No anchoring is needed.
- E. Commercial matting and netting. Follow manufacturer's specifications included with the material.

### 3.3 SEDIMENT TRAPS

- A. Install sediment traps in accordance with details shown on Drawings.
- B. Sediment traps shall be maintained until other erosion control methods can be substituted for them.
- C. Sediment traps shall be cleaned out when they are 1/2 filled with silt.
- D. Sediment traps shall be removed from the construction area when their use is no longer required.

### 3.4 RIP RAP

- A. Place geotextile fabric over substrate, lap edges and ends.
- B. Place riprap at culvert pipe ends, at embankment slopes, and as indicated on Drawings.

### 3.5 SILT FENCE

- A. Temporary silt fences shall be located at all points where surface water can leave the construction area.
- B. Silt fences shall be installed so as to remove sediments from flowing water through filtration and sedimentation. Silt fences shall be installed in accordance with the details shown on Drawings.
- C. Silt fences shall be arranged to create ponding behind them. Provision shall be made for removing accumulated sediments and maintaining ponding capacity.
- D. Silt fences shall be removed and the area restored when permanent vegetation or other erosion control measures are effective.

### 3.6 GRADING OPERATIONS

- A. Grading operations shall be scheduled so that ground surface will be disturbed for the shortest possible time before permanent construction is installed. Large areas shall be maintained as flat as possible to minimize soil transport through surface flow.
- B. Wherever steep slopes or abrupt changes in grade are required, a diversion or berm shall be constructed at the top of slope to cause surface water to flow along the

diversion to a control point to be transported downslope in a slope drain. In no case shall surface water be allowed to flow uncontrolled down slopes.

### 3.7 CONSTRUCTION IN STREAM BEDS

- A. Unless otherwise approved in writing by Engineer, construction operations in rivers, streams and impoundments shall be restricted to those areas which must be entered for the construction of temporary or permanent structures. As soon as conditions permit, rivers, streams and impoundments shall be promptly cleared of all false-work, sheeting or piling, which are to be removed, debris and other obstructions. Forging of live streams with construction equipment will not be permitted; therefore, temporary bridges or other structures (stream crossings) shall be used whenever stream crossings are required. Unless otherwise approved in writing by Engineer, mechanized equipment shall not be operated in live streams except as may be required to construct channel changes and temporary or permanent structures, and to remove temporary structures.

### 3.8 RUN-OFF EROSION AND SEDIMENTATION CONTROLS

- A. During construction, route run-off through sedimentation barriers and check dams as practical.
- B. Contractor shall maintain sedimentation devices in functional condition. Sedimentation barriers and check dams shall be cleaned out when these devices are at least 60 percent of their capacity. Defective materials in barriers and check dams shall be replaced.
- C. Contractor shall establish sedimentation barriers at the toe of slopes under construction. These barriers may be relocated and reused after permanent slope stabilization becomes established. As they are relocated, any defective materials shall be replaced. In addition, all debris and silt at previous location will be removed.
- D. A 6-inch minimum thickness of crushed stone construction exit pad shall be located at all access points to site from public streets in accordance with details shown on Drawings. All construction vehicles leaving construction site shall have mud cleaned from their tires at these points to protect public streets from the transportation of sediment from site.

### 3.9 CLEANING

- A. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.
- B. Do not damage structure or device during cleaning operations.
- C. Do not permit sediment to erode into construction or site areas or natural waterways.
- D. Clean channels when depth of sediment reaches approximately one half channel depth.

END OF SECTION

## SECTION 31 37 00

### RIPRAP

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
1. Riprap placed loose.
  2. Riprap placed in bags.
- B. Related Sections:
1. Section 31 25 13 – Erosion Controls

##### 1.2 SUBMITTALS

None Required

##### 1.3 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Riprap: Granite or Limestone type; irregular shaped rock; solid and nonfriable.

1. Gradation for Stone-Dumped rip rap Type 1\*

Size By Volume	Approx. Weight	Percent Smaller Than
4.2 ft <sup>3</sup> (0.12 m <sup>3</sup> )	700 lbs (320 kg)	100%
1.8 ft <sup>3</sup> (0.05 m <sup>3</sup> )	300 lbs (135 kg)	50% - 90%
0.8 ft <sup>3</sup> (0.02 m <sup>3</sup> )	125 lbs (55 kg)	20% - 65%
* Between 0% and 15% of the Type 1 rip rap shall pass a 4 in (100 mm) square opening sieve.		

2. Gradation for Stone-Dumped rip rap Type 3\*

Size By Volume	Approx. Weight	Percent Smaller Than
1.0 ft <sup>3</sup> (0.03 m <sup>3</sup> )	165 lbs (75 kg)	100%
0.1 ft <sup>3</sup> (0.003 m <sup>3</sup> )	15 lbs (7 kg)	10% - 65%
* Between 0% and 15% of the Type 3 rip rap shall pass a 2 in (50 mm) square opening sieve.		



- B. Geotextile Fabric: Non-biodegradable, non-woven manufactured by MIRAFI 700X or PROPEX 1199.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Do not place riprap bags over frozen or spongy subgrade surfaces.

### 3.2 PLACEMENT

- A. Place geotextile fabric over substrate, lap edges and ends.
- B. Place riprap at culvert pipe ends, at embankment slopes, and as indicated on Drawings.
- C. Place rock evenly and carefully over bagged riprap to minimize voids, do not tear bag fabric, place bags and rock in one consistent operation to preclude disturbance or displacement of substrate.

### 3.3 SCHEDULES

- A. Culvert Pipe Ends: Bagged riprap, placed one layer thick, 6 inch average thickness, concealed with topsoil fill.
- B. Sloped Grade at Retaining Wall: Individual riprap units, 6 inch thickness; placed prior to finish topsoil.

END OF SECTION

SECTION 32 91 13  
SOIL PREPARATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Preparation of subsoil.
  - 2. Soil testing.
  - 3. Placing topsoil.
  
- B. Related Sections:
  - 1. Section 32 92 19 - Seeding
  - 2. Section 32 92 23 - Sodding.

1.2 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with State of Georgia D.O.T.

1.4 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Topsoil: Excavated from site and free of weeds.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
  
- B. Verify prepared soil base is ready to receive the Work of this section.

### 3.2 PREPARATION OF SUBSOIL

- A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.
- C. Scarify subsoil to depth of 3 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

### 3.3 PLACING TOPSOIL

- A. Spread topsoil to minimum depth of 4 inches over area to be seeded. Rake until smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.
- E. Install edging at periphery of seeded areas in straight lines to consistent depth.

END OF SECTION

## SECTION 32 92 19

### SEEDING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Fertilizing.
  - 2. Seeding.
  - 3. Hydroseeding.
  - 4. Mulching.
  - 5. Maintenance.
  
- B. Related Sections:
  - 1. Section 32 91 13 - Soil Preparation
  - 2. Section 32 92 23 - Sodding.

##### 1.2 REFERENCES

- A. ASTM International:
  - 1. ASTM C602 - Standard Specification for Agricultural Liming Materials.
  
- B. "Manual for Erosion and Sediment Control in Georgia" - latest edition, prepared by the Georgia Soil and Water Conservation Commission as amended in 2000.

##### 1.3 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

##### 1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
  
- B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

##### 1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

## 1.6 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.
- B. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
- C. Insure strict compliance with "Manual for Erosion and Sediment Control in Georgia" - latest edition, prepared by the Georgia Soil and Water Conservation Commission.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

## 1.8 MAINTENANCE SERVICE

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance service.
- B. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition for two cuttings.

## PART 2 PRODUCTS

### 2.1 SEED MIXTURE

- A. Substitutions: Section 01 60 00 - Product Requirements.
- B. Seed shall be delivered to the job site in new weatherproof bags labeled in accordance with the U.S. Department of Agriculture Federal Seed Act.
- C. Seed shall be delivered to the job site in new weatherproof bags labeled in accordance with the U.S. Department of Agriculture Federal Seed Act.

### 2.2 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.

- B. Lime: Natural limestone containing not less than 85% of total carbonates, ground so that not less than 90% passed a No. 10-mesh sieve and not less than 50% passes a No. 40-mesh sieve. Provide lime in the form of dolomitic limestone meeting the specified requirements.
- C. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- D. Erosion Fabric: Jute matting, open weave.
- E. Commercial fertilizer shall be Grade 4-12-12, 6-12-12 or 5-10-15 ready-mixed material. Container bags shall have the name and address of the manufacturer, the brand name, net weight, and chemical composition. Fertilizer proportions used should be those necessary to correct any deficiencies of topsoil to the following proportions: Nitrogen - 5 percent, Phosphoric Acid - 10 percent, Soluble Potash - 10 percent.
- F. Stakes: Softwood lumber, chisel pointed.
- G. String: Inorganic fiber.

### 2.3 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
- C. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.
- D. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify prepared soil base is ready to receive the Work of this section.

### 3.2 FERTILIZING

- A. Apply lime at application rate of 2000 lbs/ac. Work lime into top 6 inches of soil.
- B. Apply fertilizer at application rate of 1800 lbs/ac.

- C. Apply after smooth raking of topsoil and prior to roller compaction.
- D. Do not apply fertilizer at same time or with same machine used to apply seed.
- E. Mix fertilizer thoroughly into upper 2 inches of topsoil.
- F. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

### 3.3 SEEDING

- A. Apply seed at a rate shown on drawings, evenly in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Planting Season: As shown on drawings.
- D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.
- E. Roll seeded area with roller not exceeding 112 lbs/linear foot.
- F. Immediately following seeding and compacting, apply mulch to thickness of 1/8 inches. Maintain clear of shrubs and trees.
- G. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

### 3.4 HYDROSEEDING

- A. Apply fertilizer, mulch and seeded slurry with hydraulic seeder at rate of 2000 lbs/acre evenly in one pass.
- B. After application, apply water with fine spray immediately after each area has been hydroseeded. Saturate to 4 inches of soil and maintain moisture levels two to four inches.

### 3.5 SEED PROTECTION

- A. Identify seeded areas with stakes and string around area periphery. Set string height to inches. Space stakes at 36 inches.
- B. Cover seeded slopes where grade is 4 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- C. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.

- D. Secure outside edges and overlaps at 36 inch intervals with stakes.
- E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

### 3.6 MAINTENANCE

- A. Mow grass at regular intervals to maintain at maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at each mowing. Perform first mowing when seedlings are 40 percent higher than desired height.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming. Do not let clippings lay in clumps.
- D. Water to prevent grass and soil from drying out.
- E. Roll surface to remove minor depressions or irregularities.
- F. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper use of herbicides.
- G. Immediately reseed areas showing bare spots.
- H. Repair washouts or gullies.
- I. Protect seeded areas with warning signs during maintenance period.

### 3.7 SCHEDULE

- A. See Plans for Areas.

END OF SECTION



## SECTION 32 92 23

### SODDING

#### PART 1 GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Preparation of subsoil.
2. Placing topsoil.
3. Fertilizing.
4. Sod installation.
5. Maintenance.

###### B. Related Sections:

1. Section 31 23 17 - Trenching: Rough grading over cut.
2. Section 32 92 19 - Seeding and Soil Supplements.

##### 1.2 REFERENCES

###### A. ASTM International:

1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

###### B. Turfgrass Producers International:

1. TPI - Guideline Specifications to Turfgrass Sodding.

###### C. ASPA (American Sod Producers Association) - Guide Line Specifications to Sodding.

##### 1.3 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

##### 1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data for sod grass species, fertilizer, mulch.

C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

#### 1.5 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Operation and Maintenance Data: Submit maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

#### 1.6 QUALITY ASSURANCE

A. Sod: Root development capable of supporting its own weight without tearing, when suspended vertically by holding upper two corners.

B. "Manual for Erosion and Sediment Control in Georgia" - latest edition, prepared by the Georgia Soil and Water Conservation Commission as amended in 2000.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Deliver sod on pallets. Protect exposed roots from dehydration.

C. Do not deliver more sod than can be laid within 24 hours.

#### 1.8 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

#### 1.9 MAINTENANCE SERVICE

A. Section 01 70 00 - Execution and Closeout Requirements: Maintenance service.

B. Maintain sodded areas immediately after placement until grass is well established and exhibits vigorous growing condition for two cuttings.

### PART 2 PRODUCTS

#### 2.1 SOD

A. Furnish materials in accordance with State Municipality of Highways Public Work's standards.

B. Minimum age of 18 months with root development that will support its own weight without tearing when suspended vertically by holding the upper two corners.

- C. Sod: Nursery grown grade; cultivated grass sod; type indicated in plant schedule on Drawings; with strong fibrous root system, free of stones, burned or bare spots; containing no more than 10 weeds per 1000 sq ft.

## 2.2 SOIL MATERIALS

- A. Topsoil: Excavated from site and free of weeds.

## 2.3 ACCESSORIES

- A. Commercial fertilizer shall be Grade 4-12-12, 6-12-12 or 5-10-15 ready-mixed material. Container bags shall have the name and address of the manufacturer, the brand name, net weight, and chemical composition. Fertilizer proportions used should be those necessary to correct any deficiencies of topsoil to the following proportions: Nitrogen - 5 percent, Phosphoric Acid - 10 percent, Soluble Potash - 10 percent.
- B. Lime: Natural limestone containing not less than 85% of total carbonates, ground so that not less than 90% passed a No. 10-mesh sieve and not less than 50% passes a No. 40-mesh sieve. Provide lime in the form of dolomitic limestone meeting the specified requirements.
- C. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- D. Wood Pegs: Softwood, sufficient size and length to anchor sod on slope.
- E. Wire Mesh: Interwoven hexagonal metal wire plastic mesh of 2 inch size.
- F. Edging: Galvanized steel.

## 2.4 HARVESTING SOD

- A. Machine cut sod and load on pallets in accordance with TPI.
- B. Cut sod in area not exceeding 1 sq yd, with minimum 1/2 inch and maximum 1 inch topsoil base.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify prepared soil base is ready to receive the Work of this section.

### 3.2 PREPARATION OF SUBSOIL

- A. Prepare sub-soil and eliminate uneven areas and low spots.
- B. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- C. Remove foreign materials and undesirable plants and their roots. Do not bury foreign material beneath areas to be sodded.
- D. Remove contaminated subsoil.
- E. Scarify sub-soil to depth of 4 inches where topsoil is to be placed.
- F. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

### 3.3 PLACING TOPSOIL

- A. Spread topsoil to minimum depth of 3 inches over area to be sodded.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- D. Grade topsoil to eliminate rough, low or soft areas and to ensure positive drainage.
- E. Install edging at periphery of sodded areas in straight lines to consistent depth.

### 3.4 FERTILIZING

- A. Apply lime at application of 2000 lbs/ac. Work lime into top 6 inches of soil.
- B. Apply fertilizer at application rate of 1800 lbs/ac.
- C. Apply fertilizer after smooth raking of topsoil and prior to installation of sod.
- D. Apply fertilizer no more than 48 hours before laying sod.
- E. Mix fertilizer thoroughly into upper 4 inches of topsoil.
- F. Lightly water soil to aid dissipation of fertilizer.

### 3.5 LAYING SOD

- A. Moisten prepared surface immediately prior to laying sod.
- B. Lay sod within 24 hours after harvesting to prevent deterioration.

- C. Lay sod tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces.
- D. Lay smooth. Align with adjoining grass areas.
- E. Place top elevation of sod 1/2 inch below adjoining edging.
- F. On slopes 6 inches per foot and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet on center. When using "big roll", lay sod parallel to slope. Drive pegs flush with soil portion of sod.
- G. Do not place sod when temperature is lower than 32 degrees F.
- H. Water sodded areas immediately after installation. Saturate sod to 4 inches of soil.
- I. After sod and soil have dried, roll sodded areas to bond sod to soil and to remove minor depressions and irregularities.
- J. Roll before first watering.

### 3.6 MAINTENANCE

- A. Mow grass at regular intervals to maintain at maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at each mowing.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming.
- D. Water to prevent grass and soil from drying out.
- E. Roll surface to remove or irregularities.
- F. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper use of herbicides.
- G. Immediately replace sod on areas showing deterioration or bare spots.
- H. Protect sodded areas with warning signs during maintenance period.

### 3.7 SCHEDULE

- A. See Plans for Areas.

END OF SECTION

## SECTION 34 71 13

### VEHICLE BARRIERS

#### PART 1 GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Manual on Uniform Traffic Control Devices, Latest Edition, and U.S. Department of Transportation's Federal Highway Administration.

##### 1.02 SUMMARY

- A. Furnish all materials, labor, tools, paint, equipment and incidentals necessary and perform all operations required to furnishing, installing, and maintaining timber barricade panels of the types called for on the Plans and in the Manual on Uniform Traffic Control Devices.
- B. Use timber barricades to warn and alert drivers of the terminus of a road, street, or highway in a non-construction or non-maintenance area. Install timber barricades where called for on the Plans or directed by the Engineer.

#### PART 2 MATERIALS

##### 2.01 GENERAL:

- A. Road closure barricade material shall be conforming to Plan details and locations, specifications, Section 635 of the "Standard Specifications Construction of Transportation Systems", Latest Edition, Georgia Department of Transportation, and the Manual on Uniform Traffic Control Devices.

#### PART 3 INSTALLATION

##### 3.01 GENERAL:

- A. Road closure barricade construction and installation shall be conforming to Plan details and locations, specifications, Section 635 of the "Standard Specifications Construction of Transportation Systems", Latest Edition, Georgia Department of Transportation, and the Manual on Uniform Traffic Control Devices.
- B. Ensure that the barricade rails are marked with alternate red and white stripes sloping downward at an angle of 45 degrees in the direction traffic is to pass. If the traffic may turn right or left, have the stripes slope downward in both directions from the center of the barricade. Make the entire red-and-white striped area of retro-

reflectorized sheeting meeting Section 913. Other barricade components shall be white.

- C. Ensure that the barricade has three rails as long as specified on the Plans.
- D. Promptly clean, repair, or replace barricades that are damaged, defaced, or otherwise unfit at the Contractor's expense.

END OF SECTION

# APPENDIX A



## Contractor's Application for Payment No.

	Application Period:	Application Date:
To (Owner): City of LaGrange	From (Contractor):	Via (Engineer):
Project: Granger Park - Water Quality Pond Stormwater Improvement Project	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.: R2016-119

### Application For Payment Change Order Summary

Approved Change Orders				
Number	Additions	Deductions		
TOTALS				
NET CHANGE BY CHANGE ORDERS				

  

	1. ORIGINAL CONTRACT PRICE.....	\$ _____
	2. Net change by Change Orders.....	\$ _____
	3. Current Contract Price (Line 1 ± 2).....	\$ _____
	4. TOTAL COMPLETED AND STORED TO DATE (Column F total on Progress Estimates).....	\$ _____
	5. RETAINAGE:	
	a. X _____ Work Completed.....	\$ _____
	b. X _____ Stored Material.....	\$ _____
	c. Total Retainage (Line 5.a + Line 5.b).....	\$ _____
	6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5.c).....	\$ _____
	7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application).....	\$ _____
	8. AMOUNT DUE THIS APPLICATION.....	\$ _____
	9. BALANCE TO FINISH, PLUS RETAINAGE (Column G total on Progress Estimates + Line 5.c above).....	\$ _____

**Contractor's Certification**

The undersigned Contractor certifies, to the best of its knowledge, the following:

(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;

(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such Liens, security interest, or encumbrances); and

(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

**Contractor Signature**

By: _____	Date: _____
-----------	-------------

Payment of:	\$ _____	(Line 8 or other - attach explanation of the other amount)
is recommended by:	_____	_____
	(Engineer)	(Date)
Payment of:	\$ _____	(Line 8 or other - attach explanation of the other amount)
is approved by:	_____	_____
	(Owner)	(Date)
Approved by:	_____	_____
	Funding or Financing Entity (if applicable)	(Date)





# APPENDIX B

# Change Order

No. \_\_\_\_\_

Date of Issuance: \_\_\_\_\_

Effective Date: \_\_\_\_\_

Project: Granger Park – Water Quality Pond Stormwater Improvement Project	Owner: City of LaGrange	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.: R2016-119

**The Contract Documents are modified as follows upon execution of this Change Order:**

Description:  
\_\_\_\_\_  
\_\_\_\_\_

**Attachments (list documents supporting change):**

\_\_\_\_\_

**CHANGE IN CONTRACT PRICE:**

Original Contract Price:

\$ \_\_\_\_\_

[Increase] [Decrease] from previously approved  
Change Orders No. \_\_\_\_\_ to No. \_\_\_\_\_:

\$ \_\_\_\_\_

Contract Price prior to this Change Order:

\$ \_\_\_\_\_

[Increase] [Decrease] of this Change Order:

\$ \_\_\_\_\_

Contract Price incorporating this Change Order:

\$ \_\_\_\_\_

**CHANGE IN CONTRACT TIMES:**

Original Contract

Times:  Working days  Calendar days

Substantial completion (days or date): \_\_\_\_\_

Ready for final payment (days or date): \_\_\_\_\_

[Increase] [Decrease] from previously approved Change  
Orders No. \_\_\_\_\_ to No. \_\_\_\_\_:

Substantial completion (days): \_\_\_\_\_

Ready for final payment (days): \_\_\_\_\_

Contract Times prior to this Change Order:

Substantial completion (days or date): \_\_\_\_\_

Ready for final payment (days or date): \_\_\_\_\_

[Increase] [Decrease] of this Change Order:

Substantial completion (days or date): \_\_\_\_\_

Ready for final payment (days or date): \_\_\_\_\_

Contract Times with all approved Change Orders:

Substantial completion (days or date): \_\_\_\_\_

Ready for final payment (days or date): \_\_\_\_\_

RECOMMENDED:

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

Engineer (Authorized

Date: \_\_\_\_\_

ACCEPTED:

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

Owner (Authorized Signature)

Date: \_\_\_\_\_

ACCEPTED:

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

Contractor (Authorized

Date: \_\_\_\_\_

# APPENDIX C

**Lien Waiver**

STATE OF GEORGIA

COUNTY OF TROUP

TO WHOM IT MAY CONCERN:

WHEREAS, the undersigned has been employed by City of LaGrange for the construction of the Granger Park – Water Quality Pond Stormwater Improvement Project of which City of LaGrange is the owner.

The undersigned hereby certifies that all work required under the above contract has been performed in accordance with the terms thereof, that all material men, subcontractors, mechanics and laborers have been paid and satisfied in full, and that there are no outstanding claims of any character arising out of the performance of the contract which have not been paid in full and satisfied in full. The undersigned further certifies to the best of his knowledge and belief there are no unsatisfied claims for damages resulting from injury or death to any employees, subcontractors or the public arising out of the performance of the contract, or any suits or claims for damages of any kind, nature or description which might constitute a lien upon the property of the Owner.

\_\_\_\_\_  
Company

\_\_\_\_\_  
Signature Title

PERSONALLY appeared before me this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_  
\_\_\_\_\_, who under oath deposes that they have read the above statement and that to the best of their knowledge and belief same is an exact true statement.

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

My Commission Expires: \_\_\_\_\_