DeKalb County
Department of Purchasing and Contracting

Maloof Administration Building, 1300 Commerce Drive, 2nd Floor, Decatur, Georgia 30030

September 2, 2019

INVITATION TO BID (ITB) NO. 19-101139
FOR

HENDERSON PARK TENNIS SIDE RESTROOM SITE PREP

DEKALB COUNTY, GEORGIA

Procurement Agent:	Jennifer Schofield
Phone:	404.687.4042
Email:	jjschofield@dekalbcountyga.gov
Mandatory DeKalb First LSBE Meeting: (Bidders must attend 1 meeting on either of the dates listed.)	September 4, 2019 , September 11, 2019 4572 Memorial Drive, Decatur, Georgia 30032 Main Conference Room - A (Meetings are held at 10:00 a.m. and 2:00 p.m.) Video Conference: Utilize the link supplied on our webpage labeled "DeKalb First LSBE Video Meeting"
MANDATORY Pre-Bid Conference:	September 12, 2019, 11:00 AM, Henderson Park @ Tennis Courts 2723 Henderson Road, Tucker, GA 30084
Deadline for Submission of Questions:	5:00 P.M. ET, September 6, 2019
Bid Opening:	3:00 P.M. ET, October 3, 2019
Price Schedule Opening:	3 – 5 Business days after Bid Opening

THE RESPONSIBILITY FOR SUBMITTING A RESPONSE TO THIS BID TO THE DEPARTMENT OF PURCHASING AND CONTRACTING OF DEKALB COUNTY GOVERNMENT ON OR BEFORE THE STATED DATE AND TIME WILL BE SOLELY AND STRICTLY THE RESPONSIBILITY OF THE BIDDER.

TABLE OF CONTENTS

Title	Page Number
Acknowledgment of Bidder	3
Advertisement for Bids	4-5
Instructions to Bidders	6-16
Bidder's Unit Price Form	17-21
Bid Bond Form	22-23
First Source Jobs Ordinance Information with Exhibits 1 - 4	24-27
Reference and Release Form	28
Subcontractor Reference and Release Form	29
DeKalb First Ordinance Information Sheet and LSBE Exhibits A and B	30-38
Certificate of Corporate Bidder	39
Certificate of Authority – Joint Venture Bidder	40
Bidder's Affidavit of Compliance with O.C.G.A. §13-10-91	41
Subcontractor Affidavit	42
Oath of Successful Bidder	43
Required Documents Checklist	44
Standard Form Contract for Construction	Exhibit 1 (Pages 45-100)
Technical Specifications	Exhibit 2 (Pages 101-330)
Drawings	Exhibit 3 (Pages 331-341)

ACKNOWLEDGEMENT OF BIDDER

I _____ have had the opportunity to review and have reviewed this Bid Document Package dated _____, 20___ in its entirety and I agree that it is accurate and complete. I_____ am duly and properly in office and I am fully authorized and empowered to execute this Acknowledgement for and on behalf of the Contractor.

By: _____(SEAL)
Signature

_____
Name (Typed or Printed)

_____
Title

_____
Name of Business

_____
Federal Tax I.D. Number

ATTEST:

_____
Signature

_____
Name (Typed or Printed)

_____
Title

ADVERTISEMENT FOR BIDS

DEKALB COUNTY, GEORGIA

INVITATION NUMBER 19-101139

Sealed Bids will be received by DeKalb County, Georgia, in the Department of Purchasing and Contracting, The Maloof Center, 2nd Floor, 1300 Commerce Drive, Decatur, Georgia 30030, until **3:00 p.m. on October 3, 2019**, at which time and place they will be publicly opened and read aloud, for furnishing all labor, materials, equipment, and all things necessary pursuant to Drawings, Specifications, conditions, etc., for Henderson Park Tennis Side Restroom Site Prep ("the Project"). Bid Price Form shall be opened and read aloud 3 to 5 business days after Bid Opening.

SUBMIT ONE ORIGINAL BID PACKAGE (INCLUSIVE OF THE ENTIRE INVITATION TO BID DOCUMENT AND REQUIRED DOCUMENTS WITH THE EXCEPTION OF THE BID PRICE FORM) STAMPED "ORIGINAL" AND TWO SEALED IDENTICAL COPIES STAMPED "COPY" OF THE BID PACKAGE TO THE ADDRESS LISTED ABOVE.

Contract Documents, Drawings, and Specifications for this Work are on file and open for inspection at the Department of Purchasing and Contracting, The Maloof Center, 2nd Floor, 1300 Commerce Drive, Decatur, Georgia 30030.

MANDATORY PRE-BID CONFERENCE AND SITE VISIT

A mandatory pre-bid conference and site visit will be held at **11:00 AM. on September 12, 2019** at **Henderson Park @ Tennis Courts, 2723 Henderson Road, Tucker, GA 30084**. Bidders are required to attend and participate in the mandatory pre-bid conference and site visit. Bidders shall sign in at the mandatory pre-bid meeting and site visit as proof of attendance. Only the Bidder or its authorized representative or employee shall sign in at the mandatory pre-bid meeting and site visit. For individual firms planning to bid as a yet to be formed joint venture, a representative from each firm is required to attend and sign in. Failure of a Bidder to attend or sign in at the mandatory pre-bid conference and site visit, will be cause for rejection of Bid. For information regarding the mandatory pre-bid conference and site visit, please contact Jennifer Schofield, Procurement Agent at 404.687.4042 or jjschofield@dekalbcountyga.gov.

QUESTIONS

All questions concerning the Project and requests for interpretation of the solicitation may be asked and answered at the pre-bid conference; however, oral answers are not authoritative. Questions must be submitted to the Department of Purchasing and Contracting in writing via email to **jjschofield@dekalbcountyga.gov.** Questions and requests for information or clarification concerning the specifications in this ITB must be submitted to the above listed contact person via email no later than the date and time listed in the bid timetable. Questions and requests for interpretation received after the above stated time or sent to anyone other than the listed contact person will not receive a response or be the subject of addenda.

No Bid may be revoked or withdrawn until sixty (60) days after the time set for opening the Bids.

THE COUNTY RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS, TO WAIVE INFORMALITIES IN BIDDING, AND TO READVERTISE.

This 2nd day of September, 2019.

DEKALB COUNTY, GEORGIA

By: _____
Jennifer Schofield
Procurement Agent
Department of Purchasing and Contracting

INSTRUCTIONS TO BIDDERS

GENERAL

Sealed Bids will be received by DeKalb County, Georgia, in the Department of Purchasing and Contracting, The Maloof Center, 2nd Floor, 1300 Commerce Drive, Decatur, Georgia 30030, until 3:00 p.m. on October 3, 2019, for ITB No. 19-101139 according to the Drawings and Specifications entitled Henderson Park Tennis Side Restroom Site Prep on file in the Department of Purchasing and Contracting, The Maloof Center, 2nd Floor, 1300 Commerce Drive, Decatur, Georgia 30030. Bid Price Forms shall be opened and read aloud 3 to 5 business days after Bid Opening Date. Sealed Bids shall be submitted on the form furnished by the County and shall be submitted in **triplicate**, designated as original or copy. **SUBMIT ONE ORIGINAL BID PACKAGE (INCLUSIVE OF THE ENTIRE INVITATION TO BID DOCUMENT AND REQUIRED DOCUMENTS WITH THE EXCEPTION OF THE BID PRICE FORM) STAMPED "ORIGINAL" AND TWO SEALED IDENTICAL COPIES STAMPED "COPY" OF THE BID PACKAGE TO THE ADDRESS LISTED ABOVE.**

Bids will be considered only from experienced and well-equipped contractors. Prior to beginning construction, the successful Bidder will file with the County a **Performance Bond and a Payment Bond, each equal to 100% of the Contract Price**, with the terms and surety to be approved by the County; and furnish satisfactory proof of carriage of the insurance required.

SUBMITTING BIDS

Bids are to be submitted on the proper unaltered forms, and shall be addressed to the DeKalb County Department of Purchasing and Contracting, The Maloof Center, 2nd Floor, 1300 Commerce Drive, Decatur, Georgia 30030, sealed, dated and enclosed in an envelope or package appropriately marked on the outside with the name of the Bidder, the date and hour of opening, and the Invitation to Bid Number and Project Name.

FAILURE TO SUBMIT THE BID PRICE FORM IN A SEPARATE SEALED ENVELOPE SHALL DEEM THE BID NON-RESPONSIVE. INCLUDING THE PRICE SCHEDULE IN ANY AREA OUTSIDE OF ITS SEPARATE, SEALED

ENVELOPE WILL RESULT IN BIDDER'S BID BEING DEEMED NON-RESPONSIVE.

It is the responsibility of each Bidder to ensure that its submission is received by 3:00 p.m. on the bid due date. The time/date stamp clock located in the Department of Purchasing & Contracting shall serve as the official authority to determine lateness of any bid. The bid opening time shall be strictly observed. Be aware that visitors to our offices will go through a security screening process upon entering the building. Bidders should plan enough time to ensure that they will be able to deliver their submission prior to our deadline. Late submissions, for whatever reason, will not be evaluated. Bidders should plan their deliveries accordingly. Telephone or fax bids will not be accepted.

PRICE SCHEDULE OPENING

Price Schedule openings shall be conducted in the Department of Purchasing and Contracting three (3) to five (5) days after the bid opening. Only the Price Schedules of responsive bidders shall be opened. The County reserves the right to decide which bid(s) will be deemed responsive and said determination shall be made in accordance with the requirements stated in this solicitation.

BUSINESS LICENSE

Bidders shall submit a copy of its current, valid business license with its Bid or upon award. If the Bidder is a Georgia corporation, Bidder shall submit a valid county or city business license. If Bidder is a joint venture, Bidder shall submit valid business licenses for each member of the joint venture. If the Bidder is not a Georgia corporation, Bidder shall submit a certificate of authority to transact business in the state of Georgia and a copy of its current, valid business license issued by its home jurisdiction. If Bidder holds a professional license, then Bidder shall submit a copy of the valid professional license. Failure to provide the business license, certificate of authority, or professional license required by this section, may result in the proposed Bid being deemed non-responsive.

UTILITY SYSTEMS CONTRACTOR'S LICENSE

As required by O.C.G.A. § 43-14-8, *et seq.*, a Bidder responding to this Invitation to Bid must provide a copy of its or its subcontractor's Georgia Utility Systems Contractor's License, Utility Manager's Certificate, and Utility Foreman's Certificate with its Bid. All licenses and certificates must be issued in the name of the person or entity that will perform the utility work. If a subcontractor's Georgia Utility Systems Contractor's License is submitted with the Bid, the subcontractor must be listed as such on appropriate Bidder's Lump Sum Price Form Bidder's Unit Price Form. All licenses and certificates must be current, valid, and issued in compliance with applicable law. Failure to provide this license and necessary certificates in this format will result in the proposed Bid being deemed non-responsive.

GENERAL CONTRACTOR'S LICENSE NUMBER

As required by O.C.G.A. § 43-41-6, *et seq.*, a Bidder responding to this Invitation to Bid must provide a copy of its Georgia General Contractor's License with its Bid. The Georgia General Contractor's License must be issued in the name of the Bidder or in the name of its qualifying agent. If a proposed Bidder is relying upon a qualifying agent's Georgia General Contractor's License, then the name of the proposed Bidder must be set forth on the license as an affiliated business organization/dependent licensee. All licenses must be current, valid, and issued in compliance with applicable law. Failure to provide this license with the Bid will result in the proposed Bid being deemed non-responsive.

QUESTIONS, ADDENDA AND INTERPRETATION

All questions concerning the Project and requests for interpretation of the solicitation may be asked and answered at the pre-bid conference; however, oral answers are not authoritative. Questions must be submitted to the Department of Purchasing and Contracting in writing via email to jjschofield@dekalbcountyga.gov. Questions and requests for information or clarification concerning the specifications in this ITB must be submitted to the above listed contact person via email no later than the date and time listed in the bid timetable. Questions and requests for interpretation received after the above

stated time or sent to anyone other than the listed contact person will not receive a response or be the subject of addenda. For questions and requests for interpretation after the pre-bid conference, each response shall be given in written addendum, separately numbered and dated, and published on the County website in sufficient time for interested parties to review. **No responses to requests, answers to specification questions, or additional information shall be supplied after "September 6, 2019"**

ACKNOWLEDGMENT OF ADDENDA

Addenda may be issued in response to changes in the Invitation to Bid. Addenda must be acknowledged by signing and returning the Addendum Acknowledgement with the Bid. Acknowledgments must be received by the County before the Bid opening time and date. Failure to properly acknowledge any addendum may result in the proposed Bid being deemed non-responsive. Bidder may call Jennifer Schofield at 404.687.4042 or send an email to jjschofield@dekalbcountyga.gov to verify the number of addenda prior to submission. All addenda issued for this Project may be found on DeKalb County's website, http://www.dekalbcountyga.gov/purchasing/index.htm.

AUTHORITY TO SIGN

If a Bid is submitted by an individual, his/her name and mailing address must be shown. If submitted by a corporation, partnership, or joint venture, the name and physical mailing address of each member of the corporation, partnership, or joint venture must be shown. If submitted by a corporation, the Certificate of Corporate Bidder in the form attached to the Bid Document Package must be executed and submitted with the Bid. If submitted by a joint venture, the Certificate of Authority – Joint Venture in the form attached to the Bid Document Package must be executed and submitted with the Bid. A post office box is not acceptable as a physical mailing address. The legal and proper name of the proprietorship, corporation, or partnership submitting the Bid shall be printed or typed in the space provided on the Certificate of Corporate Bidder.

BID GUARANTEE TO ACCOMPANY BID

Each Bid must be accompanied by a Bid Guarantee in an amount of not less than ten percent (10%) of the amount of the Bid. The Bid Guarantee may be in the form of an official bank check payable to DeKalb County, or a Bid Bond in the form provided in the Bid Document Package. The Bid Bond shall be issued by a surety company licensed to write bonds in the State of Georgia, listed in the most current U.S. Treasury Circular No. 570, and have a current A.M. Best rating of "A" (Excellent) with a Financial Size Category of XII or better.

VALID INSURANCE, BONDS, LICENSES, PERMITS, AND CERTIFICATES

Bidder shall ensure that any bond, bid bond, payment bond, performance bond, insurance, license, permit or certificate submitted in response to this Invitation to Bid or as part of the Contract for this Project shall be current and valid when submitted, and shall remain valid, current and maintained in good standing for the Contract Term.

BUILDERS' RISK INSURANCE COVERAGE

DeKalb County shall procure and maintain Builders Risk Insurance on the entire work which provides "All-risk" form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism, malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than caused by flood), and such other perils or causes of loss as may be specifically required by Supplementary Conditions) until Final Completion and Acceptance of the Project. Such policy of insurance shall contain at least the following sub-limits of insurance and deductibles:

Sub-limits:	
Property in Transit	$1,000,000
Property in Offsite Storage	$1,000,000
Plans & Blueprints	$25,000
Debris Removal	25% of Insured Physical Loss
Delay in Completion / Soft Cost	TBD
Ordinance of Law (Increased Cost of Construction)	$1,000,000

Flood and Earthquake	TBD – Full Contract Value
Deductibles:	
Flood and Earthquake	$25,000
Water Damage other than Flood	$100,000
All other Perils	$10,000

RIGHTS RESERVED

The County reserves the right to reject any or all Bids, to waive informalities, and to re-advertise. The County reserves the right to decide which Bid will be deemed lowest, responsive and responsible. For consideration as a responsible Bidder, the proposed Bidder shall, among other qualifications, demonstrate in its Bid that it has been the general contractor engaged in construction and successful completion of facilities of similar character and magnitude for at least **five (5) years**, and shall demonstrate the financial ability to perform the required Work. Bidder may be required to submit evidence setting forth qualifications which entitle him to consideration as a responsible Bidder. A list of work of similar character successfully completed within the last five (5) years may be required as set forth in the Invitation to Bid giving the location and size of each project. Bidder shall complete the Reference and Release Form attached to the Bidder Document Package. In addition, the Bidder shall submit upon request by the County, a list of equipment available for use on this Work with its Bid. Any additions, conditions, limitations, or provisions attached to the Bid shall render it informal, and will be cause for rejection as non-responsive. No Bid may be revoked or withdrawn until sixty (60) days after the time set for opening the Bids.

AWARD OF CONTRACT

The Contract, if awarded, will be awarded to that responsible Bidder whose responsive Bid will be most advantageous to the County, price and other factors considered. The County is entitled to make the determination in its sole discretion. The Contract between the County and the Contractor shall be executed in the form attached to the Bid Document Package on pages , and shall form a binding contract between the contracting parties. A Performance Bond and a Payment Bond, each equal to 100% of the Contract Price, must be provided by the successful Bidder, issued in proper form by a surety

company licensed to write bonds in the State of Georgia, listed in the most current U.S. Treasury Circular No. 570, and which has a current A.M. Best rating of "A" (Excellent) with a Financial Size Category of XII or better. Bonds given shall meet the requirements of the law of the State of Georgia including, but not limited to, O.C.G.A. §13-10-1 and §36-91-21 *et seq.*

FAILURE TO EXECUTE CONTRACT

The County shall have sixty (60) days after the time set for openings of Bids to notify a Bidder of the County's acceptance of the Bid and its intent to award the Contract to such Bidder. If the County so notifies a Bidder and the Bidder fails to enter into the Contract in the form attached to the Bid Document Package on pages within ten (10) days of receiving such notice, or fails within that time to provide the required Payment and Performance Bonds and proof of required insurance, the amount of the Bid Bond or other Bid Guarantee shall be paid over to the County as liquidated damages. The acceptance of the payment of the Bid Bond shall not operate to bar any claim the County might otherwise have against the Bidder, and the County shall be authorized to pursue any claim against the Bidder for failure to consummate the Contract as may be authorized by law.

TIME AND LIQUIDATED DAMAGES

Construction must begin within ten (10) days from the date the Contractor acknowledges receipt of the Notice to Proceed, by signing and inserting the acknowledgement date on the Notice to Proceed. Contractor shall fully complete the Work within **sixty (60)** days from and including the acknowledgement date. For failure to complete the Work within this period, the Contractor shall pay the County liquidated damages in the amount of **ONE HUNDRED FIFTY Dollars ($150.00**) for each day in excess of the Contract Time unless an extension of the Contract Time has been obtained by Change Order, as defined in the Contract, prior to the expiration of the Contract Term as defined in the Contract.

LOCATIONS AND SITE

The site of the proposed Work is at the stated location(s) within DeKalb County, Georgia. By submitting a Bid, the Bidder accepts the site in its present condition and agrees, if awarded the Contract, to carry out all Work in accordance with the requirements of the Contract, the Specifications and as shown on the Drawings. The Bidder shall, before submitting a Bid, visit the site and acquaint itself with the actual conditions and the location of any or all obstructions that may exist on the site. The documents comprising the Contract contain the provisions required for the completion of the Work to be performed pursuant to this Contract. Information obtained from an officer, agent, or employee of the County, or any other person shall not affect the risks or obligations assumed by the Contractor or relieve it from fulfilling any of the conditions of the Contract. Each Bidder, prior to submitting his Bid, is responsible for inspecting the site and for reading and being thoroughly familiar with all of the documents comprising the Contract and Bid Document Package. The failure or omission of any Bidder to so familiarize himself shall in no way relieve any Bidder from any obligation in respect to his Bid. The Contractor shall inspect all easements and rights-of-way to insure that the County has obtained all land and rights-of-way necessary for completion of the Work to be performed pursuant to the Contract. The Contractor shall comply with all stipulations contained in easements acquired by the County. If applicable to the Work, all easements and rights-of-way documents are available for inspection in the office of , , . The Contractor shall not be entitled to damages and agrees not to make any claim against the County, its officials or employees for the failure to obtain necessary interests in land for this Project. The Contractor shall accurately locate above-ground and below-ground utilities and structures which may be affected by the Work using whatever means may be appropriate.

DEKALB FIRST ORDINANCE

It is the objective of the Chief Executive Officer and Board of Commissioners of DeKalb County to provide maximum practicable opportunity for all businesses to participate in the performance of government contracts. The current DeKalb County List of Certified Vendors may be found on the County website at http://www.dekalbcountyga.gov/purchasing/pdf/supplierList.pdf

It is required that all responding Bidders attend the mandatory LSBE meeting within two-weeks of the solicitation's advertisement, and comply, complete and submit all LSBE forms with the Bidder's response in order to remain responsive. Attendance can be in person, via video conference and teleconference. Video conferencing is available through Skype/Lync. Instructions for attendance via video conference can be found on the County's website at https://www.dekalbcountyga.gov/purchasing-contracting/dekalb-first-lsbe-program.

For further details regarding the DeKalb First Local Small Business Enterprise Ordinance, contact the LSBE Program representative at pcadmin-ops@dekalbcountyga.gov or (404) 371-7051.

FEDERAL WORK AUTHORIZATION PROGRAM PARTICIPATION

All qualifying Contractors and Subcontractors performing work with DeKalb County, Georgia must register and participate in the federal work authorization program to verify the work eligibility information of new employees. In order for a Bid to be considered, it is mandatory that the Bidder's Affidavit of Compliance with O.C.G.A. §13-10-91 included as page be completed and submitted with the Bid.

GEORGIA OPEN RECORDS ACT

Without regard to any designation made by the person or entity making a submission, DeKalb County considers all information submitted in response to this invitation or request to be a public record that will be disclosed upon request pursuant to the Georgia Open Records Act, O.C.G.A. §50-18-70 et seq., without consulting or contacting the person or entity making the submission, unless a court order is presented with the submission. You may wish to consult an attorney or obtain legal advice prior to making a submission.

FIRST SOURCE JOBS ORDINANCE

The DeKalb County First Source Jobs Ordinance requires contractors or beneficiaries entering into any type of agreement with the County, including purchase orders, regardless of what they may be called, for the procurement or disposal of supplies, services, construction projects, professional or consultant services, which is funded in whole or part with County funds or County administered funds in which the contractor is to receive $50,000 or more in County expenditures or committed expenditures and recipient of urban redevelopment action grants or community development block funds administered in the amount of $50,000 or more make a good faith effort to hire DeKalb County residents for at least 50% of jobs using the First Source Registry (candidate database). The work to be performed under this contract is subject to the provisions of the DeKalb County First Source Jobs Ordinance. Please complete the First Source Jobs Ordinance Acknowledgement and New Employee Tracking Form included in Attachment , First Source Jobs Ordinance (with Exhibits 1 – 4) and submit with the responder's proposal.

For more information on the First Source Jobs Ordinance requirement, please contact WorkSource DeKalb at www.worksourcedekalb.org or 404-687-3400.

ETHICS RULES

Bidders are subject to the Ethics provision within the DeKalb County Purchasing Policy; the Organizational Act, Section 22A, the Code of DeKalb County; and the rules of Executive Order 2014-4. Any violations will be addressed, pursuant to these policies and rules.

To the extent that the Organizational Act, Section 22A, the Code of DeKalb County, and the rules of Executive Order 2014-4 allow a gift, meal, travel expense, ticket, or anything else of value to be purchased for a CEO employee by a contractor doing business with the County, the contractor must provide written disclosure, quarterly, of the exact nature and value of the purchase to the Chief Integrity Officer, if created, or the Finance Director or his/her designee. Every contractor conducting business with the County will receive a copy of these ethical rules at the time of execution of the contract.

DEKALB COUNTY, GEORGIA'S TITLE VI POLICY STATEMENT

DeKalb County, Georgia is committed to compliance with Title VI of the Civil Rights Act of 1964 and all related regulations and directives. DeKalb County assures that no person shall on the grounds of race, color, sex, or national origin, as provided by Title VI of the Civil Rights Act of 1964, the Federal-Aid Highway Transportation Act of 1973, and the Civil Rights Restoration Act of 1987 be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity. DeKalb County further assures that no person shall on the grounds of age, low income, disability, sexual orientation or gender identity be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity.

DeKalb County assures every effort will be made to ensure nondiscrimination in all of its programs and activities, whether those programs and activities are federally funded or not. In addition, DeKalb County will take reasonable steps to provide meaningful access to services for persons with Limited English Proficiency (LEP).

STANDARD COUNTY CONTRACT

The attached sample contract is the County's standard contract document, which specifically outlines the contractual responsibilities. All bidders should thoroughly review the document prior to submitting a bid. Any proposed revisions to the terms or language of this document must be submitted in writing with the bidder's bid. Since proposed revisions may result in a bid being rejected if the revisions are unacceptable to the County, bidders should review any proposed revisions with an officer of the firm having authority to execute the contract. No alterations can be made in the contract after award by the Board of Commissioners.

BIDDER'S UNIT PRICE

*****NEW–BID PRICE FORM MUST BE SUBMITTED IN A SEPARATE SEALED ENVELOPE OR BIDDER WILL BE DEEMED NON-RESPONSIVE AND WILL NOT BE CONSIDERED FOR AWARD*****

TO: The Governing Authority of DeKalb County, Georgia

The undersigned, as Bidder, declares that he has carefully examined ITB No. 19-101139, Henderson Park Tennis Side Restroom Site Prep, an annexed proposed form of Contract, the Specifications therein contained, and the Drawings therein referred to, and that he proposes and agrees that if his Bid is accepted, to provide the necessary machinery, tools, apparatus, and other means of construction, and will furnish all materials and labor specified in the Contract, or called for by the Drawings, or necessary to complete the Work in the manner therein specified within the time specified, as therein set forth for the unit prices on the form following this page. If the Bidder's Unit Price exceeds one page in length it should be completed in an excel format, typewritten, printed out and attached hereto. Handwritten Unit Prices exceeding one page in length may not be accepted and may result in the proposed Bid being deemed non-responsive.

DeKalb County / City of Tucker Henderson Park Restroom Addition				
Item	**Qty**	**Unit**	**Unit Price**	**Subtotal**
Tree Protection Fence	300	lf		
Silt Fence (Type C)	1,100	lf		
Temporary Seeding	1,700	sy		
Clearing	0.10	ac		
Debris Removal	1	ls		
Grading				
Rough Grading	150	cy		
Fine Grading	3,000	sf		
Pavement				
Concrete -Sidewalk	140	sy		
Electrical Line	300	lf		
Sanitary Sewer - 6" DIP	520	lf		
Waterline - 1" Copper	600	lf		
Permanent Grassing	1,700	sy		
Permitting	1			
			SUBTOTAL	
			10% CONTINGENCY	
			TOTAL	

These quantities are approximate and may be increased or decreased as to any and all units as necessary to complete the construction of said Project without entitling the Contractor to any claim for extra compensation because of any injury, damage or delay he may sustain on account of such increase or decrease. The Contractor shall be entitled to compensation on the foregoing unit prices only on the quantities of materials actually furnished and work actually done as determined and approved in writing by the County through an inspection of the work completed. In no event shall the County be liable for payment in excess of the total Bid amount of $ (Insert same "TOTAL BID" figure as listed on the foregoing page) without proper prior written authorization via Change Order from the County. The Total Bid includes and encompasses the cost of all labor, materials, equipment, tools, supervision, scheduling, safety program, coordination, engineering, testing, surveys, layout, cleanup, and other things and services required to complete the entire Project in strict conformity with the Drawings, Specifications, the Contract, and all addenda and authorized written clarifications issued prior to the Bid date. Without limitation, the Total Bid also includes all applicable sales and use taxes, fees, temporary lighting, security for the site, heating and cooling, temporary utilities, freight costs, handling costs, permit costs, field and main office costs, bond premiums, insurance premiums, direct and indirect administrative costs, overhead, and profit.

Bidder has examined the site of the proposed Work and all documents comprising the Contract, and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the Contract.

No Bid may be revoked or withdrawn until sixty (60) days after the time set for opening the Bids.

Attached hereto is Bid Bond made by _____

_____, a surety company listed in the most recent US Treasury Circular No. 570 and licensed to write surety bonds in the State of Georgia, payable to DeKalb County, Georgia (or an official bank check), in the amount of ten percent (10%) of the above Bid, to-wit: $_____.

If this Bid shall be accepted by DeKalb County and the undersigned shall fail to execute a satisfactory contract in the form of said proposed Contract, give satisfactory Performance and Payment Bonds, or furnish satisfactory proof of the insurance required, as stated in the Instructions to Bidders within ten (10) days from the Notice of Award of the Contract, then the County may at its option, determine that the undersigned abandoned the Contract and thereupon this Bid shall be null and void, and the sum stipulated in the attached Bid Bond (or an official bank check) shall be forfeited to the County as liquidated damages.

Bidder declares his intent to subcontract the portion of the Work as below stated. Bidder understands and agrees that the use of any Subcontractor not listed below shall be strictly prohibited without prior written approval from the County**.** (*List names of all subcontractors and the work to be provided by the subcontractor on the lines provided below.)*

_____

_____

_____

Bidder further declares that the full names and residence addresses of all persons and parties interested in the foregoing Bid as principals are as follows:

_____

_____

_____.

Bidder declares further that it is ☐ / is not ☐ a DeKalb County Firm.

Signed, sealed, and dated this _____ day of _____, 20___.

By:_____(SEAL)
Signature

_____
Print Name of Signer

_____
Title of Signer

_____
Name of Business Entity Submitting Bid

_____
Bidder's Street Address

_____
Bidder's City, State and Zip Code

_____
Bidder's Phone Number

_____
Bidder's Fax Number

_____
Bidder's E-Mail Address

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

_____

(hereinafter called the Principal) and _____

_____ (hereinafter called the Surety), a corporation chartered and existing under the laws of the State of with its principal offices in the City of _____ _____and listed in the Federal Register and licensed to write surety bonds in the State of Georgia, are held and firmly bound unto DeKalb County, Georgia, in the full and just sum of 10% of the Principal's Bid good and lawful money of the United States of America, to be paid upon demand of DeKalb County, Georgia, to which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, and assigns, jointly and severally and firmly by these presents.

WHEREAS, the Principal is about to submit, or has submitted to DeKalb County, Georgia, a Bid for (*insert name of the Project*)_____

_____.

WHEREAS, the Principal desires to file this Bond in accordance with law to accompany this Bid.

NOW, THEREFORE, the conditions of this obligation are such that if the Bid be accepted within sixty (60) days of the Bid opening, the Principal shall execute a Contract in accordance with the Bid and upon the terms, conditions, and prices set forth therein, and in the form and manner required by DeKalb County, Georgia, and within ten (10) days from the date of Notice of Award of the Contract, execute a sufficient and satisfactory Performance Bond and Payment Bond payable to DeKalb County, Georgia, each in an amount of one hundred percent (100%) of the total Contract Price, in form and with security satisfactory to DeKalb County and furnish satisfactory proof of the insurance required, then this obligation to be void; otherwise, to be and remain in full force and virtue in law; and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above,

immediately pay to the aforesaid DeKalb County, Georgia, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

IN TESTIMONY THEREOF, the Principal and Surety have caused these presents to be duly signed and sealed this _____ day of _____, 20___.

PRINCIPAL

By: _____(SEAL)
Signature of Principal

_____
Print Name and Title of Authorized Signer

_____
Print Name of Principal Business

ATTEST:

_____
Corporate Secretary

SURETY

By: _____(SEAL)
Signature of Surety (by Power of Attorney)

_____
Print Name and Title of Authorized Signer

_____
Print Name of Surety Business

WITNESS:

_____

FIRST SOURCE JOBS ORDINANCE INFORMATION
(WITH EXHIBITS 1 – 4)

EXHIBIT 1

First Source Jobs Ordinance Acknowledgement

The DeKalb County First Source Ordinance requires contractors or beneficiaries of eligible projects entering into any type of agreement with the County, including purchase orders, regardless of what they may be called, for the procurement or disposal of supplies, services, construction projects, professional or consultant services, which is funded in whole or part with County funds or County administered funds in which the contractor is to receive $50,000 or more in County expenditures or committed expenditures and recipient of urban redevelopment action grants or community development block funds administered in the amount of $50,000 or more to make a good faith effort to hire DeKalb County residents for at least 50% of jobs created using the First Source Registry (candidate database) within one hundred twenty (120) days of contract execution. The work to be performed under this contract is subject to the provisions of the DeKalb County First Source Jobs Ordinance. All contractors will be asked to submit an ***Employment Roster*** and/or copies of active payroll registers on a monthly basis to verify compliance. The undersigned acknowledges and agrees to comply with the provisions of the DeKalb County First Source Jobs Ordinance.

CONTRACTOR OR BENEFICIARY INFORMATION:

_____
Contractor or Beneficiary Name (Signature)

_____
Contractor or Beneficiary Name (Printed)

_____
Title

_____
Telephone

_____
Email

_____
Name of Business

Please answer the following questions:

1. How many job openings do you anticipate filling related to this contract? _____

2. How many incumbents/existing employees will retain jobs due to this contract?
   DeKalb Residents: _____ Non-DeKalb Residents: _____

3. How many work hours per week constitutes Full Time employment? _____

Please return this form to WorkSource DeKalb, (404)687-3900 or email to fkadkins@dekalbcountyga.gov, malee@dekalbcountyga.gov, vlnicksion@dekalbcountyga.gov, or jmjones@dekalbcountyga.gov

FIRST SOURCE JOBS ORDINANCE INFORMATION
EXHIBIT 2

NEW EMPLOYEE TRACKING FORM

Name of Bidder_____
Address_____
E-Mail_____
Phone Number_____
Fax Number_____
Do you anticipate hiring from the First Source Candidate Registry? Y or N (Circle one)
If so, the approximate number of employees you anticipate hiring: _____

Type of Position (s) you anticipate hiring: **(List position title, one position per line)** **Attach job description per job title:**	**The number you anticipate hiring:**	**Timeline**

Please return this form to WorkSource DeKalb, fax (404) 687-4099 or email to FirstSourceJobs@dekalbcountyga.gov.

FIRST SOURCE JOBS ORDINANCE INFORMATION
EXHIBIT 3

BUSINESS SERVICE REQUEST FORM

Please note: We need one form completed for each position that you have available.

DATE: **FEDERAL TAX ID:**

COMPANY NAME: **WEBSITE:**

ADDRESS:

(WORKSITE ADDRESS IF DIFFERENT):

CONTACT NAME:

CONTACT PHONE: **CONTACT FAX:**

CONTACT E-MAIL ADDRESS:

Are you a private employment agency or staffing agency? ☐YES ☐NO

JOB DESCRIPTION: (PLEASE INCLUDE A COPY OF JOB DESCRIPTION)

POSITION TITLE:

NUMBER OF POSITIONS AVAILABLE:_____ TARGET START DATE:_____

WEEKLY WORK HOURS: 20-30 hours ☐ 30-40 hours ☐ Other ☐

SPECIFIC WORK SCHEDULE:

SALARY RATE(OR RANGE):

PERM ☐ TEMP ☐ TEMP-TO-PERM ☐ SEASONAL ☐

PUBLIC TRANSPORTATION ACCESSIBILITY YES ☐ NO ☐

IF SCREENINGS ARE REQUIRED, SELECT ALL THAT APPLY:
☐CREDIT ☐DRUG ☐MVR ☐BACKGROUND ☐OTHER _____

Please return form to: Business Solutions Unit (First Source)
774 Jordan Lane Bldg. #4
Decatur, Ga. 30033
Phone: (404) 687-3400
FirstSourceJobs@dekalbcountyga.gov

FIRST SOURCE JOBS ORDINANCE INFORMATION
EXHIBIT 4

EMPLOYMENT ROSTER
DeKalb County

Contract Number: _____

Project Name:_____

Contractor: _____ **Date:** _____

Name	Position:	Start Date	Hourly Rate of Pay	Hired for this Project? (yes/no)	Anticipated Length of Employment (Months)	% of Time Dedicated to the Project	Full or Part Time? (No. of Hours)	Georgia County of Residency

CONTRACTOR REFERENCE AND RELEASE FORM

List below at least three (3) references, including company name, contact name, address, email address, telephone numbers and contract period who can verify your experience and ability to perform the type(s) of product(s)/ service(s) listed in the solicitation.

Company Name	Contract Period		
Contact Person Name and Title	Telephone Number (include area code)		
Complete Primary Address	City	State	Zip Code
Email Address	Fax Number (include area code)		
Project Name and Description			

Company Name	Contract Period		
Contact Person Name and Title	Telephone Number (include area code)		
Complete Primary Address	City	State	Zip Code
Email Address	Fax Number (include area code)		
Project Name and Description			

Company Name	Contract Period		
Contact Person Name and Title	Telephone Number (include area code)		
Complete Primary Address	City	State	Zip Code
Email Address	Fax Number (include area code)		
Project Name and Description			

REFERENCE CHECK RELEASE STATEMENT

You are authorized to contact the references provided above for purposes of this ITB.

Signed_____ Title_____
(Authorized Signature of Bidder)

Company Name _____Date _____

SUBCONTRACTOR REFERENCE AND RELEASE FORM

List below at least three (3) references, including company name, contact name, address, email address, telephone numbers and contract period who can verify your experience and ability to perform the type(s) of product(s)/ service(s) listed in the solicitation.

Company Name	Contract Period		
Contact Person Name and Title	Telephone Number (include area code)		
Complete Primary Address	City	State	Zip Code
Email Address	Fax Number (include area code)		
Project Name and Description			

Company Name	Contract Period		
Contact Person Name and Title	Telephone Number (include area code)		
Complete Primary Address	City	State	Zip Code
Email Address	Fax Number (include area code)		
Project Name and Description			

Company Name	Contract Period		
Contact Person Name and Title	Telephone Number (include area code)		
Complete Primary Address	City	State	Zip Code
Email Address	Fax Number (include area code)		
Project Name and Description			

REFERENCE CHECK RELEASE STATEMENT

You are authorized to contact the references provided above for purposes of this ITB.

Signed_____ Title_____
(Authorized Signature of Bidder)

Company Name _____Date _____

DEKALB FIRST LSBE INFORMATION
WITH EXHIBITS A – B

SCHEDULE OF LOCAL SMALL BUSINESS ENTERPRISE PARTICIPATION OPPORTUNITY TRACKING FORM

The Chief Executive Officer and the Board of Commissioners of DeKalb County believe that it is important to encourage the participation of small and local businesses in the continuing business of County government; and that the participation of these types of businesses in procurement will strengthen the overall economic fabric of DeKalb County, contribute to the County's economy and tax base, and provide employment to local residents. Therefore, the Chief Executive Officer and the Board of Commissioners have made the success of local small businesses a permanent goal of DeKalb County by implementing the DeKalb First Local Small Business Enterprise Ordinance.

PROVISIONS OF DEKALB FIRST LOCAL SMALL BUSINESS ENTERPRISE (LSBE) ORDINANCE

Percentage of LSBE Participation Required
20% of Total Award

Certification Designation	Request For Proposals (RFP)
LSBE Within DeKalb (LSBE-DeKalb)	Ten (10) Preference Points
LSBE Outside DeKalb (LSBE-MSA)	Five (5) Preference Points
Demonstrated GFE	Two (2) Preference Points

Certified Local Small Business Enterprises (LSBEs) located within DeKalb County and prime contractors utilizing LSBEs that are locally-based inside DeKalb County shall receive ten (10) points in the initial evaluation of their response to any Request for Proposal. Certified LSBEs located outside of DeKalb County but within the nine (9) County Metropolitan Statistical Area (MSA) consisting of Cherokee, Clayton, Cobb, Douglas, Fayette, Fulton, Gwinnett, Henry and Rockdale Counties shall receive five (5) points in the initial evaluation of their response to any Request for Proposal. Prime Contractors who demonstrate sufficient good faith efforts in accordance with the requirements of the ordinance shall be granted two (2) points in their initial evaluation of responses to any Request for Proposal. Pro-rated points shall be granted where a mixture of LSBE-DeKalb and LSBE MSA firms are utilized. Utilization of each firm shall be based upon the terms of the qualified sealed solicitation.

Prime Contractor(s) deemed responsible and remains responsive to an Invitation to Bid (ITB) because they are either a certified LSBE-DeKalb or LSBE-MSA firm or has obtained 20% participation of an LSBE-DeKalb or LSBE-MSA firm, submits the lowest bid price shall be deemed the lowest, responsive and responsible bidder.

Prime Contractor(s) deemed responsible and remains responsive to an Invitation to Bid (ITB) and documented good faith efforts, submits a lower bid price than a Prime Contractor that achieved 20% LSBE participation, or otherwise required benchmark, then the Prime Contractor who actually met

the benchmark will be given the opportunity to match the lowest bid price of the Prime Contractor who only made good faith efforts. Prime Contractor(s) who choose **not** to match the lowest bid price, then the Prime Contractor who made the good faith efforts will be deemed the lowest, responsive and responsible bidder.

For all qualified sealed solicitations, the Director of Purchasing and Contracting, DeKalb County Government, shall determine if the bidder/proposer has included written documentation showing that at least twenty percent (20%) of the total contract award will be performed by a certified LSBE. This written documentation shall be in the form of a notarized Schedule of LSBE Participation (Attached hereto as "Exhibit A".) For all contracts, a signed letter of intent from all certified LSBEs describing the work, material, equipment and/or services to be performed or provided by the LSBE(s) and the agreed upon percentage shall be due with the bid or proposal documents and included with "Exhibit A". The certified vendor list establishes the group of Certified LSBE's from which the bidder/proposer must solicit subcontractors for LSBE participation. This list can be found on our website http://www.dekalbcountyga.gov/purchasing-contracting/about-purchasing-and-contracting or obtained from the Special Projects LSBE Program team.

Prime Contractors failing to meet the LSBE benchmark must document and demonstrate Good Faith Efforts in accordance with the attached "Checklist for Good Faith Efforts" portion of "Exhibit A." The notarized Schedule of LSBE Participation shall be due and submitted with each bid or proposal. Failure to achieve the LSBE benchmark or demonstrate good faith efforts shall result in a bid or proposal being rejected. Prime Contractors that fail to attend the mandatory LSBE meeting in person or via video conference shall mean that the Prime Contractor has not demonstrated sufficient good faith efforts and its bid or proposal if submitted, shall be deemed non-responsive without any further review.

Upon award, Prime Contractors are required to submit a report detailing LSBE Sub-Contractor usage with each request for payment and not less than on a monthly basis. Prime Contractors shall ensure that all LSBE sub-contractors have been paid within seven (7) days of the Prime's receipt of payment from the County. Failure to provide requested reports/documentation shall constitute a material breach of contract, entitling the County to terminate the Contract for default or pursue other remedies. LSBE sub-contractors must confirm payments received from the Prime(s) for each County contract they participate in.

For eligible bids/proposals valued over $5,000,000.00, the Mentor-Protégé provision of the Ordinance shall apply. Prime Contractors must agree to become mentors and take on an LSBE protégé in an effort to enhance the potential of future LSBEs. Qualifying projects shall be performed by both Mentor and Protégé through a subcontract between both parties. This requirement is in addition to all other applicable sections of the DeKalb First Ordinance. Please review the ordinance, section 2-214 or contact the LSBE Program Representative for detailed information regarding this initiative.

EXHIBIT A

SCHEDULE OF DEKALB FIRST LOCAL SMALL BUSINESS ENTERPRISE PARTICIPATION

OPPORTUNITY TRACKING FORM

As specified, Bidders and Proposers are to present the details of LSBE participation below:

PRIME
BIDDER/PROPOSER_____

SOLICITATION NUMBER: **19-101139**

TITLE OF UNIT OF WORK – **Henderson Park Tennis Side Restroom Site Prep**

1. My firm, as the prime bidder/proposer on this unit of work, is a certified (check all that apply):
   ____LSBE-DeKalb ____LSBE-MSA

2. If you are a Certified LSBE-DeKalb or MSA, please indicate below the percentage of that your firm will carry out directly: _____.

3. If the prime bidder/proposer is a joint venture, please describe below the nature of the joint venture and level of work and percentage of participation to be provided by the LSBE-DeKalb or MSA joint venture firm.

   _____

   _____

4. List the LSBE-DeKalb or MSA subcontractors and/or firms (including suppliers) to be utilized in of this contract, if awarded. No changes can be made in the subcontractors listed below without the prior written approval of the County. Please attach a signed letter of intent from all certified LSBEs describing the work, materials, equipment or services to be performed and/or provided and the agreed upon percentage of work to be performed. A Letter of Intent form is attached hereto as "Exhibit B".

Name of Company	
Address	
Telephone	
Fax	
Contact Person	
Indicate certification status and attach proof of certification: LSBE-DeKalb/LSBE-MSA	
Description of services to be performed	
Percentage of work to be performed	

Name of Company	
Address	
Telephone	
Fax	
Contact Person	
Indicate certification status and attach proof of certification: LSBE-DeKalb/LSBE-MSA	
Description of services to be performed	
Percentage of work to be performed	

Name of Company	
Address	
Telephone	
Fax	
Contact Person	
Indicate certification status and attach proof of certification: LSBE-DeKalb/LSBE-MSA	
Description of services to be performed	
Percentage of work to be performed	

Name of Company	
Address	
Telephone	
Fax	
Contact Person	
Indicate certification status and attach proof of certification: LSBE-DeKalb/LSBE-MSA	
Description of services to be performed	
Percentage of work to be performed	

Please attach additional pages, if necessary.

EXHIBIT A, CONT'D

DEKALB COUNTY
CHECKLIST FOR GOOD FAITH EFFORTS

A bidder/proposer that does not meet the County's LSBE participation benchmark is required to submit documentation to support all "Yes" responses as proof of "good faith efforts." Please indicate whether or not any of these actions were taken:

	Yes	No	Description of Actions
1.			Prime Contractors shall attend a **MANDATORY LSBE** Meeting in person or via video conference within two-weeks of advertisement of the solicitation.
2.			Provide a contact log showing the company's name, contact person, address, email and contact number (phone or fax) used to contact the proposed certified subcontractors, nature of work requested for quote, date of contact, the name and title of the person making the effort, response date and the percentage of work.
3.			Provide interested LSBEs via email, of any new relevant information, if any, at least 5 business days prior to submission of the bid or proposal.
4.			Efforts made to divide the work for LSBE subcontracting areas likely to be successful and to identify portions of work available to LSBEs consistent with their availability. Include a list of divisions of work not subcontracted and the corresponding reasons for not including them. The ability or desire of a bidder/proposer to perform the contract work with its own organization does not relieve it of the responsibility to make good faith efforts on all scopes of work subject to subcontracting.
5.			Efforts were made to assist potential LSBE subcontractors meet bonding, insurance, or other governmental contracting requirements. Where feasible, facilitating the leasing of supplies or equipment when they are of such a specialized nature that the LSBE could not readily and economically obtain them in the marketplace.
6.			Communication via email or phone with DeKalb First Program Staff seeking assistance in identifying available LSBEs. Provide DeKalb First Program Staff representative name and title, and date of contact.
7.			For all contracts, a signed letter of intent from all certified LSBEs describing the work, materials, equipment or services to be performed or provided by the LSBE(s) and the agreed upon LSBE participation percentage shall be due with the bid or proposal documents.
8.			Other Actions, to include Mentor/Protégé commitment for solicitations $5M and above (specify):

Please explain all "no" answers above (by number):

_____

_____

This list is a guideline and by no means exhaustive. The County will review these efforts, along with attached supporting documents, to assess the bidder/proposer's efforts to meet the County's LSBE Participation benchmark. If you require assistance in identifying certified, bona fide LSBEs, please contact the Purchasing and Contracting Department - DeKalb First Program, Felton Williams, Procurement Projects Manager at 404-371-6312.

EXHIBIT A, CONT'D

DEKALB FIRST LOCAL SMALL BUSINESS ENTERPRISE SCHEDULE OF PARTICIPATION
OPPORTUNITY TRACKING FORM

Bidder/Proposer Statement of Compliance

Bidder(s)/Proposer(s) hereby state that they have read and understand the requirements and conditions as set forth in the objectives and that reasonable effort were made to support the County in providing the maximum practicable opportunity for the utilization of LSBEs consistent with the efficient and economical performance of this contract. The Bidder and any subcontractors shall file compliance reports at reasonable times and intervals with the County in the form and to the extent prescribed by the Director of DeKalb County Purchasing and Purchasing and Contracting Department. Compliance reports filed at such times as directed shall contain information as to the employment practices, policies, programs and statistics of Contractors and their subcontractors.

1. **Non-Discrimination Policy**
   a. During the performance of this agreement, Contractor agrees to conform to the following Non-Discrimination Policy adopted by the County.
   b. Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, or disability. The Contractor will take action to ensure that applicants are employed, and the employees are treated during employment without regard to their race, color, religion, sex, national origin, or disability. Such action shall include, but not be limited to, the following:
      (1) Employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractor agrees to post in conspicuous places available to employees and applicants for employment, notices to be provided setting forth provisions of this non-discrimination clause.
      (2) Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or disability.
   c. Without limiting the foregoing, Contractor shall not discriminate on the basis of disability in the admission or access to, or treatment or employment in, the programs and activities, which form the subject of the contract. The Contractor will take action to ensure that applicants for participation in such programs and activities are considered without regard to disability. Such action shall include, but not be limited to, the following:

(1) Contractor agrees to post in conspicuous places available to participants in its programs and activities notices to be provided setting forth the provisions of this non-discrimination clause.

(2) Contractor shall, in all solicitations or advertisements for programs or activities, which are the subject of the contract, state that all qualified applicants will receive consideration for participation without regard to disability.

2. **Commitment**

The undersigned certifies that he/she has read, understands, and agrees to be bound by the bid specifications, including the accompanying Exhibits and other terms and conditions of the Invitation to Bid and/or Request for Proposal regarding LSBE utilization. The undersigned further certifies that he/she is legally authorized by the bidder or responder to make the statements and representations in Exhibit A and that said statements and representations are true and correct to the best of his/her knowledge and belief. The undersigned will enter into formal agreement(s) with the LSBE(s) listed in this Exhibit A, which are deemed by the owner to be legitimate and responsible LSBEs. Said agreement(s) shall be for the work and contract with the Prime Contractor. The undersigned understands and agrees that if any of the statements and representations are made by the Bidder knowing them to be false, or if there is a failure of the successful Bidder (i.e., Contractor) to implement any of the stated agreements, intentions, objectives, goals and commitments set forth herein without prior approval of the County, then in any such events the contractor's act or failure to act, as the case may be, shall constitute a material breach of contract, entitling the County to terminate the Contract for default. The right to so terminate shall be in addition to, and not in lieu of, any other rights and remedies the County may have for other defaults under the Contract. Additionally, the Contractor will be subject to the loss of any future contract awards by the County for a period of one year.

Firm Name (Please Print):

_____

Firm's Officer:

_____

(Authorized Signature and Title Required) Date

Sworn to and Subscribed to before me this ____ day of_____, 201__.

_____

Notary Public

My Commission Expires:_____

EXHIBIT B

LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR PROVIDING MATERIALS OR SERVICES

Instructions:

1. Complete the form in its entirety and submit with bid documents.
2. Attach a copy of the LSBE's current valid Certification Letter.

To:_____

(Name of Prime Contractor Firm)

From:_____ **☐ LSBE –DeKalb ☐ LSBE –MSA**
(Name of Subcontractor Firm) **(Check all that apply)**

ITB Number: 19-101139

Project Name: Henderson Park Tennis Side Restroom Site Prep

The undersigned subcontractor is prepared to perform the following described work or provide materials or services in connection with the above project (specify in detail particular work items, materials, or services to be performed or provided).

Description of Materials or Services	Project/Task Assignment	% of Contract Award

Prime Contractor **Sub-contractor**

Signature:_____ **Signature:**_____

Title:_____ **Title:**_____

Date:_____ **Date:** _____

CERTIFICATE OF CORPORATE BIDDER

I, _____(*insert name of the Corporate Secretary*), certify that I am Secretary of the corporation named as Bidder herein, same being organized and incorporated to do business under the laws of the State of _____; that _____ (*insert name of individual signing the Bid*) who executed this Bid on behalf of the Bidder was, then and there, _____ (*insert title of individuals signing the Bid*) and that said Bid was duly signed by said officer for and on behalf of said corporation, pursuant to the authority of its governing body and within the scope of its corporate powers.

I further certify that the names and addresses of the owners of all outstanding stock of said corporation as of this date are as follows:

_____

_____

_____

_____

_____

This _____ day of _____, 20___.

By:_____(Corporate Seal)
Secretary

CERTIFICATE OF AUTHORITY – JOINT VENTURE
(Separate Certificate to be submitted by each joint venture partner)

I, _____,[1] certify that:

1. I am the _____[2] of _____,[3] (hereinafter "Venturer");

2. Venturer is a partner and participant in the joint venture having submitted the Invitation to Bid or Request for Proposal No. _____ for _____(*insert Project Name*);

3. Venturer is organized and incorporated to do business under the laws of the State of _____; and

4. Said Invitation to Bid or Request for Proposal No._____ was duly signed by said officer for and on behalf of said Venturer and the Contractor pursuant to the authority of the governing body of each and within the scope of its corporate powers.

I further certify that the names and addresses of the owners of all the outstanding stock or ownership interest in Venturer as of this date are as follows:

_____
_____
_____

This _____ day of _____, 20___.

By:_____
Signature of Person Executing Certification

INSTRUCTIONS FOR COMPLETION OF THIS CERTIFICATE:

1. Name of secretary (if Venturer is a corporation), or Manager or CEO (if Venturer is a LLP) of Venturer.
2. Title of person executing Certification.
3. Name of joint venture partner.

COPY THIS FORM AND SUBMIT SEPARATE CERTIFICATES FOR EACH JOINT VENTURE PARTNER WITH THE BID OR PROPOSAL.

BIDDER'S AFFIDAVIT OF COMPLIANCE WITH O.C.G.A. §13-10-91

By executing this affidavit, the undersigned verifies its compliance with O.C.G.A. § 13-10-91, as amended, stating affirmatively that the Bidder submitting a Bid to DEKALB COUNTY, GA, a political subdivision of the State of Georgia, has registered with and is participating in a federal work authorization program, commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91, as amended. The undersigned further verifies that it will continue to use the federal work authorization program for the Contract Term, and it will only contract with Subcontractors who have registered for the federal work authorization program. The undersigned hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____
Federal Work Authorization User Identification Number

_____
Date of Authorization

_____
Name of Contractor

_____
Name of Project

_____
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, ___, 20__ in _____(city), _____(state).

By:_____
Signature of Authorized Officer or Agent

_____
Printed Name and Title of Authorized Officer or Agent

Subscribed and Sworn before me on this the
____ day of _____, 20__.

_____
NOTARY PUBLIC
My Commission Expires:

_____

SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned verifies its compliance with O.C.G.A. § 13-10-91, as amended, 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 DEKALB COUNTY, GA, a political subdivision of the State of 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, as amended]. The affiant agrees to continue to use the federal work authorization program throughout the contract period.]

_____ _____

BY: Authorized Officer or Agent
(Bidder's Name)

Federal Work Authorization
Enrollment Date

_____ _____

Title of Authorized Officer or Agent of Bidder

Identification Number

_____
Printed Name of Authorized Officer or Agent

_____
Address (* do not include a post office box)

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE

_____ DAY OF _____, 20__

_____
Notary Public
My Commission Expires: _____

STATE OF GEORGIA
COUNTY OF DEKALB

CONTRACTOR AFFIDAVIT AND OATH OF SUCCESSFUL BIDDER

Personally appeared before me, the undersigned officer, duly authorized to administer oaths,_____,(*insert name*), who, after being duly sworn, deposes as follows:

I,_____, (*insert name*), am a competent adult, and I have personal knowledge of the facts set forth in this Affidavit and Oath which I make for any lawful use or purpose.

I,_____(*insert name*) swear or affirm that I have not prevented or attempted to prevent competition in bidding or submitting a proposal for this Project by any means whatsoever. I swear or affirm that I have not prevented or endeavored to prevent anyone from making a Bid for this Project by any means whatsoever, I swear I have not caused or induced any other person to withdraw a Bid for this Project. I swear or affirm that I have not violated O.C.G.A. §36-91-21(d) in any way, directly or indirectly.

I hereby declare under penalty of perjury that the foregoing is true and correct. Executed on

_____ ___, 20__ in _____(*city*), _____(*state*).

By:_____
Signature

_____
Print Name of Affiant

_____
Print Title of Affiant

Subscribed and Sworn before me on this the
_____ day of _____, 20_____.

_____
NOTARY PUBLIC
My Commission Expires:

_____

REQUIRED DOCUMENTS CHECKLIST

Bidder shall complete and submit the following documents with their bid:

Bid Page No.	Title	Check This Box If Included With Bid
4,6	One Original, Two Copies of Entire ITB (pages 1- 44)**	
3	Bid Acknowledgement Form*	
8	Utility Systems Contractor License*	
8	General Contractors License*	
17-21	Bid Price Forms	
22-23	Bid Bond	
24-27	First Source Jobs Acknowledgement Form and Supplemental Docs *	
28	Contractor Reference and Release Form*	
29	Subcontractor Reference and Release Form, if applicable**	
30-38	LSBE - Exhibits A and/or B of Attachment G*	
39	Certificate of Corporate Bidder*	
40	Certificate of Authority – Joint Venture (if applicable)*	
41	Bidder's Affidavit	
42	Subcontractor Affidavit, if applicable**	
43	Contractor Affidavit / Oath of Successful Bidder	
44	Required Documents Checklist	

***If these mandatory forms are not completed and submitted with the bid, the bidder will be deemed non-responsive.**

****These forms are applicable if a subcontractor will be utilized to fulfill the requirements of this contract. If these forms are applicable, they must be completed and submitted with the bid. Failure to submit these forms, if applicable, will result in the bidder's bid being deemed non-responsive.**

I, the undersigned, acknowledge that I have included the requested documents as listed above.

_____ _____

Printed Name Signature

SAMPLE COUNTY CONTRACT

STATE OF GEORGIA

COUNTY OF DEKALB

CONTRACT FOR CONSTRUCTION

THIS CONTRACT, made as of this ____day of _____, 20___, (hereinafter called the "execution date") by and between, **DEKALB COUNTY,** a political subdivision of the State of Georgia (hereinafter called the "County") and _____, a _____ organized pursuant to the laws of the State of _____(hereinafter called the "Contractor").

I. SCOPE OF WORK

A. The term "Work" means the construction, labor, materials, equipment, tools, machinery, testing, temporary services and utilities, supervision, administration, coordination, planning, insurance, bonds, transportation, security, and all other services and things necessary to provide the County with the facilities, improvements, features, and functions in strict conformity with the General Requirements attached hereto as Attachment A, and as described in the Specifications and the Drawings included in the Bid Document Package. The Contractor agrees to complete the Work in a good, firm, substantial and workmanlike manner in strict conformity with this Contract.

(1) The Work relates to the following Project:

(2) Work not included in this Contract (*if applicable*):

B. Unless otherwise stipulated, the Contractor shall furnish all of the Work in accordance with the Contract and all incidental work necessary to complete the Project in an acceptable manner, ready for use, occupancy, or operation by the County. The Contractor shall be responsible for the entire Work and every part thereof.

II. TIME, TERM AND LIQUIDATED DAMAGES

A. **Contract Time.** The Contractor shall commence the Work under this Contract within ten (10) days from the date on the Notice to Proceed. Contractor shall fully complete the Work within _____ calendar days from and including the date on the Notice to Proceed. If the Change Order only seeks to extend the Contract Time, it may be approved and executed by the DeKalb County Chief Executive Officer or his/her designee and the Contractor in accordance with the terms of this Contract.

SAMPLE

B. **Contract Term.** As required by O.C.G.A §36-60-13, this Contract shall commence immediately upon the execution date. This Contract shall (i) terminate without further obligation on the part of the County each and every December 31st, as required by O.C.G.A. § 36-60-13, as amended, unless terminated earlier in accordance with the termination provisions of this Contract; (ii) automatically renew on each January 1st, unless terminated in accordance with the termination provisions of this Contract; and (iii) terminate absolutely, with no further renewals, on December 31, 20___ , unless extended by Change Order adopted and approved by the DeKalb County Governing Authority and the Contractor in accordance with the terms of this Contract.

OR

B. Contract Term. *(May be used for public works construction contracts for waste-water treatment, storm-water, water or sewer system or any combination of such systems)* As allowed by O.C.G.A. §36-60-15.1, this Contract shall commence immediately upon the execution date. This Contract shall terminate without further obligation on the part of the County, with no further renewals, on _____, 20_____, unless extended by Change Order adopted and approved by the DeKalb County Governing Authority and the Contractor in accordance with the terms of this Contract.

C. **Liquidated Damages.** The Contractor acknowledges that time is of the essence with respect to the Work governed by this Contract. Contractor acknowledges and recognizes that if it fails to achieve Substantial Completion of any portion of the Work within the Contract Time as may be extended in accordance with the terms of this Contract, the County will sustain substantial losses as a result of such failure. The Contractor further acknowledges that the County will suffer damages that are difficult if not impossible to accurately estimate. Contractor shall pay liquidated damages of _____Dollars ($_____) for each day that Substantial Completion of the Work is delayed past the Contract Time. The Contractor agrees that the foregoing rate is a reasonable pre-estimate of the probable damages that the County will suffer if Substantial Completion is delayed, and said daily rate is intended to compensate the County for its damages and is not intended to penalize the Contractor for its delay. The County may deduct such liquidated damages from any unpaid amounts then or thereafter due the Contractor under this Contract. Any liquidated damages not deducted from any unpaid amounts due the Contractor are payable to the County at the County's demand, together with interest from the date of the demand at a rate equal to seven percent (7%) per annum.

III. PAYMENT

A. **Contract Price.** As full payment for the faithful performance of this Contract, the County shall pay the Contractor, the Contract Price, which is an amount not to exceed **_____ ($_____)**, unless changed by written Change Order in accordance with the terms of this Contract. The term "Change Order" includes the term "amendment" and shall mean a written order authorizing a change in the Work, and an adjustment in Contract Price to Contractor or the Contract Term, as adopted and approved by the Contractor and the DeKalb County Governing Authority, or the Chief Executive Officer, if exempted from

SAMPLE

Governing Authority adoption and approval in accordance with the express terms of this Contract. The Chief Executive Officer or his/her designee shall have the authority to approve and execute a Change Order lowering the Contract Price or increasing the Contract Price up to twenty percent (20%) of the original Contract Price, provided that the total amount of the increase authorized by such Change Order is less than $100,000.00. If the original Contract or Purchase Order Price does not exceed $100,000.00, but the Change Order will make the total Contract Price exceed $100,000.00, then the Change Order will require approval by official action of the Governing Authority. Any other increase of the Contract Price shall be by Change Order adopted and approved by the DeKalb County Governing Authority and the Contractor in accordance with the terms of this Contract. Amounts paid to the Contractor shall comply with and not exceed Attachment A, the Contractor's Cost Proposal, consisting of _____ page(s) attached hereto and incorporated herein by reference. Payment is to be made no later than thirty (30) days after submittal of undisputed invoice.

B. **Retainage and Partial Payments.** Partial payments to the Contractor shall be made monthly, based on the value of Work completed as determined by the County, plus the value of materials and equipment suitably stored, insured and protected at the construction site. The Contractor shall submit a payment request for Work completed during the preceding calendar month to _____ for review and approval on or before last day of each month. If approved by the Project Manager or Designated Representative, the approved amount, less retainage, shall be paid to the Contractor thirty (30) days after the date the approved payment request is received by the County Finance Department. If a payment request is not approved by the County, then no payment shall be made to the Contractor until after the Project Manager or Designated Representative approves the payment request. The amount of retainage shall be as follows:

(1) Ten percent (10%) of each partial payment shall be withheld as retainage until the value of fifty percent (50%) of the Contract Price, including Change Orders and other authorized additions provided in the Contract, is due;

(2) When fifty percent (50%) of the Contract Price, as described above, becomes due and the manner of completion of the Work and its progress, quality, schedule are reasonably satisfactory to the County, and there are no outstanding claims by the Contractor, Subcontractors, lower tier subcontractors, as that term is defined by state law, or Suppliers, the withholding of retainage shall be discontinued.

(3) If after discontinuing retainage, the County determines that the Work is unsatisfactory or has fallen behind schedule, withholding of ten percent (10%) of each request for payment may be resumed. When the Work has reached Substantial Completion and the County determines the Work to be reasonably acceptable, the Contractor shall submit an invoice or other documents as may be required and receive payment of retainage within thirty (30) days. If minor items remain incomplete at that time, an amount equal to two hundred percent (200%) of the value of each item, as determined by the County, shall be withheld until such items are completed.

SAMPLE

(4) The Contractor shall within ten days from the Contractor's receipt of each payment from the County pass through payments to Subcontractors and shall reduce each Subcontractor's retainage in the same manner as the Contractor's retainage is reduced by the County. The Subcontractor shall, within ten days from the Subcontractor's receipt of payment, pass through payments to lower tier subcontractors and shall reduce each lower tier subcontractor's retainage in the same manner as the Subcontractor's retainage is reduced.

(5) Contractor and County agree to abide by all applicable provisions of Georgia state law concerning retainage, including but not limited to O.C.G.A. § 13-10-80 and 13-10-81. If the terms of this contract concerning retainage conflict with state law, state law governs.

(6) *For contracts relating to the installation, extension, improvement, maintenance or repair of any water or sewer facility add the following provision:* As required by O.C.G.A. § 13-10-81, Retainage shall be invested by the County at the current market rate and any interest earned on the retained amount shall be paid to the Contractor when the Project has been completed within the time limits specified and for the price specified in this Contract or in change orders approved in accordance with the terms of this Contract, upon the County's receipt of certification by the engineer in charge of the Project in the manner and form required by O.C.G.A. §13-10-81.

C. **Payment Requests and Invoices.** Payment Requests and invoice(s) must be submitted as follows:

(1) Original(s) must be submitted to:

Insert User Department Address here.

(2) Upon award, Prime Contractor(s) with Local Small Business Enterprise (LSBE) Subcontractor(s) shall enter utilization reports electronically at www.dekalblsbe.info. Proof of payment to the LSBE Subcontractor must be uploaded and submitted. LSBE Subcontractors shall confirm receipt of payment from the Prime, electronically also, at www.dekalblsbe.info.

D. **Title.** All equipment, materials, and Work covered by partial payments shall, upon payment thereof, become the sole property of the County, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of equipment, materials, and Work upon which payments have been made, or the restoration of any damaged Work.

E. **Final Payment.** Within sixty (60) days after the Work is fully completed and accepted by the County, the balance due hereunder shall be paid; provided, however, that final payment shall not be made until said Contractor shall have completed all Work necessary

SAMPLE

and reasonably incidental to the Contract, including final cleanup and restoration. Acceptance of the Work and the making of final payment shall not constitute a waiver of any claims by the County. All claims by the Contractor for breach of contract, violation of state or federal law, or compensation and extensions of time shall be submitted in writing to the Chief Executive Officer within sixty (60) days after completion and acceptance of the Work as herein provided, or all such claims shall be forever barred.

IV. NOTICE

Any notice or consent required to be given by or on behalf of any party hereto to any other party hereto shall be in writing and shall be sent to the County's Chief Executive Officer and the Executive Assistant or to the Contractor or his authorized representative on the work site by (a) registered or certified United States mail, return receipt requested, postage prepaid, (b) personal delivery, or (c) overnight courier service. All notices sent to the addresses listed below shall be binding unless said address is changed in writing no less than fourteen days before such notice is sent. Future changes in address shall be effective upon written notice being given by the Contractor to the County's Executive Assistant or by the County to the Contractor's authorized representative via certified first class U.S. mail, return receipt requested. Such notices will be addressed as follows:

If to the County:

Chief Executive Officer
The Maloof Center
1300 Commerce Drive, 6th Floor
Decatur, Georgia 30030

and

Executive Assistant
The Maloof Center
1300 Commerce Drive, 6th Floor
Decatur, Georgia 30030

With a copy to: Director of the Department of Purchasing and Contracting
The Maloof Center
1300 Commerce Drive, 2nd Floor
Decatur, Georgia 30030

With a copy to: _____
_____
_____
_____

If to the Contractor:

SAMPLE

With a copy to: *(Insert Contractor name and address)*

_____
_____
_____
_____

V. FEDERAL WORK AUTHORIZATION

A. Pursuant to O.C.G.A. §13-10-91, the County cannot enter into a contract for the physical performance of services unless the Contractor, its Subcontractor(s) and sub-subcontractor(s), as that term is defined by state law, register and participate in the Federal Work Authorization Program to verify specific information on all new employees.

B. Contractor certifies that it has complied and will continue to comply throughout the Contract Term with O.C.G.A. §13-10-91 and any related and applicable Georgia Department of Labor Rule.

C. Contractor agrees to sign an affidavit evidencing its compliance with O.C.G.A. §13-10-91. The signed affidavit is attached to this Contract as Attachment B.

D. Contractor agrees that in the event it employs or contracts with any Subcontractor(s) in connection with this Contract, Contractor will secure from each Subcontractor an affidavit that certifies the Subcontractor's current and continuing compliance with O.C.G.A. §13-10-91 throughout the Contract Term. Any signed Subcontractor affidavit(s) obtained in connection with this Contract shall be attached hereto as Attachment C.

E. Each Subcontractor agrees that in the event it employs or contracts with any sub-subcontractor(s), each Subcontractor will secure from each sub-subcontractor an affidavit that certifies the sub-subcontractor's current and continuing compliance with O.C.G.A. §13-10-91 throughout the Contract Term. Any signed sub-subcontractor affidavit(s) obtained in connection with this Contract shall be attached hereto as Attachment D.

VI. CORPORATE AUTHORITY

Contractor agrees to execute the Certificate of Corporate Authority, attached hereto as Attachment E. The officials of the Contractor executing this Contract are duly and properly in office and are fully authorized and empowered to execute the same for and on behalf of the Contractor. Contractor warrants that it has all requisite power and authority to enter into and perform its obligations under this Contract, and that the execution and delivery by the Contractor of this Contract and the compliance by the Contractor with all of the provisions of this Contract (i) is within the purposes, powers, and authority of the Contractor; (ii) has been done in full compliance with applicable law and has been approved by the governing body of the Contractor

SAMPLE

and is legal and will not conflict with or constitute on the part of the Contractor a violation of or a breach of or a default under any indenture, mortgage, security deed, pledge, note, lease, loan, or installment sale agreement, contract, or other agreement or instrument to which the Contractor is a party or by which the Contractor is otherwise subject or bound, or any license, judgment, decree, law, statute, order, writ, injunction, demand, rule, or regulation of any court or governmental agency or body having jurisdiction over the Contractor; and (iii) has been duly authorized by all necessary action on the part of the Contractor. This Contract is the valid, legal, binding and enforceable obligation of the Contractor.

VII. PERFORMANCE AND PAYMENT BONDS AND INSURANCE REQUIREMENTS

A. Within ten (10) days from the date of Notice of Award of this Contract, the Contractor, as principal, shall give a Contract performance bond, attached hereto as Attachment F and a payment bond, attached hereto as Attachment G, each in the amount of $ _____, for the use of all persons doing work or furnishing skills, tools, machinery, or materials under or for the purpose of this Contract, in accordance with the applicable provisions of Georgia state law, including but not limited to, O.C.G.A. §13-10-1 and §36-91-21 *et seq.* The bonds shall be underwritten by a surety company licensed to write bonds in the State of Georgia, listed in the most current U.S. Treasury Circular No. 570, and which have a current A.M. Best rating of "A" (Excellent) with a Financial Size Category of XII or better. The life of these bonds shall extend throughout the Contract Term including a sixty (60) day maintenance period (where applicable) and a twelve-month guarantee period after the completion of Work performed under this Contract. The bonds shall issue on the forms provided by the County as part of this Contract.

B. It is further agreed between the parties hereto that if at any time after the execution of this Contract and the surety bonds, the County 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 its sole expense and within five (5) days after the receipt of notice from the County to do so, furnish additional bond or bonds in such form and amount and with such surety or sureties as shall be satisfactory to the County.

C. The Contractor shall, without expense to the County, provide certificates of insurance, and copies of signed insurance policies including declarations pages from companies that are authorized to engage in the insurance business in the state of Georgia and are otherwise acceptable to the County Finance Director or his/her designee, attached hereto as Attachment H. Such insurance shall be placed with admitted insurers that maintain an A.M. Best's rating of not less than A (Excellent) with a Financial Size Category of VII or better with coverage forms acceptable to Contractor. The insurance described below shall be maintained uninterrupted for the duration of the project, including any warranty periods, and shall protect Contractor, and others as required by contract, for liabilities in connection with work performed by or on behalf of Contractor, its agents, representatives, employees or Contractors.

SAMPLE

(1) *Workers Compensation Insurance*. Statutory workers compensation insurance is to be provided in compliance with the requirements of Georgia law with limits not less than the following:

Employer's liability insurance by accident, each accident	$1,000,000
Employer's liability insurance by disease, policy limit	$1,000,000
Employer's liability insurance by disease, each employee	$1,000,000

(2) *Commercial General Liability Insurance.* Commercial general liability insurance is to be provided with limits not less than the following:

$1,000,000 per occurrence for bodily injury and property damage liability
$1,000,000 personal and advertising injury liability
$2,000,000 general aggregate
$2,000,000 products-completed operations aggregate
$ 100,000 damage to rented premises (each occurrence)
$ 5,000 medical expense (any one person)

(3) *Umbrella or Excess Insurance.* Umbrella or excess insurance is to be provided with General Liability, Auto Liability and Employers Liability scheduled as underlying policies with limits not less than the following:

$5,000,000 per occurrence
$5,000,000 aggregate

(4) *Comprehensive Automobile Liability Insurance*. Comprehensive automobile liability insurance with form coverage is to be provided for all owned, non-owned and hired vehicles with combined single limit of $1,000,000. Automobile liability insurance shall be written on ISO Business Auto Coverage Form CA 0001 (1990 edition or later), or a substitute form providing equivalent coverage, and shall cover liability for bodily injury and property damage arising from the use or operation of any automobile, including those owned, hired or otherwise operated or used by or on behalf of Contractor. The policy must include Broadened Pollution Liability Endorsement CA9948 12 93.

(5) *Builder's Risk Insurance Coverage (If Applicable)*. DeKalb County shall procure and maintain Builders Risk Insurance on the entire work which provides "All-risk" form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism, malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than caused by flood), and such other perils or causes of loss as may be specifically required by Supplementary Conditions) until

SAMPLE

Final Completion and Acceptance of the Project. Such policy of insurance shall contain at least the following sub-limits of insurance and deductibles:

Sub-limits:	
Property in Transit	$1,000,000
Property in Offsite Storage	$1,000,000
Plans & Blueprints	$25,000
Debris Removal	25% of Insured Physical Loss
Delay in Completion / Soft Cost	TBD
Ordinance of Law (Increased Cost of Construction)	$1,000,000
Flood and Earthquake	TBD – Full Contract Value
Deductibles:	
Flood and Earthquake	$25,000
Water Damage other than Flood	$100,000
All other Perils	$10,000

D. The County, its elected officials, officers, employees and agents, hereinafter referred to in this article and in the article entitled "Certificates of Insurance" as "the County and its officers" are to be named as additional insured on all policies of insurance except worker's compensation insurance with no cross suits exclusion. The County and its officers shall be included as additional insureds under commercial general liability and commercial umbrella insurance, for liabilities arising out of both the ongoing and completed operations of Contractor. Such additional insured coverage shall be endorsed to Contractor's policy by attachment of ISO Additional Insured Endorsement forms CG 20 10 10 01 (ongoing operations) and CG 20 37 10 01 (products-completed operations), or form(s) providing equivalent coverage.

E. All coverages required of the Contractor will be primary over any insurance or self-insurance program carried by the County.

F. If the Contractor is a joint venture involving two (2) or more entities, then each independent entity will satisfy the limits and coverages specified here or the joint venture will be a named insured under each respective policy specified.

G. In addition to procuring and maintaining commercial general liability insurance, automobile liability and commercial umbrella insurance, for the Contract Term, Contractor shall continue to procure and maintain the products-completed operations liability insurance coverage and commercial umbrella insurance after the Work is substantially complete for the entire Contract Term or for the applicable five-year statutory limitation, whichever is greater. For such period of time, all terms and conditions of such coverage shall remain unchanged, including the limits specified herein and the requirement to provide the County with coverage as an additional insured.

SAMPLE

H. Contractor agrees to waive all rights of subrogation and other rights of recovery against the County and its officers and shall cause each Subcontractor to waive all rights of subrogation for all coverage.

I. Failure of the County to demand such certificate or other evidence of full compliance with these insurance requirements or failure of the County to identify a deficiency from evidence provided will not be construed as a waiver of the Contractor's obligation to maintain such coverage.

J. Contractor understands and agrees that the purchase of insurance in no way limits the liability of the Contractor.

VIII. CERTIFICATES OF INSURANCE

A. Certificates shall state that the policy or policies shall not expire, be cancelled or altered without at least sixty (60) days prior written notice to the County. Policies and Certificates of Insurance listing the County and its officers as additional insureds (except for workers' compensation insurance) shall conform to all terms and conditions (including coverage of the indemnification and hold harmless agreement) contained in this Contract.

B. The Contractor agrees to name the County and its officers as additional insured on the commercial general liability insurance, using the ISO Additional Insured Endorsement forms CG20101001 (ongoing operations) and CG20371001 (products-completed operations) forms, or form(s) providing equivalent coverage.

C. Certificates of Insurance must contain the policy number, policy limits, and policy expiration date of all policies issued in accordance with this Contract; the location and operations to which the insurance applies. Certificates must be provided annually for the duration of the project. If applicable, a specific statement must be included that blasting coverage is included to the extent such risk is present; that Contractor's protective coverage applies to any Subcontractor's operations; and Contractor's contractual liability insurance coverage applies to any Subcontractor.

D. This insurance for the County as the additional insured shall be as broad as the coverage provided for the named-insured Contractor. It shall apply as primary insurance before any other insurance or self-insurance, including any deductible, non-contributory, and waiver of subrogation provided to the County as the additional insured.

E. The Contractor shall be wholly responsible for securing certificates of insurance coverage as set forth above from all Subcontractors who are engaged in the Work.

F. If the County shall so request, the Contractor will furnish the County for its inspection and approval such policies of insurance with all endorsements, or confirmed specimens thereof certified by the insurance company to be true and correct copies.

SAMPLE

G. Contractor shall be responsible and have the financial wherewithal to cover any deductibles or retentions included on the certificate of insurance.

H. Such certificates should be sent to the County and must identify the "Certificate Holder" as follows:

DeKalb County, Georgia
Director of Purchasing & Contracting
The Maloof Center
1300 Commerce Drive, 2nd Floor
Decatur, Georgia 30030

I. Copies of Required Insurance policies with Declarations Page(s) shall be attached hereto as Attachment H.

IX. ATTACHMENTS

A. This Contract includes the following Attachments all of which are incorporated herein by reference:

Attachment A, General Requirements, GR-1 through GR-46.

Attachment B, Contractor's Affidavit.

Attachment C, Subcontractor's Affidavit(s).

Attachment D, Sub-subcontractor's Affidavit(s).

Attachment E, Certificate of Corporate Authority or Joint Venture Certificates

Attachment F, Performance Bond and Accompanying Power of Attorney

Attachment G, Payment Bond and Accompanying Power of Attorney

Attachment H, Copies of Required Insurance policies with Declarations Page(s)

B. In addition to the foregoing, the Bid Document Package dated_____, the original of which is maintained in the County's Department of Purchasing and Contracting, forms an essential part of this Contract as if fully set out herein.

IX. FUNDING CLAUSE

(If Applicable)

SAMPLE

The Contractor has been informed and understands that funding for this Contract is provided under the _____ Act and expressly agrees that performance of the Contract, in whole or in part, is contingent upon and subject to the availability of such funding under the _____ Act to DeKalb County, Georgia.

X. FEDERAL AND/OR STATE FUNDING/LAW

(If Applicable)

Insert any requirements pertaining to Federal and/or State funding requirements or other legal requirements.

[SIGNATURES APPEAR ON NEXT PAGE]

SAMPLE

IN WITNESS WHEREOF, the parties hereto have set their hands and caused their seals to be affixed hereupon in four (4) counterparts, each to be considered as an original by their authorized representatives.

NAME OF CONTRACTOR

By: _____
Signature (SEAL)

_____
Name (Typed or Printed)

_____
Title

_____
Federal Tax I.D. Number

_____
Date

ATTEST:

_____
Signature

_____
Name (Typed or Printed

_____
Title

APPROVED AS TO SUBSTANCE:

_____
DeKalb County Department
Director

DEKALB COUNTY, GEORGIA

_____ **by Dir.**(SEAL)
MICHAEL L. THURMOND
Chief Executive Officer
DeKalb County, Georgia

_____
Date

ATTEST:

_____
BARBARA H. SANDERS, CCC
Clerk of the Chief Executive Officer
and Board of Commissioners of
DeKalb County, Georgia

APPROVED AS TO FORM:

_____
County Attorney Signature

_____
County Attorney Name
(Typed or Printed)

SAMPLE

ATTACHMENT A

GENERAL REQUIREMENTS

INDEX TO GENERAL REQUIREMENTS

Section	Title	
GR-1	Definitions of Terms	.....
GR-2	Prior Use by County	.....
GR-3	Contractor's Obligations	.....
GR-4	Authority of the County	.....
GR-5	Changes in the Work and Change Orders	.....
GR-6	Time for Completion	.....
GR-7	Schedules, Reports, and Records	.....
GR-8	County's Right to Suspend or Terminate Work	.....
GR-9	Final Inspection	.....
GR-10	Warranties, Guarantees and Correction of Work	.....
GR-11	Contractor's Personnel and Independent Contractor Status	.....
GR-12	Subcontracting	.....
GR-13	Assignments	.....
GR-14	Indemnification and Hold Harmless	.....
GR-15	Royalties and Patents	.....
GR-16	Laws and Regulations	.....
GR-17	Permits and Inspection Fees	.....
GR-18	Land and Rights-of-Way	.....
GR-19	Protection of Work, Property, and Persons	.....
GR-20	Prohibited Interests	.....
GR-21	First Source Jobs Ordinance	.....
GR-22	Foreign Corporations	.....
GR-23	Specification and Drawings	.....
GR-24	Contractor's Submittals	.....
GR-25	As-Built Drawings	.....
GR-26	Examination of Work by Contractor	.....
GR-27	Inspection and Testing of Materials	.....
GR-28	Inspection of Work	.....
GR-29	Requests for Substitutions	.....
GR-30	Rejections of Work and Materials	.....
GR-31	Materials, Services, and Facilities	.....
GR-32	Utilities During Construction	.....
GR-33	Temporary Heat and Air Conditioning	.....
GR-34	Maintenance Manual	.....
GR-35	Weather Conditions	.....
GR-36	Lines, Grades, and Measurements	.....
GR-37	Cleaning Up	.....

SAMPLE

GR-38 Barricades .....
GR-39 No Third-Party Beneficiary…….
GR-40 Severability .....
GR-41 Interpretation.....
GR-42 Prior Contracts; Conflict in Documents……..
GR-43 Entire Agreement…….
GR-44 Counterparts.....
GR-45 Venue .....
GR-46 Right to Audit……

SAMPLE

GR-1. DEFINITIONS OF TERMS

The section captions contained in this Contract are for convenience only and do not in any way limit or amplify any term or provision hereof. The use of the terms "hereof," "hereunder" and "herein" shall refer to this Contract as a whole, inclusive of the Attachments, except when noted otherwise. The use of the masculine or neuter genders herein shall include the masculine, feminine and neuter genders and the singular form shall include the plural when the context so requires. The following terms shall have the meanings indicated:

"Addendum" or "Addenda" shall mean written or graphic instruments issued prior to the execution of the Contract, which modify or interpret the Work, or the Invitation to Bid by additions, deletions, clarifications, or corrections.

"Bid" shall mean the offer of the Bidder submitted on the prescribed form setting forth the price(s) for the Work to be performed.

"Bid Document Package" shall consist of documents entitled as follows: Acknowledgement of Contractor, Advertisement for Bids, Instructions to Bidders, Addenda, Business License, Utility Systems Contractor's License, Utility Manager's Certificate, Utility Foreman's Certificate, General Contractor's License, Bidder's Lump Sum Cost, Bidder's Unit Price, First Source Jobs Ordinance Information with Exhibits, LSBE Program Information Sheet with LSBE Exhibits, Certificate of Corporate Bidder, Certificate of Authority/Joint Venture, Bidder's Affidavit of Compliance with O.C.G.A.13-10-91, Reference and Release Form, Preferred Employee Tracking Form, Subcontractor Tracking Form, Bid Bond and Power of Attorney, Public Works Construction Affidavit and Oath of Successful Bidder, Technical Specifications, and Drawings.

"Bidder" shall mean any person, firm, or corporation submitting a Bid for the Work.

"Bonds" shall mean bid, performance, and payment bonds and other instruments of security, furnished by the Contractor and his surety in accordance with the Contract.

"Change Order" includes the term "amendment" and shall mean a written order authorizing a change in the Work, if applicable, and an adjustment in the Contract Price, Contract Time or Contract Term, as adopted and approved by the Contractor and the DeKalb County Governing Authority, or the Chief Executive Officer, if exempted from Governing Authority adoption and approval in accordance with the express terms of this Contract.

"Contract" or "Agreement" shall consist of the written Contract executed by the parties, all attachments to the Contract, Change Orders, Field Orders, and the Bid Document Package. The intent of these documents is for the Contractor to furnish all materials, appliances, tools, labor and services of every kind necessary for the proper execution of the Work, and the terms and conditions of payment therefore.

"Contract Price" shall mean the total monies payable to the Contractor under the terms and conditions of the Contract.

SAMPLE

"Contract Time" shall mean the number of days stated in the Contract for the completion of the Work.

"Contract Term" shall mean the length of time the Contract shall remain in effect.

"Contractor" or "General Contractor" shall mean the individual, firm, joint venture or corporation undertaking the execution of the Work as an independent contractor under the terms of the Contract and acting through his or its agents or employees.

"County" shall mean DeKalb County, Georgia.

"Day(s)" shall mean calendar day(s).

"Drawings" shall mean the part of the Contract which shows, largely through graphical presentation, the characteristics and scope of the Work to be performed and which have been prepared or approved by the County. The Drawings are included in the Bid Document Package.

"Field Order" shall mean a written order issued by an authorized County official/employee to the Contractor during construction effecting a change in the Work by authorizing an addition, deletion, or revision in the Work within the general scope of the Work not involving an adjustment in the Contract Price or a change to the Contract Time or Term. No Field Order shall be valid or effective unless it is signed by the County employee(s) who has been authorized in writing by the Chief Executive Officer or his/her designee to execute Field Orders.

"Notice of Award" shall mean a written notice of the acceptance of the Bid from the County to the successful Bidder.

"Notice to Proceed" shall mean a written communication issued by the County authorizing the Contractor to proceed with the Work and establishing the date of commencement of the Work. The effective date of the Notice to Proceed shall be the date set forth on the Notice to Proceed.

"Project" shall mean the undertaking to be performed as provided in the Contract.

"Shall" is mandatory; "may" is permissive.

"Specifications" or "Technical Specifications" shall mean a part of the Contract consisting of written descriptions of a technical nature regarding materials, equipment, construction systems, standards, and workmanship specified for this Project.

"Subcontractor" shall mean any person, firm, or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work.

"Submittals" shall mean all shop drawings, diagrams, illustrations, brochures, schedules, samples, and other data which are prepared by the Contractor, a Subcontractor, manufacturer,

SAMPLE

Supplier, or distributor, which illustrate how specific portions of the Work shall be fabricated or installed.

"Substantial Completion" or "Substantial Completion of the Work" shall mean that date determined by the County when the construction of the Project or an expressly stipulated part thereof is sufficiently completed, in accordance with the Contract, so that the Project or stipulated part can be fully utilized for the purposes for which it is intended.

"Superintendent" shall mean the Contractor's authorized on-the-job representative designated in writing by the Contractor prior to commencement of any work.

"Supplier" shall mean any person, supplier, or organization who furnishes materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.

"Work" shall have the meaning assigned to that term in the article in the Contract entitled Scope of Work."

GR-2. PRIOR USE BY COUNTY

Prior to completion of the Work, the County may take over operation and/or use of the Project or portions thereof. Such prior use of facilities by the County shall not be deemed as acceptance of any Work or relieve the Contractor from any of the requirements of the Contract.

GR-3. CONTRACTOR'S OBLIGATIONS

The Contractor shall, in good workmanlike manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities, and all things necessary or proper to perform and complete all the Work within the time herein specified and in accordance with the provisions of this Contract, the Specifications, the Drawings, and any and all supplemental drawings pertaining to the Work. Contractor shall furnish, erect, maintain, and remove such construction, plants, and such temporary works as may be required. Contractor alone shall be responsible for the safety, efficiency, and adequacy of its plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operation. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements and limitations imposed by the Contract and local ordinances, and state and federal laws; and shall do, carry on, and complete the entire Work.

GR-4. AUTHORITY OF THE COUNTY

A. The Contractor shall perform all of the Work under the general direction, and to the entire satisfaction, approval, and acceptance of the County. The County shall decide all questions relating to measurements of quantities, the character and

SAMPLE

acceptability of the Work performed, and as to whether the rate of progress is such that the Work will be completed within the time limit of the Contract. All questions as to the meaning of the Drawings and the Specifications will be decided by the County.

B. The approval of the County of any materials, plant, equipment, Drawings, or of any other items executed, or proposed by the Contractor, shall be construed only to constitute an approval of general design. Such approval shall not relieve the Contractor from the performance of the Work in accordance with the Contract, or from any duty, obligations, performance guarantee, or other liability imposed upon him by the provisions of the Contract.

C. Whenever in this Contract, the words "directed," "required," "permitted," "ordered," or words of like import are used, it shall be understood that the direction, requirement, permission, or order of the County is intended, and similar words, "approved," "acceptable," "satisfactory," or words of like import shall mean approved by, acceptable to, or satisfactory to the County.

GR-5. CHANGES IN THE WORK, FIELD ORDERS, AND CHANGE ORDERS

A. All changes, alterations, or instructions in regard to any feature of the Work that differ from the Drawings and Specifications must be approved in writing by Field Order or Change Order in all cases. No verbal instruction or order will be regarded as a basis for a claim for extra compensation or time.

B. If a minor change in the Work is found to be necessary due to actual field conditions, the Contractor shall submit detailed drawings and written notification of the problems necessitating such departure for approval by the County before making the change. If the Contractor fails to make such request, no excuse will be entertained thereafter for Contractor's failure to carry out the Work in the required manner and to provide required guarantees, warranties, and Bonds, and Contractor shall not be entitled to any change in the Contract Price, Contract Time or the Contract Term.

C. The County may at any time, by issuing a Field Order, make changes in the details of the Work. The Contractor shall proceed with the performance of any changes in the Work so ordered by the County unless such Field Order entitles the Contractor to a change in Contract Price, Time, and/or Term, in which event the Contractor shall give the County written notice thereof within fifteen (15) days after the receipt of the ordered change, and the Contractor shall not execute such changes until it receives an executed Change Order from the County. No extra cost or extension of time shall be allowed unless approved by the County and authorized by execution of a Change Order.

SAMPLE

D. The County may at any time order changes within the scope of the Work without invalidating the Contract.

E. No claims for extra cost or time will be considered based on an escalation of prices throughout the Contract Term. The value of any work covered by a Change Order or of any claim for increase or decrease in the Contract Price shall be determined by one of the following methods in the order of precedence listed below.

(1) Unit prices previously approved.

(2) An agreed lump sum.

(3) The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the changed Work. In addition, there shall be added an amount agreed upon but not to exceed fifteen percent (15%) of the actual cost of such work to cover the cost of general overhead and profit.

F. The parties' execution of any Change Order constitutes a final settlement of all matters relating to the change in the Work which is the subject of the Change Order, including, but not limited to, all direct or indirect costs associated with such change and any and all adjustment to the Contract Price and the construction schedule. In the event a Change Order increases the Contract Price, Contractor must include the Work covered by such Change Orders in requests for payment as if such Work were originally part of the Contract.

GR-6. TIME FOR COMPLETION

A. The Contractor understands and agrees that the date of the beginning of Work, rate of progress, and time for completion of the Work are essential conditions of this Contract.

B. The Contractor agrees that the Work shall be executed regularly, diligently, and uninterrupted at such rate of progress as will insure its full completion thereof within the Contract Time. It is expressly understood and agreed, by and between the Contractor and the County, that the time for the completion of the Work described herein is a reasonable time for the completion of the same, taking into consideration the average climate range and usual industrial conditions prevailing in this locality.

C. If extraordinary adverse weather conditions are the basis for a claim for additional time, such claim shall be supported by the attachment of records of the National Oceanic and Atmospheric Administration showing meaningful variances from historic trends thereby substantiating the fact that weather conditions were

SAMPLE

abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction activities. The Contractor shall be entitled to an extension of the Contract Time only for extraordinary adverse weather conditions that unavoidably delay activities scheduled at that time, and then only for the number of days of delay which are due solely to such extraordinary adverse weather conditions. The Contractor is not entitled to any costs associated with extraordinary adverse weather conditions.

D. The County shall not be liable to the Contractor or any Subcontractor for claims or damages of any nature caused by or arising out of delays, regardless of cause. The sole remedy against the County for delays shall be the allowance of additional time for completion of the Work, the amount of which shall be based on actual and unavoidable delay.

GR-7. SCHEDULES, REPORTS, AND RECORDS

A. The Contractor shall submit to the County such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records, and other data as the County may request concerning the Work performed or to be performed. The Contractor shall also submit a schedule of payments that he anticipates earning during the course of the Work.

B. That Contractor shall coordinate and hold a meeting with its major Subcontractors and the County to discuss the Project schedule. Such meeting shall be held prior to Commencement of the Work under this Contract, but in no event later than ten (10) days after execution of this Contract by all parties. At that meeting, the Contractor shall present a draft Project schedule, and the Contractor and its Subcontractors shall, in collaboration with the County, assist in the preparation of a detailed and specific construction schedule. The Contractor shall be responsible for preparing and updating such schedule, which shall be complete in all respects and shall, when approved by the County, become the Construction Schedule and be automatically incorporated into the Contract and shall not be changed without the prior written consent of the County. The Construction Schedule shall not exceed the Contract Time, shall be revised and updated at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract, shall utilize Critical Path Method (CPM) software that is compatible with County software, and shall provide for expeditious and practicable execution of the Work. The Construction Schedule shall be cost-loaded.

C. The Construction Schedule shall, in such detail as the County may require, show the order in which Contractor will carry on the Work, including dates on which the various parts of the Work will start, and the estimated date of completion of each part. It shall also depict all requisite shop drawing submittals and approvals,

SAMPLE

manufacturing, fabrication, the installation of materials, supplies and equipment, testing, start-up, and training.

D. The Contractor shall prepare and keep current, for the County's approval, a schedule of submittals which is coordinated with the Construction Schedule and allows the County reasonable time to review submittals. The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the County.

E. In the event the County determines that the performance of the Work has not progressed or reached the level of completion required by the Contract, the County will have the right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including, without limitation, (1) working additional shifts or overtime; (2) supplying additional manpower, equipment, and facilities; and (3) other similar measures (hereinafter referred to collectively as "Extraordinary Measures"). Such Extraordinary Measures must continue until the progress of the Work complies with the stage of completion required by the Contract and the Construction Schedule. The County's right to require Extraordinary Measures is solely for the purpose of ensuring the Contractor's compliance with the Construction Schedule. The Contractor is not entitled to an adjustment in the Contract Price for undertaking Extraordinary Measures required by the County. The County may exercise the rights furnished the County under or pursuant to this paragraph as frequently as the County deems necessary to ensure that the Contractor's performance of the Work will comply with the completion date set forth in the Contract as the Contract Time.

GR-8. COUNTY'S RIGHT TO SUSPEND OR TERMINATE WORK

A. *Termination for Convenience*. County may, for its own convenience and at its sole option, without cause and without prejudice to any other right or remedy of County, elect to terminate the Contract by delivering to the Contractor, at the address listed in the Notices article of this Contract, a written notice of termination specifying the effective date of termination. Such notice shall be delivered to Contractor at least thirty (30) days prior to the effective date of termination.

B. *Termination for Default*. If the Contractor is adjudged bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the Contractor or for any of his property, or if he files a petition to take advantage of any debtor's act or to reorganize under the bankruptcy or applicable laws, or if he fails to supply sufficient skilled workers or suitable materials or equipment, make payments to Subcontractors or for labor, materials or equipment, or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the Work, or if he otherwise violates any provision of the Contract, then the County may, without prejudice to

SAMPLE

any other right or remedy, and after giving the Contractor and his surety a maximum of seven (7) days from delivery of a written notice, declare the Contract in default and terminate this Contract. In that event, the County may take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor. The County may cause the Work to be completed and corrected by whatever method it deems expedient. If called upon by the County to finish the Work, the Contractor's surety shall promptly do so. In any case, the Contractor and its surety shall be liable to the County for any and all damages and costs incurred by the County as a result of any default by the Contractor, including without limitation all costs of completion or correction of the Work, liquidated damages, attorneys' fees, expert fees, and other costs of dispute resolution. Termination of this Contract pursuant to this paragraph may result in disqualification of the Contractor from bidding on future County contracts for a period of time not to exceed five (5) years.

C. If Contractor's services are terminated by the County pursuant to paragraph A or B in this General Requirement, the termination will not affect any rights or remedies of the County then existing or which may thereafter accrue against Contractor or its surety. Any retention or payment of moneys due Contractor by County will not release Contractor from liability. If it is determined that the Contractor was not in default or that the failure to perform is excusable, a termination for default will be considered to have been a termination for the convenience of the County, and the rights and obligations of the parties shall be governed accordingly.

D. In case of termination of this Contract before completion of the Work, Contractor will be paid only for materials and equipment accepted by the County and the portion of the Work satisfactorily performed through the effective date of termination as determined by the County.

E. Except as otherwise provided in this General Requirement, neither party shall be entitled to recover lost profits, special, consequential or punitive damages, attorney's fees or costs from the other party to this Contract for any reason whatsoever.

F. The parties' obligations pursuant to this General Requirement shall survive any Acceptance of Work, or expiration or termination of this Contract.

GR-9. FINAL INSPECTION

Upon notice from the Contractor that the Work is completed, the County shall make a final inspection of the Work, and shall notify the Contractor of all instances where the Work fails to comply with the Drawings and Specifications, as well as any defects the County may discover. At no cost to the County, the Contractor shall immediately make such alterations as are

SAMPLE

necessary to bring the Work into compliance with the Contract, the Drawings, and Specifications.

GR-10. WARRANTIES, GUARANTEES AND CORRECTION OF WORK

A. The Contractor warrants to the County that materials and equipment furnished under the Contract will be new and of good quality, unless otherwise required or permitted by the Contract; that the Work will be free from defects not inherent in the quality required or permitted; and that the Work will conform to the requirements of the Contract. Work not conforming to these requirements, including substitutions not properly approved and authorized, is considered defective. The County, in its sole discretion, may exclude from the Contractor's warranty; remedies for damage or defect which the County determines were caused by abuse; modifications not executed by the Contractor; improper or insufficient maintenance; improper operation; and normal wear and tear and normal usage.

B. Upon the completion of the Work, and as a condition of final payment, the Contractor shall guarantee in writing that all Work has been accomplished in conformance with the Contract. If required by the County, the Contractor shall also furnish additional satisfactory evidence as to the kind and quality of materials and equipment.

C. The Contractor shall promptly, and in no event later than 48 hours after receiving written demand from the County, remedy any error, omission, defect, or non-compliance in the Work discovered by the County during construction or at any time thereafter until one year after the final completion of the Work. Nothing herein shall be deemed to shorten any statutory period of limitation otherwise applicable to any legal action by the County against the Contractor.

D. Contractor shall pay for any damage caused by any omission or defect in the Work, including without limitation, any damage to other improvements or facilities. In the event that the Contractor should fail to timely make repairs, adjustments, or other remedy that may be made necessary by such defects, the County may do so, and charge the Contractor the cost thereby incurred.

E. All warranties and guaranties shall extend for the greatest of one (1) full year commencing on the dates of Substantial Completion of the Project or such longer period of time as is required by the Contract. The one (1) year period shall be extended with respect to portions of the Work first performed after Substantial Completion for a period of one (1) year after the actual performance of the Work. If any defect or deviation should exist, develop, be discovered or appear within such one (1) year period, the Contractor, at it sole cost and expense and immediately upon demand, shall fully and completely repair, correct, and eliminate such defect. The foregoing warranties and guarantees are cumulative of

SAMPLE

and in addition to, and not restrictive of or in lieu of, any and all other warranties and guarantees provided for or required by law. No one or more of the warranties contained herein shall be deemed to alter or limit any other. The Performance Bond shall remain in full force and effect throughout the applicable guarantee period set forth in this paragraph.

F. Neither the final payment nor any provision of the Contract, nor partial or entire occupancy or use of the Work by the County, shall constitute an acceptance of any part of the Work that is not in accordance with the Contract or relieve the Contractor of liability for incomplete or faulty materials or workmanship.

G. All manufacturer warranties and guarantees shall be delivered to the County prior to Substantial Completion and such delivery shall be a condition precedent to the issuance of the Certificate of Substantial Completion. Before final payment, the Contractor shall assign and transfer to the County all guarantees, warranties and agreements from all contractors, Subcontractors, vendors, Suppliers, or manufacturers regarding their performance, quality of workmanship or quality of materials supplied in connection with the Work. The Contractor represents and warrants that all such guarantees, warranties and agreements will be freely assignable to the County, and that upon final completion of the Work, all such guarantees, warranties and agreements shall be in place and enforceable by the County in accordance with their terms. Contractor's obligations pursuant to this General Requirement shall survive any acceptance of Work, or termination or expiration of this Contract.

GR-11. CONTRACTOR'S PERSONNEL AND INDEPENDENT CONTRACTOR STATUS

A. The Contractor will supervise and direct the Work, including the Work of all Subcontractors. Contractor will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. An experienced Superintendent and necessary assistants competent to supervise the particular types of work involved shall be assigned to the Project by the Contractor, and shall be available at all times when work is in progress. The name of the Superintendent shall be submitted with qualifications of same prior to the start of the Work. If approved by the County, the Superintendent so named by the Contractor shall be employed by the Contractor and shall have served in a supervisory capacity on at least one Project of like description and size performed by the Contractor during the previous twelve months. Under no circumstances shall an employee of any Subcontractor serve as the Superintendent, unless approved by the County prior to being named Superintendent. The Superintendent shall represent the Contractor, and all directions given to the Superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

SAMPLE

B. The Contractor shall not change key members of its staff without the prior consent of the County, unless such staff members prove to be unsatisfactory to the Contractor and cease to be in its employ. If the Contractor intends to change a key staff member (defined as certain full-time personnel stationed at the site including Project Manager, Superintendent, Project Engineer, Assistant Project Manager, Assistant Superintendent, or Assistant Project Engineer) it shall give the County written notice at least fifteen (15) days prior to the intended change. The written notice shall include a description of qualifications for the new proposed key staff member. The County shall have the right to approve or disapprove the proposed key staff member.

C. Only persons skilled in the type of work which they are to perform shall be employed. The Contractor shall, at all times, maintain discipline and good order among his employees, and shall not employ any unfit person or persons or anyone unskilled in the work assigned him.

D. The relationship between the County and the Contractor shall be that of owner and independent contractor. Other than the consideration set forth herein, the Contractor, its officers, agents, servants, employees, and any Subcontractors shall not be entitled to any County employee benefits including, but not limited to social security, insurance, paid annual leave, sick leave, worker's compensation, free parking or retirement benefits. All services provided by Contractor shall be by employees of Contractor or its Subcontractors and subject to supervision by Contractor. No officer or employee of Contractor or any Subcontractor shall be deemed an officer or employee of the County. Personnel policies, tax responsibilities, social security payments, health insurance, employee benefits and other administrative policies, procedures or requirements applicable to the Work or services rendered under this Contract shall be those of the Contractor, not the County.

GR-12. SUBCONTRACTING

A. The Contractor understands and agrees that it shall be a breach of this Contract to subcontract any portion of the Work on this Project unless

1. The Work and the Subcontractor proposed to perform it have been declared in the Bid to the Contract; or

2. The Contractor shall have obtained advance written approval from the County.

B. The Contractor further understands and agrees that any work on this Project, which the Contractor secures in violation of this General Requirement, shall be deemed a donation from the Contractor for which the County shall not be

SAMPLE

obligated to pay. Nothing contained in this Contract shall create any contractual relation between any Subcontractor and the County. Upon request, Contractor shall provide the County with copies of each of its contract(s) and amendments with each Subcontractor.

C. Nothing contained in this Contract shall create, nor be interpreted to create privity, or any other relationship whatsoever, between the County and any person, or entity or than Contractor.

GR-13. ASSIGNMENTS

The Contractor agrees it shall not sublet, assign, transfer, pledge, convey, sell, or otherwise dispose of the whole or any part of this Contract or his right, title, or interest therein to any person, firm, or corporation without the previous written consent of the County. If the County consents to any such assignment or transfer, then the Contractor binds itself, its partners, successors and assigns to all covenants of this Contract.

GR-14. INDEMNIFICATION AND HOLD HARMLESS

A. The Contractor shall be responsible from the execution date or from the time of the beginning of the Work, whichever shall be the earlier, for all injury or damage of any kind resulting from the Work, to persons or property, including employees and property of the County. The Contractor shall exonerate, indemnify, and save harmless the County, its elected officials, officers, employees, agents and servants, hereinafter collectively referred to in this General Requirement as "the County Indemnitees," from and against all claims or actions based upon or arising out of any damage or injury (including without limitation any injury or death to persons and any damage to property) caused by or sustained in connection with the performance of this Contract or by conditions created thereby or arising out of or any way connected with Work performed under this Contract, as well as all expenses incidental to the defense of any such claims, litigation, and actions. Furthermore, Contractor shall assume and pay for, without cost to the County Indemnitees, the defense of any and all claims, litigation, and actions suffered through any act or omission of the Contractor, or any Subcontractor, or anyone directly or indirectly employed by or under the supervision of any of them. Notwithstanding any language or provision in this Contract, Contractor shall not be required to indemnify any County Indemnitee against claims, actions, or expenses based upon or arising out of the County Indemnitee's sole negligence.

B. As between the County Indemnitees and the Contractor as the other party, the Contractor shall assume responsibility and liability for any damage, loss, or injury, including death, of any kind or nature whatever to person or property, resulting from any kind of claim made by Contractor's employees, agents, vendors, Suppliers or Subcontractors caused by or resulting from the performance of Work under this Contract, or caused by or resulting from any error, omission, or the negligent or intentional act of the Contractor, vendors, Suppliers, or

SAMPLE

Subcontractors, or any of their officers, agents, servants, or employees. The Contractor shall defend, indemnify, and hold harmless the County Indemnitees from and against any and all claims, loss, damage, charge, or expense to which they or any of them may be put or subjected by reason of any such damage, loss, or injury.

C. The Contractor expressly agrees to provide a full and complete defense against any claims brought or actions filed against the County Indemnitees, where such claim or action involves, in whole or in part, the subject of the indemnity contained in this Contract, whether such claims or actions are rightfully or wrongfully brought or filed. The County has the sole discretion to choose the counsel who will provide the defense.

D. No provision of this Contract and nothing herein shall be construed as creating any individual or personal liability on the part of any elected official, officer, employee, agent or servant of the County, nor shall the Contract be construed as giving any rights or benefits hereunder to anyone other than the parties to this Contract.

E. The parties agree that Contractor shall be liable for all fines or civil penalties, which may be imposed by any local, federal or state department or regulatory agency that are a result of Contractor's performance of the Work under this Contract. Contractor shall pay the costs of contesting any such fines. The parties' obligations pursuant to this General Requirement shall survive any acceptance of Work, or termination or expiration of this Contract.

GR-15. ROYALTIES AND PATENTS

The Contractor shall hold and save the County and its elected officials, officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the County, unless otherwise specifically stipulated in the Contract.

GR-16. LAWS AND REGULATIONS

A. The Contractor's attention is directed to the fact that all applicable federal, state, and County laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full. The Contractor shall keep itself and its employees and Subcontractors fully informed of all laws, ordinances, and regulations in any manner affecting those engaged or employed in the Work or the materials used in the Work or in any way affecting the conduct of the Work and of all orders and decrees of bodies or tribunals having any jurisdiction or

SAMPLE

authority over same. If Contractor discovers any discrepancy or inconsistency in this Contract or in the Drawings or Specifications in relation to any such law, regulation, ordinance, order, or decree, Contractor shall promptly report the same, in writing, to the County. Contractor shall at all times observe and comply with all such laws, ordinances, and regulations, and shall protect and indemnify the County and its agents against any all damages and claims arising out of any violation of such law, ordinance, regulation, order, or decree, whether by Contractor or its employees or Subcontractors.

B. Contractor shall not discriminate against any person in its operations, activities or performance of Work under this Contract. Contractor shall affirmatively comply with all applicable provisions of federal, state and local equal employment laws and shall not engage in or commit any discriminatory practice against any person based on race, age, religion, color, gender, national origin, physical or mental disability, or political affiliation. Contractor shall maintain a Drug Free Workplace.

GR-17. PERMITS AND INSPECTION FEES

A. Permits shall be secured by the Contractor, and inspections will be required, but the County will not charge the Contractor for permits and inspections obtained from the County. The Contractor shall secure and pay for any permits and inspection fees required by any other governmental entity or agency.

B. Prior to execution of this Contract, Contractor shall provide the County with a copy of its current, valid business license. If Contractor is not a Georgia corporation, Contractor shall submit a certificate of authority to transact business in the state of Georgia and a copy of their valid business license issued by their home jurisdiction. Contractor shall provide the County with copies of all other required licenses, certifications and permits for the Contractor and/or all of Contractor's employees, personnel, agents or Subcontractors performing services that require licensure by the federal government, the State of Georgia, or the County. Contractor hereby warrants and represents that at all times during the Contract Term it shall maintain in good standing all required licenses, certifications, and permits required under federal, state and local laws necessary to perform the services required by this Contract.

GR-18. LAND AND RIGHTS-OF-WAY

Prior to entering on any land or right-of-way, the Contractor shall ascertain the requirements of applicable permits or easements obtained by the County, and shall conduct his work in accordance with requirements thereof, including the giving of notice. The Contractor shall be fully responsible for performing work to the requirements of any permit or easement granting entity, even though such requirements may exceed or be more stringent than that

SAMPLE

otherwise required by the Contract, and shall compensate the County fully for any loss or expense arising from failure of the Contractor to perform as required by such entity. The Contractor shall provide, at its own expense without liability to the County, any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.

GR-19. PROTECTION OF WORK, PROPERTY, AND PERSONS

A. The Contractor is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the Project and other persons who may be affected thereby, all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, lakes, drainage ways, walks, pavements, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of construction.

B. The Contractor shall erect and maintain, as required by the conditions and progress of the Work, all necessary warning safeguards for devices and the safety and protection of the Work, the public and adjoining property.

C. If existing utilities or structures are indicated by the Contract, no warranty is made as to the accuracy or completeness of such indication or the information provided regarding such utilities or structures. The Contractor shall comply with all applicable state law concerning the marking and location of existing utilities. The Contractor shall, prior to commencing other on-site work, accurately locate above and below ground utilities and structures, which may be affected by the Work, using whatever means may be appropriate, and shall verify the nature and condition of such utilities and structures. The Contractor shall mark the location of existing utilities and structures, if they are not otherwise readily visible, with flagging, stakes, barricades, or other suitable means, and shall preserve and protect all utilities and structures not designated for removal, relocation, or replacement in the course of construction. Contractor shall notify the County promptly of discovery of any conflict between the Contract and any existing facility.

D. All existing utilities, both public and private, including but not limited to, sewer, gas, water, electrical, and telephone services, shall be protected and their operation shall be maintained through the course of the Work. Any temporary shutdown of an existing service shall be arranged between the Contractor and the responsible agency. The Contractor shall assume full responsibility and hold the County harmless from the result of any damage that may occur as a result of the Contractor's activities in this regard.

SAMPLE

E. In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, or unanticipated conditions where delay would substantially impact the time or cost of work, the Contractor, upon notification to the County, shall act to prevent threatened damage, injury, or loss. Any claim for compensation or extension of time by the Contractor due to such extra work shall be submitted to the County within ten (10) days of the date of performing such work or deviations in the manner prescribed for a Change Order.

GR-20. PROHIBITED INTERESTS

No official of the County who is authorized in such capacity and on behalf of the County to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction, or material supply contract, or any subcontract in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part hereof. No officer, employee, architect, attorney, engineer, or inspector of or for the County who is authorized in such capacity and on behalf of the County to exercise any legislative, executive, supervisory, or other similar functions in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the Project.

GR-21. FIRST SOURCE JOBS ORDINANCE

The Contractor is required to comply with the DeKalb County First Source Jobs Ordinance, Code of DeKalb County as Revised 1988, section 2-231 *et seq*., and among other things, is required to make a good faith effort to hire DeKalb County residents for at least fifty percent 50% of all jobs created by an Eligible Project, as that term is defined in the First Source Ordinance, using the First Source Registry.

GR-22. FOREIGN CORPORATIONS

In the event the Contractor is a foreign corporation, partnership, or sole proprietorship, the Contractor hereby irrevocably appoints the Georgia Secretary of State as its agent for service of all legal process for the purposes of this Contract only.

GR-23. SPECIFICATIONS AND DRAWINGS

A. The Specifications, the Drawings and the Contract shall be supplementary to each other, and any material, workmanship, and/or service which may be in one, but not called for in the others, shall be as binding as if indicated, called for, or implied by all.

SAMPLE

B. Each section or type of work is described separately in the Technical Specifications; however, should any item of material, equipment, work, or combinations of such be required in one section, and not be described in that section and a similar item described in another section, that description shall apply regardless of the section under which it is described.

C. Any discrepancies found between the Drawings and Specifications and site conditions, or any inconsistencies or ambiguities in the Drawings or Specifications shall be immediately reported to the County, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies, or ambiguities shall be done at the Contractor's risk.

D. Upon award of the Contract, the Contractor will be supplied, free of charge, up to three complete sets of the Contract Drawings and Specifications. Any prints and Specifications in excess of these shall be furnished at cost at the Contractor's expense.

E. The Contractor shall furnish, with reasonable promptness, all samples as directed by the County for approval for conformance with the design concept of the Project and for compliance with the information stated in the Contract. The Work shall be in accordance with approved samples.

F. The County may, without changing the scope of the Work, furnish the Contractor additional instructions and detail drawings, as necessary to carry out the Work required by the Contract. The additional drawings and instructions thus supplied will become a part of the Contract. The Contractor shall carry out the Work in accordance with the additional detail drawings and instructions.

G. Attention is directed to the fact that the detailed Specifications and separate sections may be written in short or abridged form. In regard to every section of the Specifications and all parts thereof, mentioned therein, or indications on the Drawings of articles, materials, operations, or methods, requires that the Contractor:

(1) Provide each item mentioned and indicated of a quality or subject to qualifications noted;

(2). Perform according to conditions stated, each operation prescribed; and

(3) Provide therefore all necessary labor, equipment, and incidentals.

H. For convenience of reference and to facilitate the letting of contracts and subcontracts, these Specifications are separated into titled sections. Such separation shall not, however, operate to make the County an arbiter to establish limits for the contracts between the Contractor and Subcontractors.

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I. Notwithstanding the appearance of such language in the various sections of the Specifications as, "The Paving Contractor," "The Grading Contractor," etc., the Contractor is responsible to the County for the entire Contract and the execution of all Work referred to in the Contract.

GR-24. CONTRACTOR'S SUBMITTALS

A. The Contractor shall submit all Submittals to the official or employee so designated by the chief executive officer all Submittals as required under the Specifications and in such time and manner that will allow at least ten (10) days for the County's review, pursuant to the Construction Schedule. No portion of the Work shall commence until all Submittals relating to such portion have been approved by the County.

B. The approved Drawings will be supplemented by such shop drawings as are needed to adequately control the Work. Shop Drawings, product data, samples and other Submittals are not parts of the Contract. The purpose of their submittal is to demonstrate for those portions of the Work for which Submittals are required by the Contract, the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract. Informational Submittals, upon which a County employee, the Architect or Engineer, if retained by the County in connection with the Project, is not expected to take responsive action, may be so identified in the Contract. Submittals which are not required by the Contract may be returned by the County without action. The approval of a Submittal shall not authorize any deviation from or alteration of the Drawings or Specifications absent a Change Order or Field Order.

C. Shop drawings to be furnished by the Contractor for any structure shall consist of such detailed drawings as may be required for the execution of the Work.

D. Drawings for false work, centering, and form work may also be required per the Specifications and in such cases shall be likewise subjected to approval unless approval is waived.

E. The County's review will be within reasonable promptness as to cause no delay in the Work. Approval of the Contractor's Submittals does not relieve the Contractor of any responsibility for accuracy of dimensions and details or from otherwise ensuring that the Work complies with the requirements of the Contract. It is mutually agreed that the Contractor shall be responsible for agreement and conformity of Submittals with the Drawings and Specifications. The County will review and approve or take other appropriate action upon the Contractor's Submittals such as shop drawings, product data and samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract. Review of submittals is not conducted for the purpose of determining the accuracy and completeness of details such as dimensions and quantities, or for substantiating instructions for installation or

SAMPLE

performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract. The County's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures. The County's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

D. It is the responsibility of the Contractor to check all Submittals before same are submitted to the County for approval. Submittals which have not been checked and approved by the Contractor will not be reviewed by the County.

E. Submittals shall be submitted only by the Contractor who shall indicate by a signed stamp on the drawings that he has checked the Submittals and that the work shown on them is in accordance with Contract requirements and has been checked for dimensions and relationship with work of all other trades involved. Under no conditions shall Submittals be accepted from anyone other than the Contractor.

F. The Contractor shall furnish the County with at least six copies of all Submittals for approval. Two finally approved copies will be returned to the Contractor for his use. The Contract Price shall include the cost of furnishing all Submittals and the Contractor will be allowed no extra compensation for such drawings.

G. The approval of such Submittals shall not relieve the Contractor from responsibility for deviations from Drawings or the Specifications unless he has in writing called attention to such deviations, and the County has approved the changes or deviations in writing at the time of submission, nor shall it relieve him from the responsibility for errors of any kind in Submittals. When the Contractor does call such deviations to the attention of the County, he shall state in writing whether or not such deviations involve any extra cost. If this is not mentioned, it will be assumed that no extra cost is involved for making the change.

H. The Contractor shall prepare and maintain a log of all Submittals which includes, at a minimum, the submittal number, revision number, description, responsible company, proposed submittal date, date actually submitted, date approved, any comments received, approval status, and resubmittal information. The log shall be updated at least on a monthly basis and made available to the County for review upon request.

GR-25. AS-BUILT DRAWINGS

The Contractor shall maintain a red-lined set of drawings on site during the progress of the Work, indicating any Field Orders, Change Orders and the location of the portion of the Work or equipment actually installed. The Contractor shall, upon completion of the Work, furnish a marked set of reproducible drawings indicating any field changes and the location of Work as actually installed, if different from the requirements of the Contract, and deliver them to

SAMPLE

the County in hard copy as well as an electronic copy compatible with the County's software and hardware system.

GR-26. EXAMINATION OF WORK BY CONTRACTOR

It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature and location of the Work, the configuration of the ground, the character, quality, and quantity of the facilities needed preliminary to and during the prosecution of the Work, the general and local conditions, and all other matters which can in any way affect the Work or the cost thereof under this Contract.

GR-27. INSPECTION AND TESTING OF MATERIALS

Unless otherwise specifically provided for, the inspection and testing of materials and finished articles to be incorporated in the Work as required by the Specifications shall be made by the County, or bureaus, laboratories, or agencies selected by the County. The cost of such inspection and testing shall be paid by the Contractor unless County agrees to pay the cost. Materials and finished articles shall have passed the required tests prior to the incorporation of such materials and finished articles in the Work. The County may require, and the Contractor shall furnish if required to do so, certificates from manufacturers to the effect that the products or materials furnished by them for use in the Work comply with the applicable specified requirements for the materials or products being furnished.

GR-28. INSPECTION OF WORK

A. The Contractor shall, at all times, permit and facilitate inspection of the Work by authorized representatives of the County and public authorities having jurisdiction in connection with the Work of this Contract. The presence or observations of the County or its representative at the site of the Work shall not be construed to, in any manner, to relieve the Contractor of its responsibility for strict compliance with the provisions of the Contract.

B. If the Drawings, Specifications, County's instructions, laws, ordinances, or a public authority require any work to be specially tested or approved, the Contractor shall give the County timely notice of its readiness for observation or inspection. If the inspection is by another authority, then the County shall be advised of the date fixed for such inspection. Required certificates of inspection shall be secured by the Contractor. Contractor, having secured all certificates of inspection, will deliver same to the County upon completion. If any Work should be covered up without approval or consent of the County, it shall, if required by the County, be uncovered for examination at the Contractor's expense. The recovering of such Work after inspection shall be at Contractor's expense.

C. Should any disagreement or difference arise as to the estimate, quantities, or classifications or as to the meaning of the Drawings or Specifications, or any point concerning the character, acceptability, and nature of the several kinds of

SAMPLE

work, any materials and construction thereof, the decisions of the County shall be final and conclusive and binding upon all parties to the Contract.

D. If the County determines that portions of the Work require additional testing, inspection or approval beyond the requirements of the Specifications, the County will instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the County, and the Contractor shall give timely notice to the County of when and where tests and inspections are to be made so that the County may be present for such procedures. Such costs, except as provided below, shall be at the County's expense.

E. If such procedures for testing or inspection reveal failure of the portions of the Work to comply with requirements established by the Contract, all costs made necessary by such failure including those of repeated procedures shall be at the Contractor's expense.

F. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract, be secured by the Contractor and promptly delivered to the County or the Architect if one is retained by the County in connection with the Project. Tests or inspections conducted, pursuant to the Contract, shall be made promptly to avoid unreasonable delay in the Work.

GR-29. REQUESTS FOR SUBSTITUTIONS

A. Requests for substitutions of proprietary products or of a particular manufacturer, vendor, or Subcontractor must be accompanied by the following documentation:

(1) Full explanation of the proposed substitution and submittal of all supporting data including technical information, catalog cuts, warranties, test results, installation instructions, operating procedures, and other like information necessary for a complete evaluation of the substitution;

(2) Reasons the substitution is advantageous or necessary, including benefits to the County and the Work in the event the substitution is acceptable;

(3) The adjustment, if any, in the Contract Price, in the event the substitution is acceptable;

(4) The adjustment, if any, in the Contract Term or Time and the construction schedule in the event the substitution is acceptable;

(5) An affidavit stating that (1) the proposed substitution conforms and meets all the requirements of the pertinent Specifications and the requirements shown on the Drawings and (2) the Contractor accepts the warranty and correction obligations in connection with the proposed substitution as if originally specified;

SAMPLE

(6) Proposals for substitutions must be submitted in triplicate to the County in sufficient time to allow the County no less than ten (10) working days for review; and

(7) No substitutions will be considered or allowed without the Contractor's submittal of complete substantiating data and information as stated hereinbefore.

B. Substitutions and alternates may be rejected at the County's discretion without explanation and will be considered only under one or more of the following conditions:

(1) Required for compliance with interpretation of code requirements or insurance regulations then existing;

(2) Unavailability of specified products, through no fault of the Contractor; or

(3) Subsequent information discloses inability or specified products to perform properly or to fit in designated space;

(4) Manufacturer/fabricator refuses to certify or guarantee performance of specified product as required; and

(5) When in judgment of the County, that a substitution would be substantially to the County's best interests, in terms of costs, time, or other considerations.

C. Whether or not any proposed substitution is accepted by the County, the Contractor must reimburse the County for any fees charged by the Architect or other consultants for evaluating each proposed substitute. By making requests for substitutions based on the above, the Contractor:

(1) Represents and warrants that the Contractor has personally investigated the proposed substitute product or Subcontractor and determined that it is equal or superior in all respects to the product or Subcontractor previously specified;

(2) Represents and warrants that the Contractor will provide the same warranty for the substituted product or for the workmanship of the substituted Subcontractor, as applicable, that the Contractor would have provided for the product or Subcontractor previously specified;

(3) Certifies that the cost data presented, in the form of certified quotations from Suppliers of both specified and proposed equipment is complete and includes all related costs under this Contract, but excludes costs under

SAMPLE

separate contracts, and waives all claims for additional costs related to the substitution which subsequently become apparent; and

(4) Agrees that the Contractor will coordinate the installation of the accepted substitution, making such changes as may be required for the Work to be complete and in accordance with the Contract in all respects.

D. Contractor shall not propose an item for substitution unless it is equal to or superior to the specified item or items in construction, efficiency, and utility. The opinion of the County as to the equality or superiority of the item shall be final, and no substitute material or article shall be purchased or installed without the County's written approval.

E. In case of a difference in price, the County shall receive all benefits of the difference in cost involved in any substitution, when lower, and the Contract altered by Change Order to credit the County with any savings to be obtained. However, the County shall not be charged for any additional cost in the case of a price increase.

GR-30. REJECTIONS OF WORK AND MATERIALS

A. All Work that is defective or deviates from the Drawings or Specifications will be rejected. All rejected Work shall be replaced immediately with other material, equipment, or work which conforms with the Drawings and Specifications at no additional cost to the County. If rejected Work is not removed within forty-eight hours from the date of letter of notification, the County shall have the right and authority to stop the Work immediately and/or to arrange for the removal of said rejected Work at the cost and expense of the Contractor.

B. Inspection of the Work shall not relieve the Contractor of any of its obligations, and defective Work shall be made good regardless of whether it has been previously inspected by the County and accepted or estimated for payment. The failure of the County to reject or condemn improper materials or workmanship shall not be considered as a waiver of any defect that may be discovered later.

GR-31. MATERIALS, SERVICES, AND FACILITIES

A. The Contractor shall at all times employ sufficient labor and equipment for executing the Work to full completion in the manner and time specified. Failure of the Contractor to provide adequate labor and equipment shall constitute a default of the Contract. The labor and equipment to be used in the Work by the Contractor shall be sufficient to meet the requirements of the Work and shall be such as to produce a satisfactory quality of work in accordance with accepted industry practices and within the Contract Time.

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B. Materials and equipment shall be so stored and handled as to insure the preservation of their quality and fitness for the Work. Stored materials and equipment to be incorporated in the Work shall be located so as to facilitate prompt inspection. No product which has in any way become unfit for the intended purpose shall be incorporated into the Work.

C. Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, cleaned, and conditioned as directed by the manufacturer. Contractor shall promptly notify the County of any conflict between the instructions of any manufacturer and the requirements of the Drawings or the Specifications.

D. Materials, supplies, and equipment to be incorporated into the Work shall be new and unused unless otherwise specifically stated in the Contract. The source of supply for all such products shall be submitted to the County, together with detailed descriptions thereof in the form of samples, shop drawings, tests, or other means necessary to adequately describe the items proposed. Approval by the County of a manufacturer or supplier shall not constitute the approval of materials, supplies, or equipment obtained from such manufacturer or supplier if they do not comply with the requirements of the Contract. If, after trial or installation, it is found that sources of supply, even though previously approved by the County, have not furnished products meeting the intent of the Contract, the Contractor shall thereafter furnish products from other approved sources, and shall remove completed Work incorporating products which do not meet Contract requirements.

E. The Contractor shall confine operations to areas permitted by law, ordinances, permits and the Contract, and shall not unreasonably encumber the site with materials or equipment. The Contractor shall provide parking for all construction vehicles only within the construction limits as indicated on the drawings or make appropriate arrangements as permitted by law.

F. Only materials and equipment which are to be used directly in the Work may be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it must be promptly removed from the Project site. Protection of construction materials and equipment stored at the Project site from weather, theft, damage, and all other adversity is the sole responsibility of the Contractor.

G. The Contractor and any entity for which the Contractor is responsible must not erect any sign on the Project site without the prior written consent of the County, which may be withheld in the sole discretion of the County.

H. Contractor must ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, and for emergency response to the site of the Work and all adjacent areas. The Work must be

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performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the Work are free from debris, building materials and equipment likely to cause hazardous conditions. Without limitation of any other provision of the Contract, Contractor must use its best efforts to minimize any interference with the occupancy or beneficial use of any areas and buildings adjacent to the site of the Work, or the Project.

I. Without prior approval of the County, the Contractor shall not permit any worker to use any existing facilities at the Project site, including, without limitation, lavatories, toilets, entrances, and parking areas other than those designated by the County for such use. Without limitation of any other provision of the Contract, the Contractor shall use its best efforts to comply with all rules and regulations promulgated by the County in connection with the use and occupancy of the Project site, as amended from time to time. The Contractor shall immediately notify the County in writing if during the performance of the Work, the Contractor finds compliance with any portion of such rules and regulations to be impracticable, setting forth the problems that may be caused by such compliance and suggesting alternatives through which the results intended by such portions of the rules and regulations can be achieved. The County may, in the County's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements applicable to the use and occupancy of the Project site.

J. Unless otherwise provided in the Contract, Contractor shall provide and maintain a suitable office on the site for its own use and for the use of representatives of the County. Contractor shall furnish sufficient heat, artificial light, ventilation and janitor's service, and shall also provide a table or desk, plan rack and chairs, all for the use of those visiting the job, in addition to such furnishings as he provides for his own use. Temporary offices and other structures shall be located where approved by the County, and shall be removed from the premises upon completion of the Contract or earlier if so directed by the County.

K. Contractor may be required by the County, at the beginning of Work, to provide, at the Project site, suitable and adequate temporary toilets and enclosure for use of workers on the job, shall maintain same in sanitary condition, and shall remove same at the completion of construction operations and/or when directed by the County. Contractor shall not allow any sanitary nuisances to be committed in or about the site and shall enforce sanitary regulations of local and state health authorities.

L. The Contractor shall cooperate with the County in any required use of the property and arrange for storage of materials on the Project site in such areas as are mutually agreed upon. The Contractor shall allot suitable and proper space to its Subcontractors for the storing of their materials and for the erection of their sheds and tool houses. Should it be necessary at any time to move materials,

SAMPLE

sheds, or storage platforms, the Contractor shall, at its own expense move same as and when directed by the County.

M. Unless otherwise instructed by the County, the Contractor shall repair and return to original condition all buildings, streets, curbs, sidewalks, utilities or other facilities affected by the Contractor's performance of the Work. The County's decisions in matters relating to aesthetic effect shall be final if consistent with the intent of the Contract.

GR-32. UTILITIES DURING CONSTRUCTION

Contractor shall furnish all utilities and pay for all bills for utilities used during construction. Utilities shall include electric power, fuel of any sort used for heating, etc., telephone services, cable and internet, if necessary, and water. Contractor shall provide all temporary connections to utilities when not provided by the utility company or others at no additional cost to the County. Contractor shall, if required by the County, install and maintain at his own expense, a job telephone and communications equipment necessary for the execution of the Work for the Contract Time.

GR-33. TEMPORARY HEAT AND AIR CONDITIONING

The Contractor shall provide, at his own expense, temporary heat or air conditioning, as necessary, to protect all Work and materials against injury from heat, dampness or cold. Fuel, equipment and method of heating and cooling shall be satisfactory to the County and shall not present a fire hazard. Contractor shall comply with the requirements in the Specifications for specific temperatures to be maintained.

GR-34. MAINTENANCE MANUAL

Contractor shall, prior to completion of Contract, deliver to the County two (2) copies of a manual, assembled, indexed, and bound, for the County's guidance, full details for care and maintenance of visible surfaces and of equipment included in Contract. Contractor shall, for this manual, obtain from Subcontractors literature of manufacturers relating to equipment, including motors; also furnish cuts, wiring diagrams, instruction sheets and other information pertaining to same that will be useful to the County in over-all operation and maintenance. Where the above-described manuals and data are called for under separate sections of the Specifications, they are to be included in the manual described in this General Requirement.

GR-35. WEATHER CONDITIONS

The Contractor will be required to protect all work and materials against damage or injury from the weather. If, in the opinion of the County, any work or materials shall have been damaged or injured by reason of failure to protect such, all such materials or work shall be removed and replaced at the expense of the Contractor.

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GR-36. LINES, GRADES, AND MEASUREMENTS

A. Such stakes and markings as the County may set for either its or the Contractor's guidance shall be preserved by the Contractor. Failure to protect such stakes or markings may, at the County's discretion, shall result in the Contractor being charged for their replacement.

B. The Contractor must exercise proper care and caution to verify the grades and figures furnished by or on behalf of the County before proceeding with the Work, and shall be responsible for any damage or defective work caused by its failure to exercise such care and caution. Contractor shall promptly notify the County of any errors or discrepancies it may discover in order that the proper corrections may be made.

C. Before ordering materials or doing work, the Contractor shall measure and verify the dimensions and locations of all existing structures, substrata, and features that affect the Work and shall be responsible for the correctness of same. No consideration will be given any claim based on the differences between the actual dimensions and those indicated on the Drawings. Contractor shall promptly notify the County of any difference which may be found, and shall obtain direction from the County before proceeding with the affected Work.

GR-37. CLEANING UP

A. The Contractor shall at all times, keep the premises free from accumulation of waste materials or rubbish caused by Contractor's employees or work. Upon completion of the Work, the Contractor shall remove all his plants, tools, materials, and other articles from the property of the County.

B. If the Contractor fails to clean up, as provided in the Contract, the County may do so, and the cost thereof shall be charged to the Contractor. Contractor shall ensure that neither it, its Subcontractors, nor their employees or agents bring any hazardous materials or other materials/waste regulated by state, federal or local law, which are not commonly used in the construction process or which are not listed in any Specifications for the Project onto the Project site without first obtaining the County's advance written approval. Contractor agrees to ensure that any hazardous materials/waste or other materials/waste regulated by state, federal or local law that Contractor, its Subcontractors or their employees or agents, bring onto or generate at the Project Site are handled in accordance with all applicable laws.

C. The Contractor shall pay all required material disposal fees and shall dispose of all materials in accordance with all applicable laws and regulations. The Contractor shall be responsible for all costs associated with improper disposal of materials, including any clean-up costs, fines or penalties, whether levied against the Contractor or the County.

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D. In addition to removing rubbish on a periodic basis and leaving the building broom clean, the Contractor shall clean all tile and glass; replace broken glass; remove stains, paint spots, and dirt from all Work; clean and polish all plumbing fixtures and equipment; and remove all temporary protection items. To the maximum extent reasonably possible, the Contractor shall keep the interior of the building free of combustible materials as the Work progresses.

E. The Contractor shall maintain and keep clean at all times the immediate approach to the Project site, including the roads abutting the Project site.

GR-38. BARRICADES

A. Contractor shall provide barricades and protective barriers around excavations, so that the public is adequately warned of such hazards. Lanterns shall remain lighted from sundown to sunrise and at all other times when the labor forces are not on the job site.

B. Delivery of construction materials and equipment shall be only to locations approved by the County.

GR-39. NO THIRD-PARTY BENEFICIARY

Except as expressly and specifically set forth herein, this Contract shall not be deemed to provide any third-party with any remedy, claim, right of action, or other right.

GR-40. SEVERABILITY

If any provision of this Contract or the application thereof to any person or circumstance shall to any extent be held invalid, then the remainder of this Contract or the application of such provision to persons or circumstances, other than those as to which it is held invalid, shall not be affected thereby, and each provision of this Contract shall be valid and enforced to the fullest extent permitted by law.

GR-41. INTERPRETATION

The laws of the State of Georgia shall govern the construction of this Contract without regard for conflicts of laws. Should any provision of this Contract require judicial interpretation, it is agreed that the court interpreting or construing the same shall not apply a presumption that the terms hereof shall be more strictly construed against one party, by reason of the rule of construction, that a document is to be construed more strictly against the party who itself or through its agent prepared same; it being agreed that the agents of all parties have participated in the preparation hereof, and all parties have had an adequate opportunity to consult with legal counsel. In interpreting this Contract in its entirety, the printed provisions of this Contract, and any additions written or typed hereon, shall be given equal weight, and there shall be no

SAMPLE

inference by operation of law or otherwise; that any provision of this Contract shall be construed against either party hereto.

GR-42. PRIOR CONTRACTS; CONFLICT IN DOCUMENTS

The Contractor may in no case claim a waiver of any specification requirements on the basis of previous approval of material or workmanship on other jobs of like nature or on the basis of what might be considered "standard" for material or workmanship in any particular location. The Contract for this Project shall govern the Work. If any portion of the Contract shall be in conflict with any other portion, the various documents comprising the Contract shall govern in the following order of precedence: Contract, Change Orders or modifications issued after execution of the Contract; the General Requirements of the Contract; the Specifications; the Drawings, as between schedules and information given on the Drawings, the schedules shall govern; as between figures given on Drawings and the scaled measurements, the figures shall govern; as between large-scale Drawings and small-scale Drawings, the larger scale shall govern; and detailed Drawings shall govern over general Drawings; and the Bid Document Package.

GR-43. ENTIRE AGREEMENT

This Contract constitutes the sole contract between the County and the Contractor. The terms, conditions, and requirements of this Contract may not be modified, except by Change Order or Field Order. No verbal agreement or conversation with any officer, agent, or employee of the County, either before or after the execution of the Contract, shall affect or modify any of the terms or obligations herein contained. No representations, oral or written, shall be binding on the parties unless expressly incorporated herein. No Change Order or Field Order shall be enforceable unless approved by official action of the County as provided by law or in this Contract.

GR-44. COUNTERPARTS

This Contract may be executed in several counterparts, each of which shall be deemed an original, and all such counterparts together shall constitute one and the same Contract.

GR-45. VENUE

The courts of DeKalb County, Georgia shall have exclusive jurisdiction to try disputes arising under or by virtue of this Contract.

GR-46. RIGHT TO AUDIT

The County shall have the right to audit all books and records, including electronic records, relating or pertaining to this contract or agreement, including but not limited to all financial and performance related records, property, and equipment purchased in whole or in part with County funds and any documents or materials which support those records, kept under the control of the Contractor, including but not limited to those kept by the Contractor's employees, agents, assigns, successors and subcontractors. The County also has the right to communicate

SAMPLE

with Contractor's employees related to the audited records.

The Contractor shall maintain such books and records, together with such supporting or underlying documents and materials, for the duration of this contract and for seven (7) years after termination or expiration, including any and all renewals thereof. The books and records, together with supporting documents and materials shall be made available, upon request to the County or its designee, during normal business hours at the Contractor's office or place of business. In the event that no such location is available, then the books, records, and supporting documents shall be made available for audit at a time and location which is convenient for the County.

SAMPLE

ATTACHMENT B

Contractor Affidavit under O.C.G.A. §13-10-91

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 engaged in the physical performance of services on behalf of DEKALB COUNTY has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. §13-10-91. Furthermore, the undersigned Contractor will continue to use the federal work authorization program throughout the Contract Term and the undersigned Contractor will contract for the physical performance of services in satisfaction of such contract only with Subcontractors who present an affidavit to the Contractor with the information required by O.C.G.A. §13-10-91. Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____
Federal Work Authorization User Identification Number

_____
Date of Authorization

_____
Name of Contractor

_____
Name of Project

_____
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, 20__ in _____(city), _____(state).

By:_____
Signature of Authorized Officer or Agent

_____
Printed Name and Title of Authorized Officer or Agent

Subscribed and Sworn before m on this the
_____ day of _____, 20 ___.

_____
NOTARY PUBLIC
My Commission Expires:

_____

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ATTACHMENT C

Subcontractor Affidavit under O.C.G.A. § 13-10-91

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 _____(insert name of Contractor) on behalf of DEKALB COUNTY, GEORGIA has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned Subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the Subcontractor with the information required by O.C.G.A. § 13-10-91. Additionally, the undersigned Subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor to the Contractor within five business days of receipt. If the undersigned Subcontractor receives notice that a sub-subcontractor has received an affidavit from any other contracted sub-subcontractor, the undersigned Subcontractor must forward, within five business days of receipt, a copy of the notice to the Contractor. Subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____
Federal Work Authorization User Identification Number

_____
Date of Authorization

_____
Name of Subcontractor

_____
Name of Project

_____
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____ ___, 20__ in _____(city), _____(state).

By:_____
Signature of Authorized Officer or Agent

_____
Printed Name and Title of Authorized Officer or Agent

Subscribed and Sworn before me on this the
_____ day of _____, 20 ___.

_____
NOTARY PUBLIC
My Commission Expires:

SAMPLE

ATTACHMENT D

Sub-subcontractor Affidavit under O.C.G.A. § 13-10-91

By executing this affidavit, the undersigned sub-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 for _____(name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract) and _____(name of Contractor) on behalf of DEKALB COUNTY, GEORGIA has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned sub-subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned sub-subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the sub-subcontractor with the information required by O.C.G.A. § 13-10-91(b). The undersigned sub-subcontractor shall submit, at the time of such contract, this affidavit to _____(name of Subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract). Additionally, the undersigned sub-subcontractor will forward notice of the receipt of any affidavit from a sub-subcontractor to _____(name of Subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract). Sub-subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____
Federal Work Authorization User Identification Number

_____
Date of Authorization

_____
Name of Sub-subcontractor

_____
Name of Project

_____
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____ ___, 20__ in _____(city), _____(state).
By:_____
Signature of Authorized Officer or Agent

_____
Printed Name and Title of Authorized Officer or Agent

Subscribed and Sworn before me on this the
_____ day of _____, 20 ___.

_____
NOTARY PUBLIC
My Commission Expires:_____

SAMPLE

ATTACHMENT E

DEKALB COUNTY, GEORGIA
CERTIFICATE OF CORPORATE AUTHORITY
(Choose Applicable Certificate)

I, _____, certify that I am Secretary of the corporation named as Contractor herein, same being organized and incorporated to do business under the laws of the State of _____; that _____, who executed this Contract on behalf of the Contractor was, then and there, _____; and that said Contract was duly signed by said officer for and in behalf of said corporation, pursuant to the authority of its governing body and within the scope of its corporate powers.

I further certify that the names and addresses of the owners of all the outstanding stock of said corporation as of this date are as follows:

_____

_____

_____

_____

_____

_____

This _____ day of _____, 20___.

_____ (Corporate Seal)
Secretary

SAMPLE

ATTACHMENT E

DEKALB COUNTY, GEORGIA
CERTIFICATE OF AUTHORITY – JOINT VENTURE
(Separate Certificate to be submitted by each joint venture partner)

I, _____,[1] certify that

1. I am the _____[2] of _____,[3] (hereinafter "Venturer");

2. Venturer is a partner and participant in the joint venture named as Contractor in that certain Contract for Construction dated _____ with DeKalb County, issued pursuant to Invitation to Bid or Request for Proposal No. _____;

3. Venturer is organized and incorporated to do business under the laws of the State of _____;

4. _____, who executed this Contract on behalf of the Contractor was, then and there, _____; and

5. Said Contract was duly signed by said officer for and in behalf of said Venturer and the Contractor pursuant to the authority of the governing body of each and within the scope of its corporate powers.

6. I further certify that the names and addresses of the owners of all the outstanding stock or ownership interest in Venturer as of this date are as follows:

_____

_____

_____

This _____ day of _____, 20___.

_____

INSTRUCTIONS:

1. Name of secretary (if Venturer is a corporation), or Manager or CEO (if Venturer is a LLP) of Venturer.
2. Title of person executing Certification.
3. Name of joint venture partner.

MAKE COPIES OF THIS FORM AND SUBMIT A SEPARATE FORM FOR EACH JOINT VENTURE PARTNER.

SAMPLE

ATTACHMENT F
(Consisting of 3 pages)
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS that _____ *[Insert name of contractor]* (hereinafter called the "Principal") and _____ *[Insert name of surety]* (hereinafter called the "Surety"), are held and firmly bound unto _____ County (hereinafter called the "County") and their successors and assigns, in the penal sum of _____ Dollars ($_____), lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with the County, awarded by the DeKalb County Governing Authority on _____, which is incorporated herein by reference in its entirety (hereinafter called the "Contract"), for the _____ *[insert Name of the Project]*, more particularly described in the Contract (hereinafter called the "Project"); and

NOW, THEREFORE, the conditions of this obligation are as follows, that if the Principal shall fully and completely perform all the undertakings, covenants, terms, conditions, warranties, and guarantees contained in the Contract, including all change orders, modifications, amendments, changes, deletions, additions, and alterations thereto that may hereafter be made, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Whenever the Principal shall be, and declared by the County to be, in default under the Contract, the Surety shall promptly remedy the default as follows:

1. Complete the Contract in accordance with the terms and conditions; or
2. Obtain a Bid or Bids for completing the Contract in accordance with its terms and conditions, and upon determination by the Surety and the County of the lowest responsible bidder, arrange for a contract between such bidder and County and make available as the work progresses (even though there should be a default or succession of defaults under the Contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the penal sum set forth in the first paragraph hereof, as may be adjusted, and the Surety shall make available and pay to the County the funds required by this Paragraph prior to the payment of the County of the balance of the contract price, or any portion thereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by the County to the Contractor under the Contract, and any amendments thereto, less the amount paid by the County to the Contractor; or, at the option of the County; or

SAMPLE

3. Allow County to complete the work and reimburse the County for all reasonable costs incurred in completing the work.

In addition to performing as required in the above paragraphs, the Surety shall indemnify and hold harmless the County from any and all losses, liability and damages, claims, judgments, liens, costs, and fees of every description, including reasonable attorney's fees, litigation costs and expert witness fees, which the County may incur, sustain, or suffer by reason of the failure or default on the part of the Principal in the performance of any or all of the terms, provisions, and requirements of the Contract, including any and all amendments and modifications thereto, or incurred by the County in making good any such failure to performance on the part of the Principal.

The Surety shall commence performance of its obligations and undertakings under this Bond promptly and without delay, after written notice from the County to the Surety.

The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and any other amendments in or about the Contract, and agrees that the obligations undertaken by this bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alterations, extensions of time, change in payment terms, and amendments.

The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment to the Contract, so as to bind the Principal and Surety to the full and faithful performance of the Contract as so amended or modified, and so as to increase the penal sum to the adjusted Contract Price of the Contract.

The Surety's obligations under this bond include all of the Contractor's duties under the Contract, including without limitation its maintenance and guarantee obligations.

No right of action shall accrue on this bond to or for the use of any person, entity, or corporation other than the County and any other obligee named herein, or their executors, administrators, successors or assigns.

This Bond is intended to comply with O.C.G.A. §36-91-70, and shall be interpreted so as to comply with the minimum requirements thereof. However, in the event the express language of this Bond extends protection to the County beyond that contemplated by O.C.G.A. §36-91-70, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the County, whether or not such protection is found in the applicable statutes.

If any one or more of the provisions of this Bond are determined to be illegal or unenforceable by a court of competent jurisdiction, all other provisions shall remain effective.

IN WITNESS WHEREOF the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this ____ day of _____, 20___.

SAMPLE

PRINCIPAL

By: _____(SEAL)
Signature of Principal

_____
Print Name and Title of Authorized Signer

_____
Print Name of Principal Business

ATTEST:

_____
Corporate Secretary

SURETY

By: _____(SEAL)
Signature of Surety (by Power of Attorney)

_____
Print Name and Title of Authorized Signer

_____
Print Name of Surety Business

WITNESS:

_____

[Attach Original Power of Attorney]

SAMPLE

ATTACHMENT G
(Consisting of 2 pages)
PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that _____ *[Insert name of contractor]* (hereinafter called the "Principal") and _____ *[Insert name of surety]* (hereinafter called the "Surety"), are held and firmly bound unto _____ County, (hereinafter called the "County"), its successors and assigns as obligee, in the penal sum of *[Insert contract amount]*, lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with the County, awarded by the DeKalb County Governing Authority on _____[insert date of award] which is incorporated herein by reference in its entirety (hereinafter called the "Contract"), for the construction of a project known as *[insert name of project]*, as more particularly described in the Contract (hereinafter called the "Project");

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to all persons working on or supplying labor or materials under the Contract, and any amendments thereto, with regard to labor or materials furnished and used in the Project, and with regard to labor or materials furnished but not so used, then this obligation shall be void; but otherwise it shall remain in full force and effect.

4. A "Claimant" shall be defined herein as any Subcontractor, person, party, partnership, corporation or other entity furnishing labor, services, or materials used, or reasonably required for use, in the performance of the Contract, without regard to whether such labor, services, or materials were sold, leased, or rented, and without regard to whether such Claimant is or is not in privity of contract with the Principal or any Subcontractor performing work on the Project, including, but not limited to, the following labor, services, or materials: water, gas, power, light, heat, oil, gasoline, telephone service, or rental of equipment directly applicable to the Contract.

5. In the event a Claimant files a claim against the County, or the property of the County, and the Principal fails or refuses to satisfy or discharge it promptly, the Surety shall satisfy or discharge the claim promptly upon written notice from the County, either by bond or as otherwise provided in the Contract.

6. The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and any other amendments in or about the Contract and agrees that the obligations undertaken by this bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alternations, extensions of time, changes in payment terms, and amendments.

7. The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment or modification to the Contract, so as to bind the Principal and Surety, jointly and severally, to the full payment of any Claimant under the Contract, as amended or modified, provided only that the Surety shall not be liable for more than the penal sum of the Bond, as specified in the first paragraph hereof.

SAMPLE

8. This Bond is made for the use and benefit of all persons, firms, and corporations who or which may furnish any materials or perform any labor for or on account of the construction to be performed or supplied under the Contract, and any amendments thereto, and they and each of them may sue hereon.

9. No action may be maintained on this Bond after one (1) year from the date the last services, labor, or materials were provided under the Contract by the Claimant prosecuting said action.

10. This Bond is intended to comply with O.C.G.A. §36-91-90, and shall be interpreted so as to comply with the minimum requirements thereof. However, in the event the express language of this Bond extends protection to the County beyond that contemplated by O.C.G.A. §36-91-90, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the County, whether or not such protection is found in the applicable statutes.

IN WITNESS WHEREOF, the Principal and Surety have hereunto affixed their corporate seals and caused this obligation to be signed by their duly authorized representatives this ____ day of _____, 20___.

PRINCIPAL

By: _____(SEAL)
Signature of Principal

_____
Print Name and Title of Authorized Signer

_____
Print Name of Principal Business

ATTEST:

_____
Corporate Secretary

SURETY

By: _____(SEAL)
Signature of Surety (by Power of Attorney)

_____
Print Name and Title of Authorized Signer

_____
Print Name of Surety Business

WITNESS:

_____

[Attach Original Power of Attorney]

SAMPLE

TECHNICAL SPECIFICATIONS

Technical Specifications

for

The Construction Of

HENDERSON PARK RESTROOM ADDITION

for

DeKalb County Department of Recreation, Parks and Cultural Affairs

DeKalb County, Georgia

June 2019

Technical Specifications Table of Contents

Contents

Division 1 – General Requirements

01001	Summary of Work	01001-1
01010	Project Procedures	01010-1
01016	Occupancy	01016-1
01040	Coordination	01040-1
01045	Cutting and Patching	01045-1
01100	Special Project Procedures	01100-1
01200	Project Meetings	01200-1
01210	Measurement and Payment - Pipeline	01210-1
01300	Submittals	01300-1
01400	Contractor's Work Quality	01400-1
01410	Testing Laboratory Services	01410-1
01600	General Material and Equipment Requirements	01600-1
01610	Transportation and Handling	01610-1
01640	Manufacturer's Services	01640-1
01650	Facility Startup	01650-1
01800	Maintenance	01800-1

Division 2 – Site Work

02000	Site Work	02000-1
02050	Demolition	02050-1
02060	Crushed Stone Aggregate	02060-1
02100	Site Preparation	02100-1
02110	Clearing and Grubbing	02110-1
02125	Temporary and Permanent Erosion and Sediment Control	02125-1
02231	Tree Protection and Trimming	02231-1
02324	Trenching and Trench Backfilling	02324-1
02485	Seeding	02485-1
02486	Sodding	02486-1
02490	Trees, Shrubs, and Ground Cover	02490-1
02510	Pavement Repairs	02510-1
02521	Concrete Sidewalks, Curbs, and Gutters	02521-1
02607	Manholes, Junction Boxes, Catch Basins, and Inlets	02607-1
02711	Fencing and Gates	02711-1
02920	Site Restoration	02920-1

Division 3 – Concrete

03200	Concrete Reinforcing	03200-1
03300	Cast-In-Place Concrete	03300-1

Division 9 – Finishes

09900	Painting	09900-1

SECTION 01001
SUMMARY OF WORK

PART 1 – GENERAL

1.01 SCOPE

A. The Work to be performed under this Contract shall consist of furnishing plants, tools, equipment, materials, supplies, and manufactured articles and furnishing labor, transportation, and services, including fuel, power, water, and essential communications, and performing work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The Work shall be complete, and any work, materials, and services not expressly indicated or called for in the Contract Documents that may be necessary for the complete and proper construction of the Work in good faith, shall be provided by the **Contractor** as though originally so indicated, at no increase in cost to the **County**.

B. The quantities shown on the bid form are estimates for the Work, including the intended construction method based upon the available information. The assigned means, methods, and quantities described herein are subject to revision by the **County** for various reasons including but not limited to, unforeseen utility conflicts/ground water, discovery of subsurface rock strata, unforeseen pipeline encasement, etc. As such, a unit price contract type has been selected to prosecute the Work and is not intended to be a guarantee for a minimum amount of work.

1.02 PROJECT LOCATION

The Work is required at the locations shown on the Approved Drawings.

1.03 WORK COVERED BY THE CONTRACT DOCUMENTS

Work shall be performed according to the requirements of the Contract Documents.

1.04 WORK COORDINATION

A. The **Contractor** shall coordinate the Work with third parties (such as public utilities and the telephone company) in areas where such parties may have rights to underground property or facilities; and request maps or other descriptive information as to the nature and location of such underground facilities or property.

B. The **Contractor** shall coordinate the Work with owners of private and public property where access is required for the performance of the Work.

C. The **County** will work with the **Contractor** to assign and schedule the Work in a logical and efficient format. However, the items in this contract shall be priced such that each item may be assigned independently or combined with other items at the **County**'s sole discretion in regard to both quantity and scope. The **Contractor** shall perform only those work items directed by the **County** at the prices specified herein. (For example, if the **County** determines that a line segment shall be cleaned but not televised, the same unit price for cleaning shall apply.)

1.05 CONDITIONS AT THE SITES

A. The **Contractor** shall make necessary investigations to determine the existence and location of underground utilities.

B. The **Contractor** shall be responsible for damage to and for maintenance and protection of existing utilities, structures, and personal property.

C. These Contract Documents do not guarantee such utilities are in the location indicated or that they actually exist, or that other utilities are not within the area of the operations.

D. The **Contractor** is responsible for safety at no additional cost to the **County**.

E. The **Contractor** shall report hazardous conditions to the **County**.

+++ END OF SECTION 01001 +++

SECTION 01010 - PROJECT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

Section includes:

A. Lands and Rights-of-Way/Easements, and Permits
B. Access to and **Contractor's** use of the site
C. Coordination requirements
D. Construction procedures

1.02 LANDS AND RIGHTS-OF-WAY: EASEMENTS AND PERMITS

A. **Contractor** shall, within 30 days of Notice To Proceed, submit to the **County** an Easement and Permit Plan listing easements and permits obtained, permits and easements yet to be obtained, the timing for obtaining required easements and permits, and conditions and mitigations associated with the easements and permits. The **Contractor** shall coordinate the acquiring of easements and permits within the accepted Construction Schedule.

The timing of acquiring easements and permits is the responsibility of the **Contractor**. Delays and rescheduling of the Work to maintain the Construction Schedule shall be mitigated by the **Contractor** at the **Contractor's** sole cost and expense.

B. Access to the Work shall be limited to the right-of-way or easement area provided for execution of the Work. The **Contractor** shall not enter any adjacent private property without prior written approval from the property owner. Proof of such approval shall be furnished to the **County** upon request. Additional permitting and easements required shall be obtained by the **Contractor** and the **Contractor** shall bear the cost.

C. If the **Contractor** performs any work or service for any property owner outside the specified scope of the **Contractor's** agreement with the **County** or has any agreements with a private property owner for access to or for temporary use of property outside of the right-of-way or easement area, a written agreement shall be entered into with the private property owner(s) prior to any work or service being performed or prior to any use by **Contractor** of the private property and such agreement shall be provided to the **County**. The agreement shall contain the following language, in addition to the terms agreed to between the **Contractor** and the property owner:

"The Property Owner understands that DeKalb **County** is not a party to this Agreement, exercises no control over the means, methods, and execution of this agreement, and that DeKalb **County** assumes no responsibility for the **Contractor's** compliance with the terms of this agreement. The **Contractor** shall be solely liable for any and all claims, demands, and judgments related to loss or damage to property or person (including death) arising from or in any way related to the **Contractor's** acts or omissions related to the agreement."

1.03 ACCESS TO AND CONTRACTOR'S USE OF THE SITE

A. The space available to the **Contractor** for the performance of the Work, either exclusively or in conjunction with others performing other construction as part of the project, is shown on the drawings.

B**.** The **County** shall continue to utilize the existing wastewater collection system and water system during assessment and construction.

1. The **County** will endeavor to cooperate with the **Contractor's** operations when the **Contractor** has notified the **County** in advance of need for changes in operations in order to accommodate construction operations.
2. The **Contractor** shall conduct the Work to cause the least interference with the **County's** operations.

C. Equipment and vehicles used by the **Contractor** on the project shall be marked with the **Contractor's** name and telephone number.

1.04 COORDINATION REQUIREMENTS

A. Coordination with **County**:

1. Limit access through occupied areas to those days and times the **County** approves. Occupied areas include areas in which the **County's** regular operations will be going on or to which the **County** requires access during the construction period.
2. When the following must be modified, provide alternate facilities acceptable to the **County**:

    a. Emergency means of egress
    b. Utilities that must remain in operation
    c. Informational signage

3. The **Contractor** shall notify the **County** immediately of any circumstances that may jeopardize or that have interrupted utility service.

B. Security Procedures:

1. Limit access to the site to persons involved in the work.
2. Provide secure storage for materials.
3. Secure completed work as required to prevent loss.

C. Coordination of Construction:

1. Inform each party involved, in writing, of procedures required for coordination of the Work; include requirements for giving notice, submitting reports, and attending meetings.
2. Inform the **County** in advance, with ample time, when coordination of Work is required.

D. Utilities Notification Prior to Construction:

1. Georgia law mandates that, before beginning mechanical digging or excavation work, **Contractor** shall contact Georgia 811 by using eRequest on www.Georgia811.com or by calling 811 or 1-800-282-7411.

2. **Contractor** may utilize EDEN (Excavation Digging Event Notification) web application that enables Members and Professional Excavators to create, manage, respond to, and edit Georgia 811 Locate Request Tickets.

3. **Contractor** shall retain records of notification and responses during the course of the project until final Payment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CONSTRUCTION

A. General Examination Requirements:

1. Prior to performing work, examine the applicable substrates and the conditions under which the work is to be performed.
2. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding.
3. Notify the **County** promptly of type modifications required.
4. Before starting work that might affect existing construction, verify the existence and location of underground utilities and other underground construction.
5. Prepare preconstruction photographic documentation in conformance with the requirements of Section 01380 of these specifications.

B. General Preparation Requirements:

1. The **Contractor** shall obtain, maintain, and pay for required permits.
2. The **Contractor** shall take field measurements as required to properly conduct the work.

C. Cleaning and Protection: Keep installed work clean, and clean again when soiled by other operations.

D. Final Cleaning:

1. Remove materials and equipment that are not part of the work and any debris from the site prior to substantial completion.
2. Dispose of debris in a lawful manner.
3. Perform final cleaning after substantial completion has been certified, but before final payment.
4. Clean entire project site and grounds.

E. Substantial Completion:
1. Requirements for the **Contractor** achieving Substantial Completion are defined in the Contract Documents in GR-1 of the General Requirements.
2. Substantial Completion is typically defined to include:

a. Completion of Work required by the Contract Documents

b. Operation of components and systems of the Work, including acceptance of testing and startup requirements
c. Closeout of quality deficiencies and non-conformances
d. Delivery and acceptance of spare parts, operations manuals, and vendor documentation
e. Completion of vendor training
f. Completion and delivery of “red-line” as built drawings

2. When the **Contractor** believes substantial completion has been achieved, **Contractor** shall notify the **County** in writing, requesting Substantial Completion. The **County** will verify that the contractual documentation requirements for Substantial Completion have been completed, including closeout of open NCRs. If verified, the **County** will schedule a Substantial Completion inspection and walk-through with the **Contractor**, DWM Operations, and the Designer, or will notify the **Contractor** in writing of acceptance or the reason(s) for denying Substantial Completion.

F. Final Completion:

1. Requirements for the **Contractor** achieving Final Completion are defined in the Contract Documents in GR-9 of the General Requirements.
2. After Substantial Completion, **Contractor** shall meet additional requirements for Final Completion and release of final payment. These requirements will be defined in the Contract and typically include:
    a. Completion of punch list items by the **Contractor**
    b. Demobilization from the project site
    c. Submittal of warranties
    d. Release of subcontractor or vendor liens
    e. Turnover of remaining project documents required by the Contract, including final as-built drawings by the Design Consultant

3.02 CHANGE MANAGEMENT

A. Contract Change Process

Any firm under contract with the **County** may submit a Change Request (CR) to the **County** following the requirements of the contract. A CR may address requested changes in cost and/or schedule, as well as contract terms or scope that do not result in cost or schedule impacts.

Changes may also be initiated by the **County** in the form of a Field Order (FO). The **Contractor** shall proceed with the change unless they believe the FO entitles them to a change in contract price, time, and/or term. If so, the **Contractor** shall submit a CR within 15 days of receiving the FO.

The CR from the **Contractor** is to be accompanied by a detailed proposal describing the **Contractor**’s opinion of the CR’s cost, schedule, and/or contract term impacts.

If the CR is acceptable to the **County**, the **Contractor** will be directed to submit a CO to the **County** to process. If the CR is not acceptable to the **County** then the **Contractor** may negotiate the CR. If the cost and/or schedule impacts cannot be

agreed, then the **County** will either instruct the **Contractor** to proceed with the change using a Unilateral Change Directive (UCD), if the change is deemed by the **County** to be needed, or the change can be terminated if the change is deemed to be not needed. If the **County** issues a UCD after failing to agree on the price of a CO, then the pricing of the change is per the contract terms.

A UCD can be initiated by the **County** only when there is an imminent threat to public safety or health, or a potential shutdown of a vital **County** function.

B. Amendment to the Contract

If the approval of a CO requires a written, formal amendment to the contract, the **County** will process the formal amendment.

C. Project Scope Change Impacts

A change to a Design /Build contract may materially change the scope of the project, including greater impact on the construction scope than the design scope. A design scope change may also materially impact the project configuration even if it is a no-cost change. Additionally, a change to one project's scope may have impacts to another project's scope.

So that a CO is not approved without understanding its full impacts beyond the affected contract scope, project scope change impacts shall be approved by the **County**. These must consider changes through every phase of the project, and/or impacts to other projects.

D. Baseline

If a CO is approved, the **Contractor** will prepare a Project Baseline Change Instruction Form to formally change the project scope, baseline schedule, and baseline budget.

E. Change Monitoring

The **Contractor** is responsible for monitoring changes to the contract. The **Contractor** will maintain a Design Change Log for each project, and will maintain a Construction Change Log that includes the change description, change status, category of change, contract, estimate of cost, estimate of schedule impact, and current process step. Change logs are updated each month and included with the Project Progress Report.

Responding to and processing changes in a timely manner is a priority. Change backlogs will be vigorously monitored and managed. Change status reports will be developed by the **Contractor** from the Change Logs to provide current status of each open change, which process step is active, and how many days remain in the process step. "Overdue" reports will be elevated to the **County** for follow-up and closure.

F. Change Status

Changes will be identified by one of the four following status descriptions:

Proposed Change is a change that has been submitted as a CR or FO, but has not yet been negotiated. Proposed changes require closure if they are deemed to be not required, or must be resolved in a timely manner if they are deemed required. The cost estimate and/or schedule impact of a proposed change will usually change as it goes through the contract change process. These changes must be reflected in the Change Log as they occur and included in monthly cost and schedule forecasts.

Pending Change is a change that has been negotiated, but has not yet received final **County** approval. These changes must be included in monthly cost and schedule forecasts.

Approved Change is a change that has received final **County** approval. The contract scope, budget, and/or schedule will be amended to include approved changes. Approved changes will be included in monthly cost and schedule forecasts until a formal re-baselining of the project schedule and/or budget is approved.

Closed Change is a change that has been formally rejected and closed by the **County**, or withdrawn by the originator.

G. Category of Change

Changes will be categorized as follows to track the types of changes that occur over the life of the project:

- **County** Requests: any change initiated by the **County**.
- Differing Site Conditions: new information not reasonably available during design, or considered "unforeseeable" through due diligence on the part of the **Contractor**.
- Design Errors: changes due to errors or deficiencies in the design.
- Design Omissions: items omitted from the design that would have been included in the original bid, had they been known.
- Regulatory Requirements: changes mandated by regulatory agencies that are different from approved permit conditions at the time the contract was approved.
- Other: changes required for all other reasons, including emergency work, adjustment of bid quantities, force majeure events, incentive payments, accepted substitutions, and changes identified during value engineering.

3.03 HEALTH AND SAFETY CONSIDERATIONS

A. Take precautions to prevent fires and to facilitate firefighting operations.

B. Take precautions to prevent accidents due to physical hazards.

C. Maintain working conditions in order to keep the site and adjacent public ways free of hazardous and unsanitary conditions and public nuisances.

D. Maintain working conditions to control rodents and other pests; prevent infestation of adjacent sites and buildings due to pests on this site.

E. Keep public streets free of debris from this Work.

F. Provide adequate traffic control in accordance with current MUTCD standards and the approved traffic permit.

G. When using trenches/excavations, follow OSHA standards 29 CFR 1926.650, 29CFR 1926.651, and 29 CFR 1926.652.

3.04 ENVIRONMENTAL PROTECTION

A. General

Contractor shall conduct its operation in a manner to prevent pollution of the environment surrounding the area of work and shall be responsible for furnishing necessary items for fulfilling the work described herein.

B. Material Transport

Contractor shall comply with the Official Code **County** of DeKalb Georgia pertaining to the duties of the **Contractor** in hauling material over **County**-owned rights-of-way. This includes, but is not limited to, approval of proposed haul routes, prevention of dropping of materials or debris on the streets from trucks arriving and leaving the site, providing a suitable vehicle inspection and cleaning installation with permanent crew, and the removal of material spilled in public areas at no additional cost to the local government agency.

C. Waste Materials

No waste or erosion materials shall enter natural or manmade water, wastewater collection systems, or stormwater drains. Erosion materials from excavations, borrow areas, or stockpiled fill shall be contained within the work area. **Contractor** shall develop methods for control of waste and erosion, which shall include filtration, settlement, and manual removal to satisfy the above requirements.

D. Burning

No burning of waste shall be allowed.

E. Dust Control

The **Contractor** shall control the generation of dust by its operations. Control of dust shall be accomplished by water sprinkling or by other methods approved by the **County.**

F. Noise Control

The **Contractor** shall minimize the noise caused by its operations.

When required by agencies having jurisdiction, noise-producing work shall be performed in less sensitive hours of the day or week as directed by the **County**.

The **Contractor** shall provide equipment that operates with the least

possible noise. The use of noisy equipment is prohibited. Hoists and compressor plants shall be electrically operated unless otherwise permitted. The air intake of compressors shall be equipped with silencers, and machinery operated by gearing shall be provided with a type of gearing designed to reduce noise. Internal combustion engines shall be equipped with mufflers in good order.

Noise generated by mobile construction equipment, stationary construction equipment, and other equipment involved in the construction of the Work shall not exceed the decibel levels indicated below. Noise generated by mobile and stationary construction equipment will be measured 3 to 6 feet from building lines, and on the A-weighting network of Type 2 general purpose sound level meter set at fast response.

	Combined Residential and Commercial
Allowable sound levels of mobile construction equipment: - From 7 a.m. to 10 p.m., Monday thru Saturday, except legal holidays - At times other than those listed above	85 dBA 70 dBA
Allowable sound levels of stationary construction equipment: - From 7 a.m. to 10 p.m., Monday thru Saturday, except legal holidays - At times other than those noted above Night work from 10 p.m. until 7 a.m. shall require an approved special permit from the **County**.	70 dBA 60 dBA The dBA level will be included in the approved permit.

G. Use of Chemicals

Chemicals used during construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, shall show approval of either EPA or FDA. Use of such chemicals and disposal of residues shall be in conformance with instructions.

H. Bypassing During Construction

No wastewater shall be bypassed at sewage collection or treatment facilities during project construction unless a bypassing schedule has been approved by the **County.** It shall be the responsibility of the **Contractor** to prepare and secure the approval of bypassing not specifically identified in

the Contract Documents.

I. Responsibility for Spills and Accidental Discharges

In the event the **Contractor** causes or has a spill or accidental discharge for which the **County** is fined by the State of Georgia Department of Natural Resources Environmental Protection Division (EPD), the **Contractor** agrees to remediate the spill or discharge immediately in accordance with current EPD regulations and to pay fines assessed against the **County** and/or **Contractor**, and pay for the **County**'**s** cost associated with efforts to remediate the situation. The **County** shall be notified immediately of such an event.

J. Odor Control

Contractor shall provide approved temporary odor control measures as required to control objectionable odors resulting from its cleaning and/or bypass pumping operations. Approved temporary odor control measures, when required, shall include odor control filters, additional ventilation, and/or covering of manholes.

3.05 PROTECTION OF THE WORK

A. Conduct construction operations so no part of the Work is subjected to damaging operations or influences that are in excess of those to be expected during normal occupancy conditions.

B. Execute work and stockpile spoils and materials to prevent flooding of excavations, below grade construction, and adjacent properties due to rainwater runoff.

C. Protect existing property not indicated to be removed.

D. Provide temporary supports as required to prevent movement and structural failure as designed by a Registered Professional Engineer in the state of Georgia at the **Contractor's** cost.

E. Equipment and vehicles used on DWM projects shall be clearly marked with the **Contractor's** name and telephone number. The identifying markings may be in the form of magnetic signs, decals, or painted lettering and shall be located on both sides of the equipment/vehicle. The lettering shall be legible, of a contrasting color to the background surface, and at least two inches in height. Markings shall be in place upon initiation of the work on the project site.

F. A copy of the Project Notice to Proceed letter issued by the **County** shall be available on the job site as proof of the contractual relationship of the **Contractor** with the **County**. The letter shall be presented for review upon request by regulatory agencies or other **County** departments that visit the job site.

G. If removal and replacement of a paved private driveway is required, the replacement shall be performed within 2 weeks of removal. The required permanent pavement replacement for public roadways shall be performed within 30 days or within 7 days if the roadway is a state highway or major **County** arterial roadway.

Temporary surface maintenance is the **Contractor's** responsibility and shall be adequate for the volume and type of traffic loads imposed. Temporary asphalt cold mix application, steel traffic plates, etc. shall be utilized as necessary.

H. The **Contractor** shall always maintain copies of permits and approved plans on the project site.

3.06 NOTIFICATION OF SERVICE INTERRUPTION

During progress of work under this Contract, it may be necessary to temporarily interrupt water, sewer, or other utility service to a limited number of customers in the vicinity of the work. It shall be the **Contractor's** responsibility to coordinate the service outage with the utility and to provide proper advance notification (a minimum of 48 hours) to the affected customers.

Due to the nature of businesses and traffic in certain projects' areas, water outages for connections, service changeovers, and other Work may not be allowed during normal work hours. The **Contractor** shall factor these considerations into bid price submitted. Coordination, special lighting, traffic control, employee overtime, special customer notification, etc. shall be included in these considerations by the **Contractor**.

++++END OF SECTION 01010++++

SECTION 01016
OCCUPANCY

PART 1 – GENERAL

1.01 PARTIAL OCCUPANCY BY COUNTY

Whenever, in the opinion of the **County**, any section or portion of the Work is in suitable condition, it may be put into use upon the written order of the **County** and such usage shall not be held in any way as an acceptance of said Work, or any part thereof, or as a waiver of any of the provisions of these Specifications and the Contract. Pending completion and final acceptance of the Work, all necessary repairs, and replacements, due to defective materials or workmanship or operations of the **Contractor**, for any section of the Work so put into use shall be performed by the **Contractor** at **Contractor's** own expense.

END OF SECTION 01016

SECTION 01040
COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. The **Contractor** shall coordinate execution of the Work with subcontractors, other contractors working on related **County** projects, and the **County,** as required, to maintain operation of the existing facilities and satisfactory progress of the Work.

B. Requirements of this Section shall be in addition to those stated in the General Requirements.

C. The **County** requires a written explanation of the **Contractor's** plan for coordinating and accomplishing separate phases of the Work, supplemental to the details provided under Section 01310 - Construction Schedule.

1.02 EXISTING UTILITIES

A. Consult with the **County** on a daily basis while the **Contractor** performs demolition, excavation, or any other alteration activity. No water or sewer function, utility, or structure is to be altered, shut off, or removed unless approved in advance, and in writing, by the **County**. The **Contractor** shall give the **County** at least 48 hours advanced notice, in writing, of the need to alter, shut off, or remove such function.

B. Coordinate the Work with the **County** and revise daily activities to avoid adversely affecting system operations. Such revisions in the proposed work schedule shall be accomplished with no additional compensation to the **Contractor**.

END OF SECTION 01040

SECTION 01045
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 DEFINITIONS

"Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other Work and subsequent fitting and patching required to restore surfaces to their original conditions.

A. Cutting and patching is performed for coordination of the Work, to uncover Work for access or inspection, to obtain samples for testing, to perform alterations, or for similar purposes.

B. Cutting and patching performed during the manufacture of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered "cutting and patching."

C. "Demolition" and "Selective Demolition" are recognized as related, but separate categories of Work, which may or may not require cutting and patching as defined in this section, refer to "Demolition" and "Selective Demolition" sections of Division 2.

1.02 SECTION INCLUDES

Unless otherwise specified, requirements of this section apply to piping Work. Refer to other sections of these specifications for specific cutting and patching requirements and limitations applicable to individual units of Work.

This Section includes:

A. Administrative and procedural requirements for cutting and patching

B. Reference to other sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work

1.03 RELATED SECTIONS

A. Drawings and general provisions of Contract, including General Requirements and other Division 1 Specification Sections.

1.04 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce the load-carrying capacity or load-deflection ratio.

Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems.

1. Primary operational systems and equipment
2. Air or smoke barriers
3. Water, moisture, or vapor barriers
4. Fire Protection Systems
5. Control Systems
6. Communication systems
7. Conveying systems
8. Noise and vibration control elements and systems

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would reduce capacity to perform as intended, or result in increased maintenance, or decrease operational life or safety.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in visually unsatisfactory manner.

Retain the original installer or fabricator, if possible, to cut and patch the exposed Work listed below. If it is impossible to engage the original installer or fabricator, engage another recognized experienced and specialized firm.

A. Stonework and stone masonry
B. Window wall systems
C. Ornamental metal
D. Firestopping
E. Stucco and ornamental plaster
F. Carpeting
G. Wall coverings

B. Approval: Obtain approval to proceed before temporary or permanent cutting and patching of the following categories:

1. Structural steel
2. Miscellaneous structural metals, including lintels, equipment supports, stair systems, and similar categories of Work
3. Structural concrete
4. Foundation construction
5. Steel

6. Lintels
7. Bearing and retaining walls
8. Structural decking
9. Exterior curtain wall construction
10. Equipment Supports
11. Piping, ductwork, vessels, and equipment
12. Structural systems of special construction, as specified by Division 13 sections
13. Shoring, bracing, and sheeting
14. Primary operational systems and equipment
15. Water/moisture/vapor/air/smoke barriers, membranes, and flashings
16. Noise and vibration control elements and systems
17. Control, communication, conveying, and electrical wiring systems

E. Installer Qualifications: Company specializing in performing the Work of this section with minimum 5 years of experience

F. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose specified and indicated

1.05 SUBMITTALS

Procedural Proposal for Cutting and Patching: Submit proposed procedures for this Work well in advance of the time Work shall be performed, and request approval to proceed. Include the following information, as applicable, in the submittal:

A. Describe nature of the Work and how it is to be performed, indicating why cutting and patching cannot be avoided. Describe anticipated results of the Work in terms of changes to existing Work, including structural, operational, and visual changes as well as other significant elements.

B. List products to be used and firms, including their qualifications, that shall perform the Work.

C. Give dates when Work is expected to be performed.

D. List utilities that will be disturbed or otherwise affected by Work, including those that will be relocated and those that will be out of service temporarily. Indicate how long utility service shall be disrupted.

E. Acknowledge that the Architect’s approval to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of unsatisfactory Work.

F. Submit details and engineering calculations to show how reinforcement is integrated with original structure to satisfy requirements when cutting and patching of structural Work involves the addition of reinforcement.

G. List certified welder who shall perform structural welding.

1.06 WARRANTY

Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Except as otherwise indicated, or as directed by the Owner, use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use compatible materials matching existing adjacent surfaces to the fullest extent possible also with regard to visual effect. Use materials for cutting and patching to result in equal-or-better performance characteristics.

B Trade Name: The use of a trade name and supplier's name and address shall indicate a possible source of the product. Products of the same type from other sources shall not be excluded provided they possess like physical and functional characteristics.

C. Identical Materials: Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials with installed performance equal to or surpassing that of existing materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Corrective Action: Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

B. Trade Meeting: Before the start of cutting Work, meet at the Work site with the parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate layout of the Work and resolve potential conflicts before proceeding with the Work.

3.02 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut. If the cut is on a structural member, a PE registered in the state of Georgia shall submit a temporary support design plan to the **County** for approval.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Interference: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Precautions: Take necessary precautions to protect existing pipe conduit, or ductwork serving the building, and schedule to remove or relocate conduits until bypass provisions have been made.

3.03 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

B. Existing Construction: Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original conditions.

C. Damage Control: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Review proposed procedures with the original installer, where possible; comply with the original installer's recommendations.

1. Use hand or small tools designed for sawing or grinding, where cutting is required. Do not hammer and chop. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Cut the exposed or finished side into concealed surfaces to avoid marring existing finish.

3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.

4. Comply with requirements of applicable Sections or Division 2 where cutting and patching require excavating and backfilling.

5. Bypass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated, or abandoned. Cut off pipe or conduit in walls or partitions to be removed. Cap valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after bypassing and cutting.

D. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.

2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that shall eliminate evidence of patching and refinishing.

3. Patch, and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance when removal extends one finish area into another. Remove existing floor and wall coverings and replace with new materials, as necessary to achieve uniform color and appearance.

   Extend final paint coat over entire unbroken area containing the patch, where patching occurs in a smooth painted surface, after the patched area has received primer and second coat.

4. Patch, repair, or rehang existing ceiling as necessary to provide an even surface of uniform appearance.

3.04 CLEANING

A. Clean Thoroughly: Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Completely remove paint, mortar, oils, putty, and items of similar nature. Thoroughly clean piping, conduit, and similar features before paint or other finishing is applied. Restore damaged pipe covering to its original conditions.

B. Traffic: Do not permit traffic over unprotected floor surface.

END OF SECTION 01045

SECTION 01100
SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.01 CONNECTIONS TO EXISTING SYSTEMS

The **Contractor** shall perform the Work necessary to locate, excavate, and prepare for connections to the terminus of the existing systems as shown on the Drawings. The cost for this Work and for the actual connection to the existing systems shall be included in the bid price for the project and shall not result in any additional cost to the **County**. Connections shall be made only after approval by the **County**.

1.02 RELOCATIONS

The **Contractor** shall be responsible for the relocation of structures, including but not limited to light poles, signs, sign poles, fences, piping, conduits, and drains that interfere with the positioning of the Work as set out on the Drawings. The cost of such relocations shall be included in the bid price.

1.03 EXISTING UNDERGROUND PIPING, STRUCTURES, AND UTILITIES

A. The **Contractor** shall exercise extreme care before and during excavation to locate and flag various sewer, water, gas, telephone, electrical, or other utility lines not shown on the Drawings to avoid damage. Should damage occur to an existing line, the **Contractor** shall bear the costs associated with the damage and repair the line at no cost to the **County.**

B. The **Contractor** shall note that the locations of existing underground piping structures and utilities are shown without express or implied representation, assurance, or guarantee that they are complete or correct or that they represent a true picture of underground piping to be encountered.

C. The **Contractor** shall notify the **County** of existing piping and utilities that interfere with new construction and shall reroute or relocate the pipeline or utility as directed before any piping and utilities not shown on the Drawings are disturbed. .

D. The **Contractor** shall exercise care in any excavation to locate existing piping and utilities. Utilities that do not interfere with complete Work shall be carefully protected against damage. Any existing utilities damaged in any way by the **Contractor** shall be restored or replaced at the **Contractor's** expense as directed by the **County**.

1.04 HAZARDOUS LOCATIONS

The **Contractor** shall check existing wet wells, manholes, and related areas that are hazardous locations, to determine whether adequate oxygen is available whenever personnel are working in these areas. The **Contractor** shall exercise caution because explosive concentrations of sewage gas may be present and the wet well may be deficient in oxygen.

1.05 CONNECTIONS TO WORK BY OTHERS (Revise or delete as needed for this project)

A. Under this Contract, and as shown on the Drawings, the **Contractor** shall construct pipelines that are to be connected to pipelines constructed by others.

B. The **Contractor** shall connect pipelines built under this Contract to pipelines constructed by others by removing the plugs and making the connection.

C. The **Contractor** shall lay any pipelines (under this Contract) not constructed by others to the required line and grade, terminated with a plugged connection precisely at the location indicated on the Drawings, and then backfilled and marked with a yellow stake exposed a minimum of 3 feet above grade.

1.06 WATER FOR CONSTRUCTION PURPOSES

The Contractor shall be responsible for any cost of water used on the Project. A water meter and backflow device shall be obtained from the DeKalb County DWM main office for recording water used for cleaning and other Work items requiring water.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01100

SECTION 01200
PROJECT MEETINGS

PART 1 - GENERAL

1.01 SUMMARY

A. The **County** shall schedule and administer a preconstruction meeting, and may schedule periodic progress meetings, and specially called meetings throughout progress of the Work. The **County** shall set the agenda for the meetings and preside at the meetings. The **Contractor** shall make physical arrangements for the meetings pursuant to the **County's** requirements. Meetings are not a pay item.

B. Representatives of the **Contractor**, subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 PRECONSTRUCTION MEETING

A. The **County** shall schedule a Preconstruction Meeting prior to the start of construction.

B. The Preconstruction Meeting shall be attended by the following:

1. **County's** representative(s)
2. **Contractor's** Project Manager and Superintendent
3. Others as appropriate or required by the **County**

C. The Preconstruction Meeting will generally have the following agenda:

1. Designation of responsible personnel
2. Distribution and discussion of list of major subcontractors and suppliers
3. Projected construction schedule with critical Work sequencing
4. Major equipment deliveries and priorities
5. Procedures and processing of:

    a. Submittals
    b. Requests for Information (RFIs)
    c. Change Documents
    1. Requests for Proposals (RFPs)
    2. Work Authorizations
    3. Proposed Change Order Requests (CORs)
    d. Field Decisions and Clarification Memos
    e. Applications for Payment
    f. Change Orders

6. Procedures for maintaining Record Documents (Section 01350 - Project Document Tracking and Control Systems)

7. Periodic Meeting Schedule

8 Mobilization Form Submittal – **Contractor** shall complete and submit a Mobilizations Request form after the following have been completed:

a. NTP Received
b. Preconstruction Meeting completed and minutes reviewed and accepted
c. Safety Plan, Construction Quality Plan, and Permit/ Easement Plan submitted to and approved by **County**

1.03 PERIODIC PROGRESS MEETINGS

A. Project Progress Meetings shall be held monthly throughout the project duration. The **County** may alter the timing of, or add supplemental, scheduled periodic progress meetings, at its discretion.

B. The Project Progress Meetings shall be attended by the following:

1. **County's** representative(s)
2. **Contractor's** Project Manager, Superintendent, and other appropriate representative(s)
3. Others as appropriate or required by the **County**

C. The Progress Meetings will generally have the following agenda:

1. Review Work progress since last meeting
2. Discussion of Construction Schedule for next period
3. Status of major equipment and material deliveries
4. Construction problems affecting progress
5. Field observations, including Safety Report(s)
6. Status of pending RFIs and changes
7. Stakeholder complaints/public outreach
8. Status of permits and easements
9. Status of invoicing
10. Other business

1.04 OTHER MEETINGS

A. Schedule Progress Meetings

As per Section 01310 - Construction Schedule, during weekly progress meetings, the **Contractor** shall submit a Look-Ahead Schedule. This schedule shall cover four weeks: the immediate past week, the current week, and the forthcoming two weeks. This schedule shall include activities that are complete, started, incomplete or underway, or scheduled to be performed during this four-week timeframe. Results of the Progress meetings shall be reported in the Project Progress Meetings.

B. Specially-called meetings may be requested by either party or by other affected entities. Requests shall be made through the **County**, which shall coordinate the meeting schedule. Specially-called meetings shall be held as warranted by:

1. Unforeseen developments during construction or as needed to coordinate special events, such as tie-ins or system shutdowns

2. Concerns regarding individual project performance and adherence to the schedule of construction

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01200

SECTION 01210
MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.01 SCOPE

A. Work includes furnishing labor, equipment, tools, materials, and performing operations required to complete the Work satisfactorily, in-place, as specified, and as indicated on the Drawings.

B. The costs of required items of work and incidentals necessary for the satisfactory completion of the Work shall be considered as included in the Total Bid. The cost of work not directly covered by the pay items shall be considered incidental to the contract and no additional compensation shall be allowed.

C. The **Contractor** shall take no advantage of any apparent error or omission on the Drawings or Specifications, and the **County** shall be permitted to make corrections and interpretations as may be deemed necessary for fulfillment of the intent of the Contract Documents.

1.02 SUBMITTALS

A. The **Contractor** shall submit to the **County** for approval, in the form directed or acceptable to the **County**, a complete schedule of values of the portions of the Work, including quantities and unit prices, aggregating the Contract Price. The **County** shall not approve an unbalanced breakdown providing for overpayment to the **Contractor** on items of Work that would be performed first.

B. The **Contractor** shall submit application for payment on a form approved by the **County** showing allowances, lump sum schedule of value items, and unit price items in accordance with Section 01310.

1.03 UNIT PRICE ITEMS

A. Payment for Work shall be in accordance with the unit price bid items in the Bid Schedule and shall be full compensation for labor, materials, and equipment required to furnish, install, construct, and test the Work covered under the unit price bid item. Work for which there is no price schedule item shall be considered incidental to the Work and no additional compensation shall be allowed.

B. Payment shall be made only for the actual quantities of work performed in compliance with the Drawings and Specifications. The **Contractor** shall be paid an amount equal to the approved quantity times the applicable unit price. Any unused balance of the unit price work shall revert to the **County** upon completion of the project.

C. All unit price work shall be considered as part of the Work to be performed within the time limits specified elsewhere for Substantial Completion and Project Completion. No increase in contract time shall be allowed for increases in quantities of unit price work performed beyond the quantities shown in the Bid Schedule, unless it can be

demonstrated that the additional Work performed under the unit price item is on the critical path of the Project Schedule and has produced an increase in time to the Contract.

1.04 MEASUREMENT OF QUANTITIES

A. Final payment quantities shall be determined from the record drawings. The As-Built Drawings lengths, dimensions, quantities, etc. shall be determined by a survey after completion of the required Work. The precision of final payment quantities shall match the precision shown for that item in the Bid Schedule. Measurements shall be taken according to the United States standard measurements and in the manner as specified in these Specifications.

B. Measurement Devices

1. Scales shall be inspected, tested, and certified by the applicable weights and measures department within the past year, and shall be of sufficient size.
2. Metering devices shall be inspected, tested, and certified by the applicable department within the past year.
3. Volume shall be determined by cubic dimension by multiplying mean length by mean width by mean height or thickness.
4. Area shall be determined by square dimension by multiplying mean length by mean width or height.
5. Linear measurement shall be measured by linear dimension, along the item centerline or mean chord.
6. Stipulated price measurement shall include items measured by number, weight, volume area, length, or combination thereof as appropriate.

Item	Method of Measurement
AC	Acre - Field Measure
AL	Allowance
CY	Cubic Yard - Field Measure within limits specified or shown, or measured in vehicle by volume, as specified
EA	Each - Field Count
GAL	Gallon - Field Measure
HR	Hour
LB	Pound(s - Weight Measure by Scale
LF	Linear Foot - Field Measure
LS	Lump Sum - Unit is one; no measurement will be made
SF	Square Foot
SY	Square Yard
TON	Ton - Weight Measure by Scale (2,000 pounds)
VF	Vertical Foot - Field Measure

SECTION 1 – UNIT PRICE BID ITEMS

1.01 DUCTILE IRON WATER DISTRIBUTION PIPE, PUSH-ON JOINT

A. Measurement for payment of furnishing and installing ductile iron water distribution pipe shall be on a linear foot basis as determined by measurement along the centerline of the pipe in place. Payment shall constitute full compensation for work necessary for installation of ductile iron water distribution pipe, including but not limited to furnishing, transporting, storing, and installing the pipe; ground penetrating radar pipe location along the pipeline route; saw cutting asphalt pavement, excavation, removal, and disposal of asphalt or concrete pavements, and excavated material; excavation support system, utility support system, dewatering, temporary water service, backfilling, and compaction; cleaning, treating, and testing; site restoration; and other specified work.

B. Depth of installation is as indicated on the drawing details, or defined in the specifications, or as directed by the **County**. Excavation is unclassified.

1.02 DUCTILE IRON WATER DISTRIBUTION PIPE, PUSH-ON JOINT, ADDITION FOR DEEP BURY, 0-4 FEET DEEPER THAN SHOWN ON THE DRAWINGS

A. Measurement for payment of Ductile Iron Water Distribution Pipe, Push-On Joint (size) Diameter, Addition for Deep Bury, 0 to 4 feet deeper than shown on the drawings shall be on a per linear foot basis. Payment for installing water main pipe at a lower grade than indicated shall be based upon the actual depth as instructed by the **County**, in accordance with the provisions of the contract documents. Payment for water main installed at depths greater than that shown in the drawings shall be made in addition to the unit prices in this section. Payment shall constitute full compensation for labor, materials, and equipment necessary to install the water distribution pipe at a depth greater than 4 feet.

B. Depth of installation is as indicated on the drawing details or defined in the specification, or as directed by the **County**. No extra compensation shall be made for depths greater than 4 feet or not shown on the approved drawings without approval from the **County**. Excavation is unclassified.

1.03 RESTRAINED JOINT DUCTILE IRON FITTINGS

Measurement for payment to furnish and install ductile iron fittings shall be at the unit price bid per ton for such approved fittings furnished. Weight shall be based on published weights provided by the fitting manufacturer. Payment for furnishing and installing fittings shall constitute full compensation for work required to furnish and install the fittings, including but not limited to: providing and installing joint restraint; purchasing, transporting, storing, and delivering to the worksite the necessary materials, tools, equipment, and labor; saw cutting asphalt pavement, excavation, dewatering, backfilling, compaction, site restoration, and cleanup; removal and disposal of asphalt or concrete pavements and excavated material; excavation support system, utility support system; dewatering, temporary water service, cleaning, treating, and testing; and other specified work.

1.04 FURNISH AND INSTALL GATE VALVES WITH VALVE BOX AND EXTENSION

Measurement for payment to furnish and install gate valves shall be on a per each basis. Payment shall be based upon actual quantity of each valve furnished and installed, in accordance with the requirements of the Contract Documents. Payment shall constitute full compensation for work necessary to install the valves, including, but not limited to: the purchase, delivery to the Work Site, on-site storage, delivery to the work areas, surface preparation, saw cutting asphalt pavement, excavation, removal, and disposal of asphalt or concrete pavements and excavated material; excavation support system, utility support system, dewatering, temporary water service, placement, backfilling and compaction; cleaning, treating and testing; cleanup, including valve box, extension, concrete collar, if required; and other specified work.

1.05 FURNISH AND INSTALL BUTTERFLY VALVES WITH VALVE BOX AND EXTENSION

Measurement for payment to furnish and install butterfly valves shall be on a per each basis. Payment shall be based upon actual quantity, of each butterfly valve, valve box, and extension furnished and installed, in accordance with the requirements of the Contract Documents. Payment shall constitute full compensation for work necessary to install the material, including, but not limited to: the purchase, delivery to the Work Site, on-site storage, delivery to the Work areas, surface preparation, saw cutting asphalt pavement, excavation, removal, and disposal of asphalt or concrete pavements, and excavated material; excavation support system, utility support system, dewatering, temporary water service, placement, backfilling and compaction; cleaning, treating and testing; cleanup, including valve box, extension; concrete collar, if required; and other specified work.

1.06 FIRE HYDRANT ASSEMBLY

Measurement for payment for furnishing and installing fire hydrant assemblies shall be at the unit price bid per each and shall include, but is not limited to transporting, storing, furnishing, and installing. Payment for furnishing and installing fire hydrant assemblies shall be made at the unit price per each and shall constitute full compensation for the construction of fire hydrant assemblies, installed complete, including fire hydrant, fire hydrant extensions, fire hydrant tee, required linear feet of 6-inch restrained joint ductile iron piping, restrained valves, and valve boxes; concrete collars and thrust blocks; gravel pockets, and fittings. A backflow preventer may be required based on distance from the main line with approval from the **County**. This also includes surface preparation, saw cutting asphalt pavement, excavation, removal, and disposal of asphalt or concrete pavements and excavated material; excavation support system, utility support system, dewatering, temporary water service, placement, backfilling and compaction; cleaning, treating and testing; cleanup, including valve box, extension; concrete collar, if required; and other specified work.

1.07 FURNISH AND INSTALL TAPPING SLEEVE AND VALVE

Measurement for payment to furnish and install tapping sleeves and valves shall be based upon actual quantity, each, of tapping sleeves and valves furnished, installed complete, in accordance with the requirements of the Contract Documents. Payment for furnishing and installing tapping sleeves and valves shall be made at the unit price per each and shall constitute full compensation for the complete installation of the tapping sleeve, valve, and valve box. This also includes surface preparation, saw cutting asphalt pavement, excavation, removal, and disposal of asphalt or concrete pavements and excavated material; excavation support system, utility support system,

dewatering, temporary water service, placement, backfilling and compaction; cleaning, treating and testing; cleanup, including valve box, extension; concrete collar, if required; and other specified work.

1.08 FURNISH AND INSTALL WATER SERVICE

Measurement for payment for furnishing and installing water service shall be on a per each basis for the actual number of water services installed, in accordance with the requirements of the Contract Documents. Payment for furnishing and installing water services shall be made at the unit price, per each, and shall constitute full compensation for the complete installation and testing of the water service from the water main to the meter stop in the meter box at the property line. Water services shall include excavation and backfill; and fittings from the main to the upstream side of the meter, including connection to the meter copper piping measured horizontally from the face of the meter box to the centerline of the main, casing measured horizontally, tracer wire, valves, corporation stop, saddle strap, and meter stop; and other fittings or items as required by the Contract Documents to provide a complete water service connection. This also includes surface preparation, saw cutting asphalt pavement, excavation, removal, and disposal of asphalt or concrete pavements and excavated material; excavation support system, utility support system, dewatering, temporary water service, placement, backfilling and compaction; cleaning, treating, and testing; cleanup, site restoration; and other specified work.

1.09 TRANSFER WATER SERVICE

A. Measurement for payment for water service transfer shall be on a per each basis for the actual number of water services transferred from an existing water main to a new, relocated water main. Payment for water service transfer shall constitute full compensation for the complete transfer of the water service from the main to the meter; the meter shall not be relocated. This item shall include fittings, piping, and restoration to transfer the service, including pressure testing and disinfection, and connection to the meter. Work shall be performed by a licensed plumber. This includes surface preparation, saw cutting asphalt pavement, excavation, removal, and disposal of asphalt or concrete pavements and excavated material; excavation support system, utility support system, dewatering, temporary water service, placement, backfilling and compaction; cleanup; and other specified work.

B. RELOCATION OF EXISTING WATER SERVICE Measurement for payment for water service relocation is on a per each basis. Payment shall constitute full compensation for work necessary to relocate the service, including relocation of the water meter. This includes, but is not limited to: the purchase, delivery to the work site, on-site storage, delivery to the work areas, surface preparation, placement, and cleanup required for the complete relocation of the water service from the main to the property line. The existing meter and appurtenances shall be reset as directed by the **County**. This item shall include devices, fittings, piping, and restoration to relocate the service, and includes removal of the existing service, pressure testing and disinfection, including connection to the relocated meter. Work shall be performed by a licensed plumber. This includes surface preparation, saw cutting asphalt pavement, excavation, removal, and disposal of asphalt or concrete pavements and excavated material; excavation support system, utility support system, dewatering, temporary water service, placement, backfilling and compaction; and other specified work.

1.10 ROCK EXCAVATION

Measurement for payment for rock excavation shall be on a per cubic yard basis. Payment shall constitute full compensation for work necessary for rock excavation in accordance with the Plans and Specifications, including, but not limited to, labor, materials, and equipment.

A. For pipeline excavation, the volume of rock excavation shall be calculated by multiplying allowable specified trench width times the horizontal distance along the survey centerline times vertical height, averaged at 25 feet, of rock excavation.

B. For other structures, including manholes, maximum width shall be 24 inches beyond each edge of the completed structure. Depth for payment purposes shall be no deeper than 12 inches below the bottom of the manhole or structure.

C. No payment shall be made for rock excavation below the required grade or outside the width pay limits as specified in Section 02324 - Trenching and Trench Backfilling.

D. Payment shall include the cost of removal and lawful disposal of the rock from the site.

E. Payment for rock excavation associated with micro-tunneling, directional drilling, tunnel construction, and tunnel access shaft shall be considered incidental to the respective Work.

1.11 JACKING AND BORING

Measurement for payment for jacking and boring shall be on a linear foot basis. Payment shall constitute full compensation for work necessary for a complete installation, including, but not limited to: labor, materials and supplies; equipment required for the handling and installation of the casing and carrier pipe, access, and receiving shafts; shaft support, shoring, and bracing removal; groundwater control, annular space fill, spacers, casing end plugs, and other associated material; surface settlement monitoring; on-site storage, delivery to the work areas, site preparation, backfill, complete restoration; and cleanup.

1.12 TYPE B BASE FOR PERMANENT ASPHALT PAVEMENT REPLACEMENT

A. Measurement for payment for Type B Base for Permanent Asphalt pavement replacement shall be per square yard, determined by multiplying the longitudinal length of the pavement cut times the allowable specified payment width of the trench. Payment shall be full compensation for furnishing labor, materials, tools, testing, and equipment necessary to install Type B Base for Permanent Asphalt Pavement Replacement, and shall include furnishing, hauling, preparation, placement of Type B base materials, and prime coat for permanent asphalt paving. Pavement thickness shall be as shown on the standard details.

B. All pavement damaged outside the payment width shall be repaired as specified by the **County** and no additional payment shall be allowed for such work outside the payment width.

1.13 CONCRETE BASE or PAVEMENT REPLACEMENT FOR WATER OR SEWER LINES

Measurement for payment of concrete pavement replacement for water or sewer lines shall be on a square yard basis determined by multiplying the longitudinal length of pavement to be replaced by the allowable specified payment width. Payment shall constitute full compensation for Work necessary to install the concrete pavement, including, but not limited to: the purchase, delivery to the Work Site, surface preparation, placement, protection, testing, and cleanup.

1.14 CONCRETE CURB AND GUTTER, CONCRETE CURB, AND CONCRETE VALLEY GUTTER

A. Measurement for payment of concrete curb and gutter, concrete curb, or granite curb and concrete valley gutter shall be made on a per linear foot basis.

B. Payment shall constitute full compensation for work necessary to install the curb and gutter, including, but not limited to: the purchase, delivery to the Work Site, on-site storage, and delivery to the work areas; excavation, backfilling, compaction, placement, and restoration of property; disposal of existing materials, and joints; special construction at driveways and other entrances or points; and cleanup. Payment shall include approaches through curb and gutter indicated on the Plans.

1.15 CONCRETE SIDEWALK

Measurement for payment for concrete sidewalk replacement shall be per square yard. Payment shall be full compensation for furnishing labor, materials, tools, and equipment necessary to install and finish concrete sidewalk, and shall include: excavation, backfilling, compaction, and restoration of property; disposal of existing materials; joints and special construction at driveways or other entrances and points; hauling and placing materials; and incidentals necessary to complete the Work. Payment shall include approaches through curb and gutter indicated on the Plans.

SECTION 2 – ALLOWANCES

2.01 ALLOWANCES

A. The allowances specified in the Bid Schedule are to establish a fund to pay the cost of items for which the **County** could not establish accurate quantities and/or detailed scope of work. The **Contractor** shall submit for review and approval by the **County** a proposed cost of services prior to performance of the Work. This Work shall be completed only at the written direction of the **County** after the cost of such Work has been approved

B. The **Contractor** shall be responsible for the payment for these services to the appropriate payee providing such service, and shall submit evidence of payments to the **County** prior to their inclusion in the progress payments.

C. The **County** shall make payment for invoices submitted by the **Contractor** subject to the Contract Documents. **Contractor** shall not receive any additional compensation for bond or insurance costs for work executed using allowance funding.

D. Allowance allocations shall only be paid to the **Contractor** for completed work authorized by the **County**. Allowance dollar amounts not expended shall revert to the **County** at the completion of the project. Should the final allowance costs be less than the specified amount of the allowance, the Contract shall be adjusted accordingly by change order. The amount of change order shall not recognize any changes in handling costs at the site, labor, overhead, profit, and other expenses caused by the adjustment to the allowance item.

2.02 COUNTY-DIRECTED COMPLIANCE TESTING

When an allowance has been established as the value of this item, this allowance shall be used to pay the costs, where the amounts are determined as specified in General Requirements Section GR-5, Changes in the Work and Change Orders, for supplemental confirmation testing where directed by the **County.**

2.03 COUNTY-DIRECTED SITE RESTORATION (Private Property)

A. When an allowance has been established as the value of this item, this allowance shall be used to pay the costs, where the amounts are determined as specified in General Requirements Section GR-5, Changes in the Work and Change Orders for additional site restoration work on private property not shown on the drawings or described in the specifications as directed by the **County**.

B. The costs of final grading, site restoration (consisting of grassing, shrub, and tree plantings, and maintenance thereof, shown in the Drawings and/or required by the Specifications) are not covered in this allowance item, and shall be included in the appropriate unit price Bid Items. The re-grassing or re-sodding of property disturbed by the **Contractor** as well as the restoration of the landscaping and structures shall be part of the **Contractor**'s unit price bid amounts under the appropriate items.

2.04 UNFORESEEN UTILITY CONFLICTS

When an allowance has been established as the value of this item, this allowance shall be used to pay the costs, where the amounts are determined as specified in General Requirements Section GR-5, Changes in the Work and Change Orders for utility conflicts as directed by the **County**. This allowance shall be used to pay the cost of: relocating utilities or other structures not shown on the Drawings, or reasonably anticipated based upon a pre-bid inspection of project conditions and the work site; additional work to resolve unforeseen utility conflicts; or demolishing structures not shown on the Drawings.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01210

SECTION 01300
SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Preparing and processing of submittals for review and action.
2. Preparing and processing of informational submittals.

B. Submit the following for the **County's** review and action:

1. Shop drawings
2. Product data
3. Samples
4. Submittals indicated as "for approval"

C. Submit the following as informational submittals:

1. Structural design information required by the contract documents
2. Certificates
3. Coordination drawings
4. Reports
5. Qualification statements for manufacturers/installers
6. Submittals indicated as "for information only"

D. Specific submittals are described in individual sections.

E. Do not commence Work that requires review of any submittals until receipt of returned submittals with an acceptable action.

F. Do not allow submittals without an acceptable action marking to be used for the project.

G Submittals shall be submitted to the **County** by a flash or jump drive. No email submittals shall be allowed for approval. One copy of each submittal shall be uploaded by the **Contractor** into the software program named by the **County**. The **County** may determine that certain submittals also shall be submitted in hard copy form.

1.02 DEFINITIONS

A. "Shop drawings" are drawings and other data prepared by the entity that is to do the Work, specifically to show a portion of the Work.

B. "Product data submittals" are standard printed data that show or otherwise describe

a product or system, or some other portion of the Work.

C. "Samples" are actual examples of the products or Work to be installed.

D. “Informational submittals” are those identified in the Contract Documents as for information only.

1.03 FORM OF SUBMITTALS

A. Sheets larger than 8-1/2 by 14 Inches:

1. Maximum sheet size: 24 by 36 inches (except for full-size pattern or template drawings).
2. Number of copies:
   a. Submittals for review: Three blue or blackline prints
   b. Informational submittals: Three blue or blackline prints

B. Small sheets or pages:

1. Minimum sheet size: 8-1/2 by 11 inches
2. Maximum sheet size for opaque copies: 11 by 17 inches
3. Number of copies shall be the same as for larger sheets

C. Samples:

1. Two sets of each shall be submitted with the original submittal.
2. One set shall be returned.
3. If additional sets are needed by other entities involved in Work represented by the samples, these shall be submitted with original submittal.

1.04 COORDINATION OF SUBMITTALS

Coordinate submittals and activities that shall be performed in sequence or of different types for the same product or system so that the **County** has enough information to properly review each submittal.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 TIMING OF SUBMITTALS

A. Transmit each submittal at the time indicated on the approved construction schedule.

B. Deliver each submittal requiring approval in time to allow for adequate review and processing time, including resubmittals if necessary; failure of the **Contractor** in this respect shall not be considered as grounds for an extension of the contract time.

C. Deliver each informational submittal prior to start of the Work involved, unless the

submittal is of a type that cannot be prepared until after completion of the Work; submit promptly.

D. If a submittal must be processed within a certain time in order to maintain the progress of the Work, state so clearly on the submittal.

E. If a submittal must be delayed for coordination with other submittals not yet submitted, the **County** may, at its option, either return the submittal with no action or notify the **Contractor** of the other submittals that shall be received before the submittal can be reviewed.

3.02 SUBMITTAL PROCEDURES - GENERAL

A. **Contractor** review: Sign each copy of each submittal certifying compliance with the requirements of the contract documents.

B. Notify the **County**, in writing and at time of submittal, of points upon which the submittal does not conform to the requirements of the contract documents, if any.

C. Preparation of submittals:

1. Label each copy of each submittal with the following information:
    a. Project name
    b. Date of submittal
    c. **Contractor**'s name and address
    d. Supplier's name and address
    e. Manufacturer's name
    f. Specification section where the submittal is specified
    g. Numbers of applicable drawings and details
    h. Other necessary identifying information

2. Submittals to receive **County's** action marking: Provide blank space on the label or on the submittal itself for action marking: minimum 4 inches wide by 5 inches high.

D. Transmittal of submittals:

1. Submittals shall be accepted from the **Contractor** only.
2. Submittals received without a transmittal form shall be returned without review or action.
3. Transmittal form: The **Contractor** shall use a form acceptable to the **County**, with space provided on the form for:
    a. Project name
    b. Submittal date
    c. Transmittal number
    d. Specification section number
    e. To:
    f. From:
    g. **Contractor**'s name

h. Subcontractor's and supplier's names
i. Manufacturer's name
j. Submittal type (shop drawing, product data, sample, informational submittal).
k. Description of submittal
l. Action marking
m. Comments

4. The **Contractor** shall complete a separate transmittal form for each submittal, also including the following:

a. Other relevant information
b. Requests for additional information

3.03 SHOP DRAWINGS

A. Content: Include the following information:

1. Dimensions, at accurate scale
2. All field measurements that have been taken, at accurate scale
3. Names of specific products and materials used
4. Details, identified by contract document sheet and detail numbers
5. Compliance with the specific standards referenced
6. Coordination requirements, including the relationship to adjacent or critical Work
7. Name of preparing firm
8. Design calculations

B. Preparation:

1. Reproductions of contract documents are not acceptable as shop drawings.
2. Copies of standard printed documents are not acceptable as shop drawings.
3. Documents shall be identified as indicated for submittals.
4. Space for **County's** action marking shall be adjacent to the title block.

3.04 PRODUCT DATA

A. Submit product data submittals for each system or unit of Work as one submittal.

B. When product data submittals are prepared specifically for this Project (in the absence of standard printed information), submit such information as shop drawings, and not as product data submittals.

C. Content:

1. Submit manufacturer's standard printed data sheets.
2. Identify the particular product being submitted; submit only pertinent pages.
3. Show compliance with properties specified.

4. Identify which options and accessories are applicable.
5. Include recommendations for application and use.
6. Show compliance with the specific standards referenced.
7. Show compliance with specified testing agency listings; show the limitations of their labels or seals, if any.
8. Identify dimensions, which have been verified by field measurement.
9. Show special coordination requirements for the product.

3.05 SAMPLES

A. Samples:

1. Provide samples that are the same as the proposed product.
2. Where selection is required, provide the full set of options.

B. Preparation:

1. Attach a description to each sample.
2. Attach name of manufacturer or source to each sample.
3. Where compliance with specified properties is required, attach documentation showing compliance.
4. Where there are limitations in availability, deliveries, or other similar characteristics, attach descriptions of such limitations.
5. Where selection is required, the first submittal may be a single set of options; after return of submittal with selection indicated, submit standard number of sets of selected item.

C. Keep final sample set(s) at the Project Site, available for use during progress of the Work.

3.06 REVIEW OF SUBMITTALS

A. Submittals for approval shall be reviewed, marked with appropriate action, and returned. Submittals are reviewed for conformance with project design concept and for compliance with standard of quality established in the Contract Documents. This review shall not relieve the **Contractor** from responsibilities for correctness of detail and dimension, nor from deviation from Contract Document requirements, except as noted and accepted in writing by the **County** at the time of submittal.

B. Informational submittals shall be reviewed.

C. Action markings for submittals for approval shall be as follows:

1. NO EXCEPTIONS TAKEN (NET): Indicate that the submitted item is released for manufacture
2. MAKE CORRECTIONS NOTED (MCN): Indicate that the submitted item is released for manufacture with the submittal complying with the comments
3. AMEND AND RESUBMIT (AAR): Indicates that the submittal shall be revised

or a new submittal complying with the comments made shall be prepared.

4. REJECTED (REJ): Indicates that the submitted item does not comply with contract requirements and that another selection shall be made and the submittal process repeated.

5. SUBMIT SPECIFIED ITEM(s) (SSI): Indicates that the submittal shall submit specified item(s) based on the specifications or as stated by the County

3.07 RETURN, RESUBMITTAL, AND DISTRIBUTION

A**.** Submittals shall be returned to the **Contractor** by mail.

B**.** The **Contractor** shall address resubmittals in the same manner as original submittals, with changes other than those requested by the **County,** clearly indicated.

1. Exception: Transmittal number for resubmittal shall be the number of the original submittal plus a letter suffix.

2. Resubmittals shall be submitted within 14 days of **Contractor's** receipt of rejected submittal.

C. Distribution: The **Contractor** shall make one copy for project record documents.

END OF SECTION 01300

SECTION 01400
Contractor's Work Quality

PART 1 GENERAL

1.01 SECTION INCLUDES

A. **Contractor**'s Quality Assurance / Quality Control Requirements

B. Experience and Qualifications of Supply and Service Companies

C. Quality of Materials, Equipment, and Work

D. Defective Work, Equipment, or Materials

E. Welding Certification and Welding Inspection

F. **Contractor**'s Surveyor

G. Field Measurements

1.02 PAYMENT

No separate payment shall be made for performing any Work of this Section and costs thereof shall be deemed incidental to the Work and included in the prices bid for the Contract, unless otherwise specified in the Detailed Specifications.

1.03 RELATED SECTIONS

Detailed Specification 01410.

1.04 DESCRIPTION

A. Experience and Qualifications of Supply and Service Companies: The **Contractor** shall require subcontractors, materialmen, and equipment service providers to comply with the accepted Health, Safety & Security Plan, and Quality Assurance requirements under the Contract.

B. Quality of Materials, Equipment and Work

1. All materials, fixtures, fittings, supplies, and equipment furnished under this Contract shall be new, of standard first grade quality, of the best workmanship, correctly designed, and be intended for the use for which they are offered. Materials or equipment that, in the opinion of the **County**, are inferior or of a lower grade than indicated, specified or required, or are obsolete, shall not be accepted.

2. All Work of assembly, installation, and construction shall be done in a neat, first-class, and skillful manner. If the quality of the material, fixtures, fittings, supplies, equipment or Work required by the Drawings does not agree with that required by the Specifications, the better quality shall be supplied. In asking for prices on, or placing orders for, materials, fixtures, fittings, supplies, and equipment intended for use or installation under this

Contract, the **Contractor** shall provide the manufacturer or dealer with such complete information from these Specifications as may in any case be necessary. In every case, it shall quote in full to each such manufacturer or dealer the text of this subparagraph, as well as the text of such other portions of the Specifications, as are appropriate.

3. At all times while Work under this Contract is being performed, the **County** shall have access to all parts of the **Contractor**'s or manufacturers' plants or other locations where the forgings, plates, materials, fixtures, fittings, supplies, or any other articles required under this Contract are manufactured, assembled, tested, or inspected. The **County** shall be permitted to witness any or all of these operations, as the **County** may deem necessary to determine that the Work is being performed in accordance with the Specifications and the approved shop drawings. The cost, if any, of providing such access shall be considered part of the normal expense of conducting business and therefore non-reimbursable.

4. The **County** shall be furnished with full facilities for inspecting the Work and ascertaining that it is being done strictly in accordance with the requirements of the Specifications, Drawings, and the intent of this Contract.

5. The **Contractor** shall provide a suitable space for the **County** and the **County**'s authorized representatives conveniently located near that part of each plant where materials or equipment to be furnished under this Contract are being manufactured, assembled, or shop tested. Each space shall be furnished with facilities for the making and the keeping of records and correspondence. The reasonable use of a photocopier, telephone, and fax shall be provided, as required by the **County**. Long distance communications shall be made using **County** mobile telephones at no cost to the **Contractor**.

6. The **Contractor** shall give notice in writing to the **County** sufficiently in advance of its intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction in the event that the **County** intends to perform Witness Shop Testing and Quality Assurance Inspection. Such notice shall contain the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the **County** will: decide upon its intent to inspect the Work or notify the **Contractor** that inspection will be waived. In those instances where the **County** inspector(s) arrive at the agreed-upon location, at the agreed-upon date and time, and find that the article(s) to be inspected are not ready for inspection, the inspector(s) shall return to their home office and the expenses incurred shall be borne by the **Contractor** and shall be deducted from the **Contractor**'s next payment, unless otherwise determined by **County**.

7. Inspection of the Work by the **County** is made solely for the benefit of the **County**. The inspection of the Work shall not relieve the **Contractor** of any of its obligations to fulfill the Contract as herein prescribed, and defective Work shall be repaired or replaced at the **Contractor**'s sole expense.

C. Defective Work, Equipment, or Materials

1. All defective or imperfect Work, equipment, or materials furnished by the **Contractor** that is discovered before the Final Acceptance of the Work, or during a warranty period, shall be removed immediately even though it may have been overlooked by the **County** and approved for payment. The **Contractor** shall repair such defect, without compensation, in a manner satisfactory to the **County**.

2. Unsuitable materials and equipment shall be rejected, notwithstanding that such defective Work, materials, and equipment may have been previously overlooked by the **County** and accepted or approved for payment.

3. If any workmanship, materials, or equipment are rejected by the **County** as unsuitable or not in conformity with the Specifications or Drawings, the **Contractor** shall promptly replace such materials and equipment with acceptable materials and equipment at no additional cost to the **County**. Equipment or materials rejected by the **County** shall be tagged as such and shall be immediately removed from the site.

4. The **County** may order tests of imperfect or damaged Work equipment, or materials to determine the required functional capability for possible acceptance, if there is no other reason for rejection. The cost of such tests shall be borne by the **Contractor**, and the nature, tester, extent, and supervision of the tests shall be as determined by the **County**. If the results of the tests indicate

that the required functional capability of the Work, equipment, or material was not impaired, the Work, equipment, or materials may be deemed acceptable, in the discretion of the **County**. If the results of such tests reveal that the required functional capability of the questionable Work, equipment, or materials has been impaired, then such Work, equipment, or materials shall be deemed imperfect and shall be replaced. The **Contractor** may elect to replace the imperfect Work, equipment, or material instead of performing the tests.

5. If, in the making of any test, it is ascertained by the **County** that the material or equipment does not comply with the Contract, the **Contractor** will be notified thereof, and it will be directed to refrain from delivering said material or equipment, or to promptly remove it from the site or from the Work and replace it with acceptable material without cost to the **County**. Upon rejection of any material or equipment submitted as the equivalent of that specifically named in the Contract, the **Contractor** shall immediately proceed to furnish the named material or equipment.

D. Welding Certification and Welding Inspection

1. For Work performed within the limits of the **County**, field welding required under this Contract shall be performed by certified welders:

   a. Certification for Welding – For field and shop welding, the following welding qualification provisions shall apply:

      i. For field welding, required permits and safety plans shall be in place and adhered to.

      ii. For shop welding: welding shall be performed in accordance with the relevant Work-specific requirements in the Specifications and Drawings.

      iii. If existing certification is not approved or not submitted, then the welders/welding shop/tack welders shall be qualified in accordance with the above procedures and tests, as administered by an inspection agency approved by the **County**. The costs associated with the required tests for certification and/or retests, if any, shall be borne by the **Contractor**. The **County** shall be given a notice of not less than 5 business days prior to such tests and may elect to witness any or all of these tests. The costs associated with witnessing these tests shall be borne by the **Contractor**.

   b. Any deviation from the above shall not be permitted without a written waiver from the **County** or its designee.

2. All welding, including welder certification, shall be performed in accordance with the requirements of AWS D1, ASME IX (and the applicable construction code), and as approved by the **County**.

3. Welding inspection shall be in accordance with the latest rules of the American Welding Society, and the following shall apply:

   a. All welds shall be inspected visually in accordance with Section V of the ASME Code.

   b. All stainless steel partial penetration groove welds shall be inspected and approved by means of Liquid Penetrant Examination (PT) in accordance with Appendix 8 of Section VIII, Division 1 of the ASME Code. Welds failing the inspection shall be made good and re-inspected by PT.

   c. All carbon steel partial penetration groove welds shall be inspected and approved by means of Magnetic Particle Examination (MT) in accordance with Appendix 6 of Section VIII, Division 1, of the ASME Code. Welds failing the inspection shall be made good and re-inspected by MT.

   d. On full penetration welds, both the root pass and the final weldment shall be inspected by means of MT or PT as applicable.

   e. Unless otherwise approved, inspection of welds shall be conducted by an inspection agency approved by the **County**.

   f. Unless waived by the **County**, full-penetration welds shall be inspected by Radiographic Examination (RT) in accordance with ASME Code, Section VIII, Division I, Paragraph UW-51.

   g. The **County** may elect to witness any or all of the welding inspection. Notice shall be given to the **County** not less than 5 business days prior to welding and inspection of those items specifically designated by the **County**. The costs associated with the welding inspection by the **County** inspectors and any additional testing required by the **County** shall be borne by the **Contractor**.

E. **Contractor**'s Surveyor

1. The **Contractor** shall retain the services of a licensed land surveyor to perform survey Work, including, but not limited to, establishing line and grade, in advance of the construction; and to perform other surveying services for the Work included under the Contract. The surveyor shall be subject to the approval of the **County**. Survey drawings shall be submitted to the **County** for approval.

2. The **Contractor** shall erect, install, and maintain survey platforms, targets, benchmarks, and similar facilities to be used by the **County** in the performance of its inspection services; and shall perform survey Work required before, during, and after construction.

F. Field Measurements

1. The **Contractor** shall take the necessary measurements in the field to determine the exact dimensions for Work and verify pertinent data and dimensions shown on the Contract Drawings.

1.05 QUALITY ASSURANCE / QUALITY CONTROL PLAN

A. The **Contractor** shall establish and execute a Quality Assurance/Quality Control (QA/QC) Plan for the services and equipment that will be supplied under this Contract. The plan shall provide the **Contractor** with adequate measures for verification and conformance to defined requirements by its personnel and subcontractors, fabricators, suppliers, and vendors. The **County**'s review and acceptance of the **Contractor's** QA/QC plan shall not relieve the **Contractor** from any of its obligations for the performance of the Work. The **Contractor**'s assigned QA/QC personnel are subject to the **County**'s review and continued acceptance. No Work covered by the QA/QC plan shall start until the **County**'s written acceptance of the **Contractor**'s QA/QC plan has been obtained.

B. The **Contractor**'s quality control organization with lines of authority and reporting structure. The Construction Quality staffing shall include a Construction Quality Manager and a supporting staff as applicable to the project. The reporting structure shall clearly provide for direct reporting access by the Construction Quality Manager to the **Contractor**'s principal officers.

C. The names, qualifications (in resume format), duties, responsibilities, and authorities of the Construction Quality Manager and staff. Construction Quality personnel qualifications (in resume form), including copies of each member's applicable certificates of training and/or qualification.

D. A copy of a letter to the Construction Quality Manager signed by a principal officer of the **Contractor**'s firm that describes the responsibilities of the Construction Quality Manager and establishes his/her authority, including authority to stop Work that does not conform with the Contract Documents. The Construction Quality Manager shall issue letters of direction to other Construction Quality staff outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the CIP PMT and CM.

E. A copy of a letter to the Construction Quality Manager signed by a principal officer of the **Contractor's** firm that describes the responsibilities of the Construction Quality Manager and establishes his/her authority, including authority to stop Work that does not conform with the Contract Documents. The Construction Quality Manager shall issue letters of direction to other Construction Quality staff outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the CIP PMT and CM.

1.06 SUBMITTALS

A. Within 15 days after the commence Work date given in the Notice to Proceed (NTP), the **Contractor** shall provide its QA/QC plan to the **County** for approval. At a minimum, the plan shall consist of the following quality elements:

1. Responsibilities
2. Management and Production Instructions
3. Material Control
4. Marking and Material Identification
5. Setup and Operational Procedures
6. Non-Conformances
7. Painting

B. Additionally, when required by the **County**, the **Contractor** shall submit the following information prior to his entering into a supply or service subcontracts:

1. Contract number, supplies or services to be provided and a general description of the proposed item(s), such as trade name, type, etc.
2. The name and address of the manufacturer or service company and the location of the plant where supplies will be manufactured and tested as required, or at which the services will be performed.
3. Experimental and test data required to support the claimed performance of the supplies.
4. A description of the testing plant, including the hydraulic, electrical and other facilities, in sufficient detail to show that the plant is adequately equipped for performing the tests, if such testing is required.
5. All additional information that the **County** may deem necessary in order to determine the ability of the supply or service company to produce the item as called for by the Specifications.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

1.01 Quality Deficiency and Non-Conformance Documentation

Quality Deficiencies and Non-Conformances are defined as documentation, drawings, material, and equipment or Work not conforming to the specified requirements or procedures. The **County** will implement and maintain a three-tier non-conformance process, as follows:

A. Deficiency Notice (DN) – The lowest level of non-conformance reporting. It documents the deficient condition and provides the **Contractor** 72 hours, or before the Work is covered, to correct the issue before it is elevated to the next

level of reporting. It is issued for deficiencies that can be easily corrected without an engineering resolution. An example would be incorrect formwork dimensions observed prior to placement of concrete.

B. Non-Conformance Report (NCR) - The second level is an NCR that documents deficient Work that has not been corrected, or that would require an engineering solution to remedy. NCRs shall be answered in writing by the **Contractor** within 24 hours. The **Contractor** shall not be allowed to progress items for payment if it has open NCRs.

C. Corrective Action Request (CAR) – The highest level of non-compliant reporting. CARs are issued for programmatic and repetitive non-compliant conditions. Examples of CARs would be using the wrong drawing revision in the field (programmatic) and a condition where the same type of Work has multiple NCR issues over a short period of time (repetitive). CARs cannot be answered by the **Contractor** field staff. They shall be transmitted to the **Contractor**'s senior level management for response.

+++END OF SECTION 01400+++

SECTION 01410
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 SCOPE

A. Testing shall be performed to determine that materials provided for the Work meet the specified requirements, in accordance with the requirements of the Specifications. Such testing includes, but is not necessarily limited to:

1. Cement
2. Aggregate
3. Concrete
4. Concrete block
5. Pipe
6. Steel and metals
7. Welding
8. Soil compaction
9. Bituminous pavement

B. Requirements for testing may be described in various sections of these Specifications; where no testing requirements are described, however if the **County** decides that testing is required to demonstrate compliance with specified material or performance standards, the **County** shall require testing to be performed under current pertinent standards for testing.

C. Employment of a testing laboratory shall in no way relieve the **Contractor** of its obligation to perform Work meeting the requirements of the Contract.

D. The independent testing laboratory shall be selected and paid by the **Contractor** and approved in writing by the **County** before any testing services are performed.

E. The **Contractor** shall pay directly for the services of the independent testing laboratory, approved by the **County**, for all testing required under this Contract.

1.02 LABORATORY DUTIES

A. Cooperate with **County** and **Contractor**.

B. Provide qualified personnel promptly on notice.

C. Perform specified inspections, sampling, and testing of materials and methods of construction.

1. Comply with specified standards, ASTM, other recognized authorities and as specified.

2. Ascertain compliance with requirements of Contract Documents.

D. Promptly notify the **County** and **Contractor** of irregularity or deficiency of Work that is

observed during performance of services.

E. Promptly submit three copies (two copies to **County** and one copy to **Contractor**) of report of inspections and tests in addition to those additional copies required by the **Contractor,** including:

1. Date issued
2. Project title and number
3. Testing laboratory name and address
4. Name and signature of inspector
5. Date of inspection or sampling
6. Record of temperature and weather
7. Date of test
8. Identification of product and Specification section
9. Location of Project and test
10. Type of inspection or test
11. Results of test
12. Observations regarding compliance with Contract Documents

F. Perform additional services as required.

G. Laboratory shall not be authorized to:

1. Release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Approve or accept any portion of Work.

1.03 CONTRACTOR RESPONSIBILITIES

A. Cooperate with laboratory personnel; provide access to Work and/or manufacturer's requirements. **Contractor** shall not charge for downtime due to required testing.

B. Provide to laboratory, preliminary representative samples, in required quantities, of materials to be tested.

C. Furnish copies of mill test reports.

D. Furnish required labor and facilities:

1. To provide access to Work to be tested

2. To obtain and handle samples at the site

3. To facilitate inspections and tests

4. Build or furnish a holding box for concrete cylinders or other samples as required by the laboratory

E. Notify laboratory sufficiently in advance of operation to allow for the assignment of personnel and schedules of tests.

F. Laboratory Tests: Where such inspection and testing are to be conducted by an independent laboratory agency, the sample or samples shall be selected by such

laboratory or agency or the **County** and shipped to the laboratory by the **Contractor** at **Contractor**'s expense.

G. Copies of the correspondence between the **Contractor** and testing agencies shall be provided to the **County**.

1.04 QUALITY ASSURANCE

Testing, when required, shall be in accordance with all pertinent codes and regulations and with procedures and requirements of the American Society for Testing and Materials (ASTM).

1.05 PRODUCT HANDLING

Promptly process and distribute all required copies of test reports and related instructions to insure all necessary retesting or replacement of materials with the least possible delay in progress of the Work.

1.06 FURNISHING MATERIALS

The **Contractor** shall be responsible for furnishing all materials necessary for testing.

1.07 CODE COMPLIANCE TESTING

Inspections and tests required by codes or ordinances or by a plan approval authority, and made by a legally constituted authority, shall be the responsibility of and shall be paid for by the **Contractor**, unless otherwise provided in the Contract Documents.

1.08 CONTRACTOR'S CONVENIENCE TESTING

Inspection or testing performed exclusively for the **Contractor's** convenience shall be the sole responsibility of the **Contractor**.

1.09 SCHEDULES FOR TESTING

A. Establishing Schedule

1. The **Contractor** shall, by advance discussion with the testing laboratory, determine the time required for the laboratory to perform its tests and to issue each of its findings, and make all arrangements for the testing laboratory to be onsite to provide the required testing.

2. Provide all required time within the construction schedule.

B. When changes of construction schedule are necessary during construction, coordinate all such changes of schedule with the testing laboratory as required.

1.10 TEST AND CERTIFICATIONS

A. General: As a minimum, the following tests shall be performed and the following certifications provided:

1. Cement: Certified test results by cement manufacturer or by independent laboratory shall be furnished as required by the **County**.

2. Aggregate and Mortar Sand: Certified test results by aggregate producer or by independent laboratory shall be furnished as required by the **County**.

3. Concrete

   a. At least five standard 6-inch cylinders shall be taken each day for each 100 cubic yards or fraction thereof for each class of concrete used.
   b. The number of cylinders, the point of sampling, and the method of securing the samples shall be determined by the **County**.
   c. All samples shall be taken to the testing laboratory for laboratory curing.
   d. Two of the laboratory cured samples shall be tested at 7 days, two samples tested at 28 days; one sample held in reserve.
   e. Test all concrete in accordance with ASTM C31-69, C39-71, and C-172.
   f. Slump Tests
      (1) Perform slump tests on the job in accordance with ASTM standards.
      (2) One slump test shall be performed for each 25 cubic yards of concrete.
      (3) More slump tests shall be performed if deemed necessary by the **County**.
   g. Perform air entrainment tests in accordance with the following standards:
      (1) Field tests - ASTM C 173
      (2) Laboratory tests - ASTM C 231

B. Precast and Concrete Block for Buildings

1. Block and precast may be visually inspected on the site by the **County**.

2. The **County** reserves the right to have the concrete block tested by an independent laboratory.

C. Steel and Miscellaneous Metal: Reinforcing steel, structural steel, and miscellaneous metal may be inspected visually on the site by the **County**.

D. Welding: 1 percent minimum of all structural welds during construction shall be inspected either visually or by an independent laboratory as required by the **County**.

E. Compaction of Earthwork

1. The compaction shall be tested by the **County** or by an independent laboratory.

2. The testing shall be performed in a manner in accordance with these Specifications.

F. Bituminous Concrete: The material testing for the bituminous concrete shall be performed by an independent laboratory as deemed necessary by the **County**.

1.11 TAKING SPECIMENS

Unless otherwise provided in the Contract Documents, all specimens and samples for tests shall be taken by the testing laboratory or the **County**.

1.12 TRANSPORTING SAMPLES

The **Contractor** shall be responsible for transporting all samples, except those taken by testing laboratory personnel, to the testing laboratory.

+++END OF SECTION 01410+++

SECTION 01600
GENERAL MATERIAL AND EQUIPMENT REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The **Contractor** shall use the latest version of the manufacturer's product line of installed materials and equipment at the time of purchase. The **Contractor** shall not purchase materials and equipment that have been outdated by newer versions at the time of purchasing. Materials and equipment that show any signs of extended storage such as corrosion, scratches, and dents shall not be accepted.

B. The **Contractor** shall use equipment for performing the Work that conforms to the latest version of applicable safety standards including, but not limited to, OSHA requirements. **Contractor** shall not exceed or ignore any requirements or recommendations of the equipment manufacturer. Equipment not meeting requirements of this Section shall be barred from use on the project.

C. The **Contractor** shall install material and equipment that meets or exceeds the latest applicable code requirements, including, but not limited to: Underwriters Laboratory, Standard Building Code, and OSHA, as well as requirements of these Specifications. Where there is conflict with requirements of the Contract Documents and code requirements, the **Contractor** shall comply with the more stringent requirements with no additional compensation to the **Contractor**.

PART 2 - MATERIALS AND EQUIPMENT

2.01 ANCHOR BOLTS

A. The **Contractor** shall use anchor bolts that are ANSI Type 316 stainless steel unless otherwise specified or indicated, and shall conform to requirements of this Section and the material articles in the appropriate Sections where they are used.

B. The **Contractor** shall use anchor bolts supplied by the manufacturer or fabricator of the specific material or equipment to be installed.

C. Design criteria for anchor bolts:

1. When the size, length, or load carrying capacity of an anchor bolt, expansion anchor, or concrete insert is not shown on the Drawings, provide the size, length and capacity required to carry the design load times a minimum safety factor of four.
2. Determine design loads as follows:
    a. For equipment anchors, use the design load recommended by the manufacturer and approved by the **County**.
    b. For pipe hangers and supports, use half the total weight of pipe, fittings, valves, accessories, and water contained in full pipe,

between the hanger or support in question and adjacent hangers and supports on both sides.

c. Allowances for vibration are included in the safety factor specified above.

d. Anchors shall develop ultimate shear and pull-out loads of not less than the following values in concrete:

Bolt Diameter (Inches)	Min. Shear (Pounds)	Min. Pull-Out Load (Pounds)
½	4,500	6,300
⅝	6,900	7,700
¾	10,500	9,900

3. Embedment depth shall be minimum 6 inches for epoxy anchors and 4 inches for steel expansion anchors, unless noted otherwise on the drawings.

D. Anchor Type and Manufacturer

1. Where epoxy anchors are noted on the drawings, provide ANSI Type 316 stainless steel threaded rod with Speed Bond #1 epoxy injection as manufactured by Prime Resins, Inc. or approved equal.

2. For other applications, provide ANSI Type 316 steel expansion anchors from one of the following manufacturers:

a. Hilti, Incorporated

b. Ramset, Incorporated

c. Approved equal

3. Install anchors per manufacturer's recommendations and this Section.

Drilled anchorage holes are to be blown out with compressed air before installing anchor.

2.02 CONNECTION BOLTS

A. Materials shall be as specified in other Sections of the Specifications, or as shown on the Drawings. Where materials are not specified or shown on the Drawings, they shall be of ANSI Type 316 stainless steel, with ANSI Type 316 stainless steel nuts and washers.

B. Unless otherwise specified, stud, tap, and machine bolts and nuts shall be ANSI Type 316 stainless steel and shall conform to the requirements of ASTM Standard Specification for Carbon Steel Externally and Internally Threaded Standard Fasteners, Designation A307-80. Hexagonal nuts of the same quality of metal as the bolts shall be used. Threads shall be clean cut and shall conform to ANSI Standard B1.1-1989 for Unified Inch Screw Threads (UN and UNR Thread Form).

2.03 CONCRETE INSERTS

Concrete inserts for hangers shall be designed to support safely, in the concrete that is used, the maximum load that can be imposed by the hangers used in the inserts. Inserts for hangers shall be of a type that permits adjustment of the hangers both horizontally (in one plane) and vertically and locking of the hanger head or nut. Inserts shall be galvanized, then epoxy phenolic primed and top coated with PVC, using thermal bond process.

2.04 SLEEVES

A. Unless otherwise indicated on the Drawings or specified, openings for the passage of pipes through floors and walls shall be formed of sleeves of standard-weight, stainless-steel pipe. The sleeves shall be of ample diameter to pass the pipe and its insulation, if any, and to permit such expansion as may occur. Sleeves shall be of sufficient length to be flush at the walls and the bottom of slabs and to project 4 inches above the finished floor surface. Threaded nipples shall not be used as sleeves.

B. Sleeves in exterior walls below grade or in walls to have liquids on one or both sides shall be as detailed on the Approved Drawings and specified in other sections.

C. Sleeves shall be set accurately before the concrete is placed or shall be built in accurately as the masonry is being built.

2.05 ELECTRICAL EQUIPMENT ENCLOSURES

Items of electrical equipment that are furnished with process equipment shall conform to the requirements specified under the appropriate electrical sections of the specifications. Enclosures for electrical equipment such as switches, starters, etc., shall conform to the requirements specified under the appropriate electrical sections of the specifications.

2.06 EQUIPMENT DRIVE GUARDS

Equipment driven by open shafts, belts, chains, or gears shall be provided with acceptable all-metal guards enclosing the drive mechanism. Guards shall be constructed of epoxy paint coated, galvanized sheet steel or galvanized woven wire or expanded metal set in a frame of galvanized steel members. Guards shall be secured in position by steel braces or straps that will permit easy removal for servicing the equipment. The guards shall conform to applicable safety codes and regulations.

2.07 NAMEPLATES

A. The **Contractor** shall provide each piece of equipment, with the exception of the items mentioned below, with a substantial nameplate of non-corrodible metal, securely fastened in place and clearly and permanently inscribed with the manufacturer's name, model or type designation, serial number, principal rated capacities, electrical or other power characteristics, and similar information as appropriate.

B. This requirement shall also apply to standard, manually operated gate, lobe, check, and plug valves.

C. Each process valve shall be provided with a substantial tag of noncorrodible metal securely fastened in place and inscribed with an identification number in conformance with the tag numbers indicated on the Process and Instrumentation Drawings.

2.08 LUBRICANTS

During testing and prior to acceptance, the **Contractor** shall furnish lubricants necessary for the proper lubrication of equipment furnished under this Contract.

2.09 PROTECTION AGAINST ELECTROLYSIS

Where dissimilar metals are used in conjunction with each other, the **Contractor** shall provide suitable insulation between adjoining surfaces to eliminate direct contact and any resultant electrolysis. The insulation shall be bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators, or washers, or other approved acceptable materials.

2.10 TRANSPORTATION, HANDLING, STORAGE, AND PROTECTION

A. Packing and Shipping:

1. Product and materials shall be shipped and handled in ways that shall prevent damage.
2. Equipment shall be protected against damage from moisture, dust, handling, or other cause during transport from manufacturer's premises to the project site. Bearing housing, vents, and other types of openings shall be wrapped or otherwise sealed to prevent contamination by grit and dirt.
3. Ship equipment, material, and spare parts in assembled units except where partial disassembly is required by transportation regulations or for protection of components.
4. Pipe and appurtenances shall be handled, stored, and installed as recommended by the manufacturer. Pipes shipped with interior bracing shall have the bracing removed only when recommended by the pipe manufacturer.
5. Stiffeners shall be used where necessary to maintain shapes and to give rigidity.
6. Each item or package shall be marked with the number unique to the specification reference covering the item. Spare parts shall be packed in containers bearing labels clearly designating contents and pieces of equipment for which intended.

B. Acceptance at Site:

C. Damaged items shall not be permitted as part of the Work except in cases of minor damage that have been satisfactorily repaired and are acceptable to the **County**.

D. Damage shall be corrected to conform to the requirements of the Contract before the assembly is incorporated into the Work.

E. The **Contractor** shall bear the costs arising out of dismantling, inspection, repair, and reassembly.

F. Storage and Protection:

1. During the interval between the delivery to the site and installation, equipment and materials shall be stored in an enclosed space affording protection from weather, dust, and mechanical damage and providing favorable temperature, humidity, and ventilation conditions to protect against equipment deterioration. Manufacturer's recommendations shall be adhered to in addition to these requirements.

2. Equipment and materials to be located outdoors may be stored outdoors if protected against moisture condensation and ultraviolet (UV) degradation. Equipment shall be stored at least 6 inches above ground. Temporary power shall be provided to energize space heaters or other heat sources for control of moisture condensation. Space heaters or other heat sources shall be energized without disturbing the sealed enclosure.

2.11 UNIT RESPONSIBILITY

A. Equipment systems made up of two or more components shall be provided as a unit by the responsible manufacturer. Unless otherwise specified, the **Contractor** shall obtain each system from the supplier of the driven equipment, and the supplier shall provide components of the system to enhance compatibility, ease of construction, and efficient maintenance. The **Contractor** shall be responsible to the **County** for performance of systems in accordance with the provisions of the General Requirements of the Contract Documents.

B. Where the detailed specifications require the **Contractor** to furnish a certificate of unit responsibility, such certificate shall be executed by the manufacturer. No other submittal material shall be processed until the Certificate of Unit Responsibility has been received and has been found to be satisfactory.

END OF SECTION 01600

SECTION 01610
TRANSPORTATION AND HANDLING

PART 1 GENERAL

1.01 SCOPE

A. The **Contractor** shall provide transportation of equipment, materials, and products furnished under these Contract Documents to the Work site. In addition, the **Contractor** shall provide preparation for shipment, loading, unloading, handling, and preparation for installation, as well as other Work and incidental items necessary or convenient to the **Contractor** for the satisfactory prosecution and completion of the Work.

B. Equipment, materials, and products damaged during transportation or handling shall be repaired or replaced by the **Contractor** at no additional cost to the **County** prior to being incorporated into the Work. Acceptance of damaged goods is at the discretion of the **County**.

1.02 TRANSPORTATION

A. Equipment shall be suitably boxed, crated, or otherwise protected during transportation.

B. Where equipment will be installed using existing cranes or hoisting equipment, the **Contractor** shall confirm that the weights of the assembled sections do not exceed the actual capacity of the cranes or hoisting equipment.

C. Small items and appurtenances such as gauges, valves, switches, instruments, and probes that could be damaged during shipment shall be removed from the equipment prior to shipment, packaged, and shipped separately. Openings shall be plugged or sealed to prevent the entrance of water or dirt.

1.03 HANDLING

A. Equipment, materials, and products shall be carefully handled to prevent damage or excessive deflections during unloading or transportation.

B. Lifting and handling drawings and instructions furnished by the manufacturer or supplier shall be strictly followed. Eyebolts or lifting lugs furnished on the equipment shall be used in handling the equipment. Shafts and operating mechanisms shall not be used as lifting points. Spreader bars or lifting beams shall be used when the distance between lifting points exceeds that permitted by standard industry practice.

C. Under no circumstances shall equipment or products such as pipe, structural steel, castings, reinforcement, lumber, piles, poles, etc., be thrown or rolled off of trucks onto the ground.

D. Slings and chains shall be of size and capacity rating to safely support the weights of items to be unloaded. Slings and chains shall be regularly inspected and tagged as in good conditions in accord with OSHA requirements. Slings and chains shall be padded

as required to prevent damage to protective coatings and finishes.

+++END OF SECTION 01610+++

SECTION 01650
FACILITY STARTUP

PART 1 - GENERAL

1.1 RELATED SECTIONS

There are multiple section specifications related to this specification.

1.2 DEFINITIONS

A. Pre-Operational Checkout (Step 1): Preparation of documented physical checks shall verify that piping systems and items of equipment or equipment systems are ready for functional testing. Example components of pre-operational checkout /testing include, but are not limited to, the following:

1. Pressure and/or leakage tests, water-tightness of concrete structures and pipe testing

2. Electrical testing, resistance testing in accordance with NETA - Section 16T Electrical Acceptance Tests and Phase/motor rotation checks

3. Instrument calibration and loop tests as well as pre-operational check-out of instrumentation system controls

4. Pre-operational checkout of mechanical and HVAC equipment to include alignment, lubrication, and other checks, as recommended by the manufacturer

B. Functional Test (Step 2): A test or tests, in the presence of the **County**, to demonstrate that the installed equipment or system meets manufacturer's installation and adjustment requirements and other requirements.

The testing of the individual items of equipment within a system shall be performed under simulated operating conditions to determine contract compliance. This test shall utilize plant effluent, potable water, or another acceptable substitute test media. The equipment shall be operated long enough to gather information (data) on noise, temperature, vibration, performance characteristics, and to make initial adjustments of any applicable controls. Initial baseline data shall be gathered on equipment with motors greater than 1 horsepower, including amperage, bearing temperatures, and vibration.

The instrumentation and control field testing (loop checks from the field devices to PLC or distributed control systems, as well as field calibrations), shall be accomplished during the pre-operational checkout and functional testing stages as defined above.

C. Operational Test (Step 3): A test, performed in the presence of the **County**, of components within a system collectively to verify that the system and its integral components function as intended. Water and/or other temporary media supplied by the **Contractor** shall be circulated through the completed facility/system for 5 days with systems operating under various loading conditions, as proposed by the **Contractor** and approved by the **County**.

The instrumentation and control system automatic function for the overall system shall be verified and documented during the operational testing stage described above.

D. Punch List: Items that could affect, or be affected by, the full-time operation of the system (as deemed critical by the **County**) shall be complete prior to the operational test phase.

E. Acceptance Test (Step 4): The startup and operation of the systems installed, under actual operating conditions, as part of the actual plant process. The acceptance test period is 30 days. **County** O&M staff will be responsible for running the system with the **Contractor's** support team available for assistance 24/7. Upon completion of this commissioning period, the **Contractor** may apply for a Substantial Completion certificate meeting the contract and General Requirements.

F. Performance Test: All special tests, performed in the presence of the **County**, called for by the specific equipment or system specifications that are to be performed in addition to the installation and acceptance tests noted in this start-up specification (pre-operational checkout, functional testing, operational testing, and acceptance testing).

G. System: The overall process, or a portion thereof, that performs a specific function. A system may consist of two or more subsystems as well as two or more types of equipment. Examples of systems on this Project are as follows:

1. Pumps, motors, and controls

2. Instrumentation and control system(s)

H. Substantial Completion: The date certified by the **County** when the entire, or a part of, the Work as identified in the **County**'s certification:
1. Has been properly installed per the contract documents and manufacturer recommendations,
2. Has been deemed operational through the completion of the pre-operational checkouts, functional tests, operational tests,
3. Has had every test document with Operation and Maintenance manuals delivered,
4. Is sufficiently completed in accordance with the requirements of the Contract Documents, and
5. Has been demonstrated through the 30-day Acceptance Test, proving that the identified portion of the Work can reliably be utilized for the purposes for which it is intended.

1.3 SUBMITTALS

A. Administrative Submittals:

1. Functional and performance test schedules and plan for equipment, units, and systems at least 14 days prior to start of related testing. Include test plan, procedures, and log format.

2. Schedule and plan of facility startup activities at least 60 days prior to commencement.

B. Quality Control Submittals:

1. Manufacturer's authorized representative's signature shall be on the Certificate of Proper Installation, as required.

2. Functional and performance test reports, in a format acceptable to the **County** and certification of functional and performance test for each piece of equipment or system specified.

3. Certifications of calibration of testing equipment.

1.4 CONTRACTOR FACILITY STARTUP RESPONSIBILITIES

A. General:

1. The **Contractor** shall provide, at no expense to the **County**: power, fuel, compressed air supplies, water, and chemicals; as well as labor, temporary piping, heating, ventilating, and air conditioning or bypass pumping, for any areas where the Improved Facilities are not complete and operable at the time of Acceptance Testing and its prerequisites. **Contractor** shall provide other items and Work required to complete Acceptance Testing and its prerequisites. Temporary facilities shall be maintained until permanent systems are in service.

2. The **Contractor** shall provide necessary qualified operations personnel and manufacturers' field service personnel of the major equipment suppliers on an 8-hour-per-day basis at the facilities and on a 24-hour-per-day basis locally during the operational and acceptance test periods.

3. At no time during startup shall the **Contractor** allow the facility to be operated in a manner that subjects equipment to conditions that are more severe than the maximum allowable operating conditions for which the equipment was designed.

B. Tie-Ins or Modifications to Existing Systems – Work Plan:

1. Each time the **Contractor** ties into or modifies an existing system, a detailed Work plan shall be required. Submittal of this Work plan shall be a minimum of 30 days in advance of commencement of the subject Work. This Work plan shall include a detailed description of the Work, a step-by-step plan of the modification or tie-in, a detailed timeline schedule, a detailed list of materials and equipment required, demonstrated communications capacity, and a listing of gates or valves that shall be operated. Working drawings shall be submitted as required for any permanent or temporary structural modifications. A temporary safety plan covering the period of the Work, and a listing of contingency plans and supplies, including, but not limited to, spill prevention planning and spill containment kits, shall be required. The **Contractor**, the **County,** and the Designer shall hold coordination meetings with the **County's** water/sewer systems operations staff, as required, at least 30 days prior to the commencement of the modification or tie-in. A final coordination meeting shall be held to provide final detailed Work assignments to the involved parties, the day before the commencement of the modification or tie-in.

2. The **County** has the right to require, at no additional cost to the **County**, stand-by equipment on item(s) deemed critical enough to delay the Work. The **Contractor** shall have available stand-by personnel to supplement the committed forces, should problems arise. The **Contractor** shall be responsible for meeting OSHA standards, including entrance and exit safety, confined space entry, fall protection, scaffolding, rigging, etc.

C. **Contractor's** Startup Manager:

The **Contractor** shall appoint a qualified Startup Manager to manage, coordinate, and supervise the varied aspects of the **Contractor's** startup and testing program, including, but not limited to, those components of the program as listed with this Section. The Startup Manager shall have at least 5 years of total experience, or experience on at least five separate projects, in managing the startup and commissioning of mechanical, electrical, instrumentation, HVAC, and piping systems. **Contractor** shall submit the Startup Manager's resume for review and approval a minimum of 6 months prior to any testing, or prior to 50% completion of the first constructed system.

D. **Contractor's** Testing Team – Quality Assurance Manager:

1. The **Contractor's** Testing Team shall include at a minimum the Quality Assurance Manager, **Contracto**r**'s** Operations Specialist, qualified Mechanical/Equipment Foreman, qualified Electrical Journeyman, qualified Instrument Technician, and qualified/Certified Plant Operations personnel. The Operations specialist shall be a graduate from a minimum four-year course in mechanical, civil, or a related program of study. The operations specialist shall have equivalent documented experience in plant operations and maintenance.

2. The **Contractor** shall have the appropriate personnel, procedures, and test forms at the test site when performing a scheduled checkout/testing activity that shall be witnessed by the **County**.

E. Test Equipment:

1. All test equipment (gauges, meters, thermometers, analysis instruments, and other equipment) used for calibrating or verifying the performance of equipment installed under this contract shall be calibrated to within plus or minus 2 percent of actual value at full scale. Test equipment employed for individual test runs shall be selected so that expected values as indicated by the detailed performance specifications fall between 60 and 85 percent of full scale. Pressure gauges shall be calibrated in accordance with ANSI/ASME B40.1. Thermometers shall be calibrated in accordance with ASTM E77 and shall be furnished with a certified calibration curve.

2 Test instruments shall be calibrated to references traceable to the National Bureau of Standards and shall have a current sticker showing date of calibration, deviation from standard, name of calibration laboratory and technician, and date recalibration is required.

3. Calibration equipment/test instruments utilized for startup and testing shall be documented to include identification (by make, manufacturer, model, and serial number) of the test equipment, date of original calibration, subsequent calibrations, calibration method, and test laboratory as well as documentation of current calibration.

4. All analysis instruments, sensors, gauges, and meters used for performance testing shall be subject to recalibration to confirm accuracy after completion, but prior to acceptance of each performance test. All analysis instruments, sensors, gauges, and meters installed under this Contract shall be subject to recalibration prior to Acceptance.

5. Test equipment used to simulate inputs and read outputs shall have a rated

accuracy at the point of measurement at least three times greater than the component under test. Buffer solutions and reference fluids shall be provided as necessary for tests of analytical equipment.

1.5 COUNTY'S FACILITY STARTUP RESPONSIBILITIES

A. General:

1. Review **Contractor's** Testing and Startup Plans and schedule.

2. Witness each functional, operational (portions of), and performance test.

3. Coordinate other plant operations, if necessary, to facilitate **Contractor's** tests.

B. Startup Test Period:

1. Operate process units and devices, with support of **Contractor**.

2. Provide sampling, labor, and materials as required and provide laboratory analyses.

3. Make available spare parts, special tools, operation, and maintenance information for **County**-furnished equipment.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 STARTUP PROGRAM IMPLEMENTATION

A. Startup Meetings:

1. The **Contractor** shall schedule and conduct regular periodic startup meetings (separate from regular progress meetings). The startup meetings shall be held at least every 10 days (once startup planning commences) and may be scheduled at a more frequent interval by the **County** if necessary. Startup meetings shall be held at a location designated by the **Contractor** and approved by the **County**.

2. Startup meetings shall be attended by the **County**, **Contractor**, subcontractors as appropriate to the agenda, suppliers as appropriate to the agenda, and others as required.

3. The meeting agenda shall generally include:
    i. Review and approval of minutes of previous meeting
    ii. Review of Startup Schedule and progress since the previous meeting
    iii. Problems which impede delivery schedules and Startup Schedule
    iv. Field observations, problems, and conflicts
    v. Corrective measures and procedures to regain the Startup Schedule
    vi. Revisions to Startup Schedule, progress and schedule of the preceding Work period
    vii. Coordination of schedules, review of start-up submittal schedules and status, status of start-up related requests for information
    viii. All other business deemed appropriate and timely

B. Startup and Testing Schedule:

1. The **Contractor** shall produce an overall testing schedule setting forth the sequence contemplated for performing the test Work. The schedule shall be in bar chart form plotted against calendar time, shall detail the equipment and systems to be tested, and shall be coordinated with the Construction Schedule. The testing schedule shall show the contemplated start date, duration of the test, and completion of each test.

2. The preliminary test schedule shall be submitted with an overall Start-up Acceptance Test Plan. The **County** shall not witness any testing Work until the **Contractor** has submitted a schedule. The **County** takes no exception. The test schedule shall be updated weekly, and presented at each start-up meeting, showing actual dates of test Work, indicating systems and equipment testing completed satisfactorily and meeting the requirements of the Contract Standards. The test schedule shall re-forecast the upcoming testing and reflect any schedule adjustments accompanied by written reason for the change. The **Contractor's** baseline start-up and testing schedule shall be submitted with the overall test plan.

C. Documentation:

1. The **Contractor** shall develop a recordkeeping system to document activities associated with Acceptance Testing and its prerequisites.

2. Equipment and system documentation shall include date of test, equipment number or system name, nature of test, test objectives, test results, test instruments employed for the test, and signature spaces for witness by the **County**, the **Contractor's** Start-Up/Quality Assurance Manager, and the Equipment Manufacturer. A separate file shall be established for each system, organized by startup phase (i.e., pre-operational, functional, operational, acceptance test phase), and shall include sections for each item of equipment. These files shall include the following information and documentation at a minimum. Test plan and documentation organization shall be as described below.

D. Test Plan Organization:

1. Index

2. Schedule

3. Steps 1 and 2: Each type of equipment shall have its own section within the system and include the following:

   a. The detailed Pre-Operational test procedures

   b. The detailed Functional Test procedures

   c. Customized mechanical equipment, customized electrical, and customized instrumentation pre-operational and functional test forms, as applicable

   d. Other pre-operational test documentation as required for piping and mechanical equipment

4. Step 3: A separate section shall be created for the system operational testing and include the following:

a. The detailed 5-day operational test procedure

b. A detailed operational system check/sign-off sheet (based on system tests, control checks, and interlock checks to be performed)

c. System operational test completion sign-off form

d. Punch list form

5. Step 4: Another section shall be designated for the Acceptance Testing, including the following:

   a. Detailed Work plans, communications plan, safety plan, and contingencies, as well as other requirements

   b. Thirty-day test overview and proposed spreadsheet forms to be utilized by the **Contractor's** staff to record appropriate operational and performance data on a regular interval for the 30 days

   c. System acceptance test completion/sign-off form

6. The forms attached to this Section are samples showing the required format and level of detail for documentation. The **Contractor** is advised that these are samples only and are not specific to this project or to any item of equipment or system to be installed under this contract. The **Contractor** shall develop test documentation forms specific to each item of facilities, equipment, and systems installed under this contract. Acceptable example documentation forms for systems and items of equipment shall be produced and submitted for review and approval by the **County**. Submittal of Startup and Testing Plans are a condition precedent to the **Contractor's** receipt of progress payments in excess of 60%of the contract amount. Once the **County** has reviewed and taken no exception to the plans and forms proposed by the **Contractor**, the **Contractor** shall produce customized forms for each item of equipment and system and include these individual forms in the overall test plan that shall be submitted for approval.

7. The complete Test Plan and its sections shall be submitted 60 days prior to any testing and approved by the **County** prior to implementation (Code 1 or Code 1C).

3.2 TEST PLAN IMPLEMENTATION

. This program shall be implemented in four distinct steps.

3.3 STEP 1 - PRE-OPERATIONAL CHECKOUT AND TESTING

A. Pre-operational Checkout: This includes multi-discipline Work completion and physical checkout. The Pre-operational Completion Verification and Pre-operational test reports include the following required testing. Examples of these documented tests include, but are not limited to:

1. Field pressure/leakage test reports for pipes, valves, and appurtenances
2. Wire insulation megohm reports for 120V and greater wire

3. Phasing, ratio, polarity, ground resistance, current injection, insulation resistance, over potential test, and circuit breaker contact resistance reports for medium voltage switchgear
4. Insulation power factor and resistance test reports for surge arresters
5. Megger reports for Unit Substations, Three Winding Transformers, and 4160V motor control centers
6. Megger reports and ground connection tests
7. Loop Status Report and Component Calibration forms
8. Equipment installation checkout forms

B. Pipe Testing:

1. Prior to application of insulation on exposed piping, test the piping systems at the appropriate pressure according to the requirements of related piping specifications. All buried piping shall be tested prior to any backfill being placed, unless prior approval by the **County** is given in writing. Test duration shall be 120 minutes and witnessed by a **County** representative. Isolate equipment that may be damaged by the specified test conditions. Testing shall be performed using calibrated test gauges and calibrated volumetric measuring equipment to determine leakage rates. Each test gauge shall be selected so that the specified test pressure falls within the upper half of the gauge's range. Testing shall include existing piping systems that connect with new piping systems. Existing pipe shall be tested to the nearest existing valve. All piping that fails the test shall be repaired.

2. For gas, air, and vapor systems, the allowable leakage rate for systems tested with air shall be based on a maximum pressure drop of 5 percent of the specified test pressure for the duration of the period. Prior to starting a test interval using air, the air shall be at ambient temperature and specified test pressure. The allowable leakage rate for hazardous gas systems, insulated systems, and systems tested with water shall be zero at the specified test pressure throughout the specified test period. Hazardous gas systems shall include sulfur dioxide, chlorine, propane, sludge gas, and natural gas systems. Testing medium shall be as follows for gas, air, and vapor systems:

Pipeline size	**Specified test pressure**	**Testing medium**
2 inch and smaller	75 psi or less	Air or water
2 inch and smaller	Greater than 75 psi	Water
Greater than 2 inch	3 psi or less	Air or water
Greater than 2 inch	Greater than 3 psi	Water

3. For liquid systems, leakage shall be zero at the specified test pressure throughout the specified duration for exposed piping, buried insulated piping, and buried or exposed piping carrying liquid chemicals. Leakage from other buried liquid piping systems shall be less than 0.02 gallon per hour per inch diameter per 100 feet of buried piping. Drain systems, other than pumped drain systems, shall be tested in accordance with Georgia State Minimum Standards.

4. For hydraulic and lube oil systems, upon completion of cleaning, field connections shall be completed and the system tested at the specified pressure. Pressure loss shall be zero for the specified test period. For fluid power systems, the manufacturer shall supervise the installation and testing of system components including field

piping.

C. Pipe System Cleaning and Flushing:

1. Piping systems shall be cleaned following completion of testing and prior to connection to operating, control, regulating, or instrumentation equipment. The **Contractor** shall clean and test sections of buried or exposed piping systems. Unless specified otherwise, piping 24 inches in diameter and smaller shall first be cleaned by pulling a tightly fitting cleaning ball or swab through the system. Piping larger than 24 inches in diameter shall be cleaned manually or with a cleaning ball or swab.

2. Upon completion of the cleaning, the **Contractor** shall connect the piping systems to related process equipment. Temporary screens, provided with locator tabs that remain visible from the outside when the screens are in place, shall be inserted in pipelines at the suction of pumps and compressors in accordance with the following table:

Equipment suction or piping size, inches	**Maximum screen opening, inches**
0 to 1	1/16
1-1/4 to 3	1/4
3-1/2 to 6	1/2
Over 6	1

3. The **Contractor** shall maintain the screens during testing prior to the start of Acceptance testing. In special cases, screens may be removed as required for performance tests. Prior to the start of Acceptance Testing, the **Contractor** shall remove the temporary screens and make the final piping connections after the screens have remained clean for at least 24 consecutive hours of operation. Systems handling solids are exempted.

4. Gas and air system piping 6 inches in diameter and smaller shall be blown out, using air or the testing medium specified. Piping larger than 6 inches shall be cleaned by having a swab or "pig" drawn through the separate reaches of pipe. After connection to the equipment, it shall then be blown out using the equipment. Upon completion of cleaning, the piping shall be drained and dried with an air stream. Sludge gas, natural gas, and propane systems shall be purged with nitrogen and a nitrogen pad maintained at 10 psig until the piping is placed in service.

5. After completion of cleaning, liquid systems, unless otherwise specified, shall be flushed with clean water. With temporary screens in place, the liquid shall be circulated through the piping system using connected equipment for a minimum period of 15 minutes and until no debris is collected on the screens. Potable water piping systems shall be flushed and disinfected in accordance with AWWA C651-05.

6. Upon completion of field piping, but before connection to any control components, hydraulic and fluid power oil systems shall be flushed and cleaned by circulating special flushing oil through the system. Flushing oil and procedures shall comply with ASTM D4174. System shall be cleaned such that internal contamination of system, when tested using procedures specified in SAE J1227, Section 2.3, shall

not exceed the ACL. Unless otherwise specified, the ACL value shall be established by the manufacturer of the major hydraulic system components in accordance with SAE J1227, Section 9.1. System supplier shall provide certificate of compliance that the ACL has been met.

7. Cleaning/flushing fluids shall be disposed of in a lawful manner meeting Federal, State, and Local regulations.

8. The **Contractor** shall verify anchor bolt torque specifications on pipe harness and hangers.

D. Equipment Pre-Operational Checkout:

Equipment pre-operational checks and tests shall include, but are not limited to, the following:

1. Check for proper installation, alignment, support, and anchorage per the applicable manufacturer's operation and maintenance manual and in accordance with the Contract Documents.

2. Check the equipment for proper adjustment, packing of seals, lubrication, drive connection, motor connection, and belt/chain tension per the applicable manufacturer's operation and maintenance manual and in accordance with the Contract Documents.

3. Check the associated process, seal water, drain, and vent pipe connections for proper routing and connection. Check to make sure the pipe testing was performed and signed as completed for the associated piping.

4. Verify that the equipment is clean and free of any construction debris that could potentially cause a malfunction.

5. Warrant that safety guards, signage, and other safety measures such as hearing protection, etc., are in place.

6. Have the manufacturer's representative perform pre-operational tests per the manufacturer's recommendations and review the equipment installation and sign the manufacturer's installation portion of the certification form. If the manufacturer's representative brings his or her own checklist, obtain a copy of the completed form and attach it to the **Contractor's** completed forms. Note that the manufacturer shall also fill out the contract approved check-out form and that the manufacturer's own forms shall not serve as a substitute.

7. All gates and valves associated with the equipment system shall be checked for proper installation, adjustment, and lubrication, per the manufacturer's recommendations.

E. Concrete Tanks Pre-Operational Checkout:

1. Water-retaining concrete structures shall be tested for water tightness in accordance with ACI 350.1R. The maximum allowable leakage rate shall be 0.075 percent over a 24-hour period.

F. Electrical Pre-Operational Checks/Tests:

Prior to energizing electrical circuits, use a 1,000-volt megohmeter to measure insulation resistance on conductors and insulated parts of electrical equipment. Measurements shall meet or exceed the appropriate ICEA, NEMA, or ANSI standard. Any insulation resistance less than 10 megohms is unacceptable. Record results, as well as ambient temperature. See attached form for example.

1. Measure phase-to-ground insulation resistance for circuits 120 volts and above, with the exception of lighting circuits. Measurements may be made with motors and other equipment connected, except that solid state equipment shall be disconnected unless the equipment is normally tested by the manufacturer at voltages in excess of 1,000 volts DC.

2. Complete Test Form for each installed motor. Measure the insulation resistance of motors before connection. Measure the insulation resistance for motors at the time of delivery as well as when connected. Insulation resistance values less than 10 megohms are not acceptable.

3. Adjust protective devices and make operative. Perform a functional check of the control circuit prior to energizing the equipment.

4. Review associated electrical terminations, switches, and breakers for satisfactory installation.

G. Individual Component/Instrument Calibration Pre-Operational Check/Test:

1. Each instrument and final element shall be field calibrated in accordance with the manufacturer's recommended procedure. Instruments shall then be tested in compliance with ISA S51.1 and the data entered on the applicable test report form. Alarm trips, control trips, and switches shall be set to initial values specified in the design at this time. Final elements shall be checked for range, dead band, and speed of response.

2. Calibration of analysis instruments, sensors, gauges, and meters installed under this contract shall proceed on a system-by-system basis. No equipment or system operational, performance, or acceptance tests shall be performed until instruments, gauges, and meters to be installed in that particular system have been calibrated and the calibration Work has been witnessed by the **County**.

3. Testing of instrument process piping/tubing, wiring, and individual components shall be completed and documented on the approved test forms provided to the **County** as part of the pre-operational testing phase and prior to commencement of individual loop testing conducted during the pre-operational functional test phase.

4. All components that fail to meet the required tolerances shall be repaired or replaced by the manufacturer and the above tests repeated until the component is within tolerance.

5. System instrumentation equipment supplied and installed shall be reviewed for proper installation and termination as part of the pre-operational checkout.

H. Pre-Operational Checkout Summary:

1. The pre-operational checkout and testing for each item shall be carried out in

accordance with the **Contractor's** submitted and approved procedures and documented on the **Contractor's** approved pre-operational test forms.

2. The **Contractor** shall complete the pre-operational testing requirements listed above, at a minimum, for each item of mechanical, electrical, instrumentation, and HVAC equipment prior to beginning any functional testing with regard to the equipment or the systems in which the equipment functions.

3.4 STEP 2 - FUNCTIONAL TEST

A. General:

1. The second step in the program is the Functional Test. This is the functional testing of the equipment. These tests begin for each item of equipment only after the Pre-operational Checks have been completed for components for the particular equipment.

2. The functional testing for each item of equipment shall be carried out in accordance with the **Contractor's** submitted and approved procedures and documented on the **Contractor's** approved functional test forms.

3. Once affected equipment has been subjected to the required pre-operational testing procedures and the **County** has witnessed and has not found deficiencies in that portion of the Work, individual items of equipment and systems shall be started and operated under simulated operating conditions to determine as nearly as possible whether the equipment and systems meet the Contract Standards. If available, plant process media may be employed for the testing of liquid systems except gaseous, oil, or chemical systems. If not available, potable water shall be employed as the test medium. Test media for these systems shall be either the intended fluid or a compatible substitute. The equipment shall be operated for a sufficient period of time to determine machine operating characteristics, including noise, temperatures, and vibration; to observe performance characteristics; and to permit initial adjustment of operating controls. When testing requires the availability of auxiliary systems such as looped piping, electrical power, compressed air, control air, or instrumentation that have not yet been placed in service, the **Contractor** shall provide acceptable substitute sources, capable of meeting the requirements of the machine, device, or system at no additional cost to the **County**. Disposal methods for test media shall be subject to review by the **County**. During the functional test period, the **Contractor** shall obtain baseline operating data on equipment with motors greater than 1 horsepower to include amperage, bearing temperatures, and vibration. The baseline data shall be collected for use as needed.

4. Test results shall be within the tolerances set forth in the detailed specification sections of the Contract Documents and as indicated in the **Contractor's** functional test plan and the manufacturer's criteria. If no tolerances have been specified, test results shall conform to tolerances established by recognized industry practice. Where, in the case of an otherwise satisfactory functional test, any doubt, dispute, or difference should arise between the **County** and the **Contractor** regarding the test results or the methods or equipment used in the performance of such test, then the **County** shall have the right to order the test to be repeated at the **Contractor's** expense. Where the results of any functional test fail to comply with the Contract Standards for such test, then such repeat tests as may be necessary to achieve the Contract Standards shall be made by the **Contractor** at no additional expense to the **County**.

B. The **Functional Test** reports include the required testing. Examples of these types of reports include, but are not limited to:

   A. The Functional Field Test of valves

   B. The cycling/functions checks of the sluice gates, slide gates, weir gates, stop logs, and stop plates

   C. The leakage testing of sluice gates, slide gates, weir gates, stop logs, and stop plates in accordance with AWWA specifications

   D. Vibration, noise, and capacity testing of pumps and motors

   E. Air distribution and leakage test of any diffused air systems

   F. Loop functional test for Instrumentation and Control

C. Process/Mechanical/Equipment - (Functional Testing):

   1. During the **Functional Verification Check and Testing** process, the **Contractor** and the various Manufacturers' Technical representatives shall examine and record the initial start-up performance of the components provided by their respective firms in accordance with the **Contractor's** approved functional test procedure.

   2. The initial operation, testing, and adjustment shall be as required to prove that the equipment has been installed properly and operates under the conditions specified.

   3. Upon completion of this Work, the manufacturer's field service technician shall complete the **Contractor's** approved functional test form as well as their own signed report to record the results of the inspection, operation, adjustments, and tests. The report shall include detailed descriptions of the points inspected, tests, and adjustments made; quantitative results if such are specified; and suggestions for precautions to be taken to maintain proper maintenance.

D. Electrical - (Functional Testing):

   1. The **Contractor's** electrician shall be present during testing to confirm the electrical, provide troubleshooting assistance, repair as needed, and assist in gathering baseline data such as motor amperages.

   2. Energize each control circuit and operate each control, alarm, or malfunction device; and each interlock in turn to verify that the specified action occurs. The **Contractor** shall submit a description of the proposed functional electrical test procedures as part of the testing plan.

   3. Verify that motors are connected to rotate in the correct direction. Verification may be accomplished by momentarily energizing the motor, provided the **Contractor** confirms that neither the motor nor the driven equipment shall be damaged by reverse operation.

E. Instrumentation and Control - (Functional Testing):

   1. The **Contractor's** instrumentation representative shall be onsite full time during the functional test phase to perform loop checks and to support the **Contractor's** start-up team as needed. Any packaged equipment or manufacturer-supplied control panels shall be field tested to verify control interlocks and control functions during this phase of testing by the equipment supplier. Note that the **Contractor's**

functional test procedure for each piece of equipment shall define each interlock to be tested.

2. Each instrument loop shall be tested. This testing shall check operation from transmitter to readout components. Signals shall be generated utilizing the primary measuring elements where possible. Signals shall be injected only if the primary element is unavailable.

3. If any output device fails to indicate properly, corrections to the loop shall be made as necessary and the test repeated until instruments operate properly.

F. Functional Testing Summary:

The functional testing for each item of equipment, electrical, and instrumentation shall be carried out in accordance with the **Contractor's** submitted and approved procedures and documented on the **Contractor's** approved functional test forms.

3.5 STEP 3 – OPERATIONAL TESTING

A. The third step in the program is the Operational Testing. This step begins after Pre-operational checks and Functional tests have been satisfactorily completed. The **Contractor** shall plan activities to allow for **County's** witnessing of tests and shall provide 24 hours' advance notice of testing activities.

B. The **Contractor's** operational test plan shall be a detailed procedure to confirm System Automatic Mode functions, verify system interlocks, and reconfirm equipment functions and controls. Design and performance criteria shall be demonstrated and documented during this five-day period. The **Contractor's** manufacturer, electrical, and instrumentation representatives shall be onsite on an 8-hour-a-day basis and locally on a 24-hour-a-day basis during this period.

C. In the event of failure to demonstrate satisfactory performance of the system on the first or any subsequent attempt, necessary alterations, adjustments, repairs, and replacements shall be made. When the system is again ready for operation, it shall be brought online and a new test shall be started. This procedure shall be repeated as often as necessary until the system has operated continuously to the satisfaction of the **County**, for the specified duration.

3.6 STEP 4 – ACCEPTANCE TESTING

A. The fourth step in the program is Acceptance Testing. The acceptance test period shall not begin until new systems and equipment have successfully completed the operational test period.

B. The Operations and Maintenance staff shall receive spare parts, safety equipment, tools and maintenance equipment, lubricants, approved operation and maintenance data, and the specified operation and maintenance instruction prior to the startup with plant process media. Valve tagging shall also be complete prior to this startup.

C. As part of the acceptance test plan, the **Contractor** shall submit detailed Work plans, communications plan, safety plan, contingencies, and other requirements.

D. In addition, a 30-day test overview and proposed spreadsheet forms shall be utilized by

the **Contractor's** operations staff to record appropriate operational and performance data on a regular interval for these 30 days.

E. Prerequisites:

Prior to the **County's** issuance of a Certificate of Substantial Completion for Design/Build Improvements, the **Contractor** shall perform Acceptance Testing. Acceptance Testing and the Acceptance Test Plan shall comprehensively cover potential modes of operation, including failure scenarios, as well as the operation of ancillary systems, to demonstrate full functionality of the Improved Facilities. Any failures of process, equipment, or systems shall result in restarting the acceptance testing period. The testing period shall be a minimum of 30 days of continuous operation, during which the facility shall meet the following criteria:

1. Continuous satisfactory operation at the rated capacity

2. Operation without violating the Contract Standards

3. Operation without creating a materially unsafe condition, nuisance condition or unacceptable risk to personnel, facilities or the public

4. Operation without producing biosolids products, air or water emissions, traffic, noise, odors, or other environmental impacts that the **County**, in its sole discretion, determines to be unacceptable to public safety, health or welfare

5. All portions of the acceptance test phase shall be carried out by qualified/certified operations personnel (supplied by the **Contractor**) that have a thorough knowledge of the process and can fully implement and document the facility performance as well as the **Contractor's** acceptance test plan.

6. Instrumentation Acceptance Test:

    a) The instrument loop acceptance test shall fully demonstrate stable operation of the loop under normal operating conditions. This test shall be witnessed by the **County**, performed, and documented by the Instrumentation System Supplier.

    b) Tuning parameters (proportional gain, integral time constant, and derivative time constant) for each control loop shall be adjusted to provide 1/4 amplitude damping unless otherwise specified and witnessed during system supplier factory testing.

F. Flow Meters:

Liquid flow meters, including open channel flow meters and meters installed in pipelines with diameters greater than 2 inches shall be calibrated *in situ* using either the total count or dye dilution methods. Gas flow meters installed in piping systems with diameters greater than 6 inches shall be calibrated *in situ* using the Pitot tube velocity averaging method. Flow meter calibration Work shall be performed by individuals skilled in the techniques to be employed. Calibration tests for flow metering systems shall be performed over a range of not less than 10 percent to at least 75 percent of system full scale. At least five confirmed valid data points shall be obtained within this range and witnessed by the **County**. Confirmed data points shall be validated by not less than

three test runs with results that agree within plus or minus 2 percent.

G. In the event of failure to demonstrate satisfactory performance of the system on the first or any subsequent attempt, necessary alterations, adjustments, repairs and replacements shall be made. When the system is again ready for operation, it shall be brought online and a new test shall be started. This procedure shall be repeated as often as necessary until the system has operated continuously to the satisfaction of the **County**, for the specified duration.

H. Completed operational test forms shall be placed into the master record test plan binder and provided to the **County** prior to acceptance.

+++END OF SECTION 01650+++

SECTION 01800
MAINTENANCE

PART 1 - GENERAL

1.01 DESCRIPTION

A. **Contractor** shall maintain stored and installed equipment and materials until Final Acceptance of the Work as defined by the General Requirements. Work includes, but is not limited to:

1. Perform required maintenance.

2. Repair and maintain protective coatings.

3. Repair and replace scratched and damaged materials and equipment.

4. Maintain and operate new equipment placed into service.

B. Work, per this Section, starts on the date the equipment and materials are received and continues until the Date of Final Acceptance.

C. **Contractor** shall monitor equipment storage, and subsequently, the operation and material functionality on a continual basis during the specified time period. Deterioration of materials or malfunction of equipment shall be followed by swift repair action to minimize the damage. Such repair shall include repair and technical services by an independent contractor if the **County** deems the **Contractor's** efforts are ineffective at correcting the problem.

D. All costs for maintenance and repair of stored and installed equipment and materials, including costs from an independent contractor, during the specified time period shall be the sole responsibility of the **Contractor**.

+++END OF SECTION 01800+++

SECTION 02000
SITE WORK

PART 1 - GENERAL

1.01 DESCRIPTION

These general site work requirements apply to all site work operations. Refer to specification sections for specific product and execution requirements.

1.02 QUALITY ASSURANCE

A. Comply with all applicable local, state, and federal requirements regarding materials, methods of work, and disposal of excess and waste materials.

B. Obtain and pay for all required inspections, permits, and fees. Provide notices required by governmental authorities.

1.03 PROJECT CONDITIONS

A. Locate and identify existing underground and overhead services and utilities within contract limit work areas. Provide adequate means of protection of utilities and services designated to remain. Repair utilities damaged during site work operations and all cost associated with the damaged utility are the **Contractor's** expense.

B. Arrange for disconnection disconnect and seal or cap all utilities and services designated to be removed or abandoned before start of site work operations. Perform all work in accordance with the requirements of the applicable utility company or agency involved.

C. When uncharted or incorrectly charted underground piping or other utilities and services are encountered during site work operations, notify the **County** and the applicable utility company immediately to obtain procedure directions. Cooperate with the applicable utility company in maintaining active services in operation.

D. Locate, protect, and maintain benchmarks, monuments, control points, and project engineering reference points. Reestablish disturbed or destroyed items at the **Contractor's** expense.

E. Perform site work operations and the removal of debris and waste materials to assure minimum interference with streets, walks, and other adjacent facilities.

F. Obtain governing authorities' written permission when required to close or obstruct street, walks, and adjacent facilities. Provide alternate routes around closed or obstructed traffic ways when required by governing authorities.

G. Control dust caused by work. Dampen surfaces as required. Comply with pollution control regulations of governing authorities.

H. Protect existing buildings, paving, and other services or facilities on site and adjacent to the site from damage caused by site work operations. Cost of repair and all cost associated with the damages including restoration of damaged items are at Contractor's expense.

I. Protect and maintain streetlights, utility poles and services, traffic signal control boxes, curb boxes, valves and other services, except items designated for removal. Remove or coordinate the removal of traffic signs, parking meters, and postal mailboxes with the applicable governmental agency. Provide for temporary relocation when required to maintain facilities and services in operation during construction work.

J. Preserve from injury or defacement all vegetation and objects designated to remain.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

Materials and equipment: As selected by the **Contractor**, except as indicated in contract documents.

PART 3 - EXECUTION

3.01 PREPARATION

A. Examine the areas and conditions under which site work is performed. Do not proceed with the work until unsatisfactory conditions are corrected.

B. Consult the records and drawings of adjacent work and of existing services and utilities that may affect site work operations.

END OF SECTION 02000

SECTION 02050
DEMOLITION

PART 1 - GENERAL

1.01 SCOPE

A. General:

1. This section covers the labor, equipment, and materials necessary for the work associated with the demolition or removal of pipes, manholes, catch basins, pavement, houses, and other structures within the construction easements shown on the Plans, including all necessary excavation and backfilling.

2. Where removing structural tile and brick from existing structures, the work shall include all patching and reconditioning to restore the remaining tile or brick to its existing state and to provide a proper joint for joining the existing to new construction.

3. Where concrete is cut from existing structures under this Section to permit setting or inserting pipes, flumes, equipment or appurtenances, the work shall include all re-concreting, dressing and finishing of openings to the required lines and dimensions or as necessary for the placing and fixing of inserts. This repair is to meet all structural and leakage requirements and shall use non – shrink material.

4. The **Contractor** shall remove from existing structures and salvage, store or dispose of as specified hereinafter, all valves and piping, mechanical equipment, plumbing, heating, electrical, and ventilating fixtures, pipes, ducts, wires, and equipment, doors and windows, floor grating and cover plates, steel stairs, pipe railing, and the like that are not to remain in service in the finished work, whether or not shown on the Drawings and/or specified herein.

5. The work specified herein and shown on the Drawings is intended to give a general idea of the scope of this work but must not be construed as covering it entirely. The **Contractor** shall visit the site and judge the amount of work required and the problems anticipated in the performance of the work.

6. Requirements for removal and abandonment of site utilities are specified in Section 02000.

B. Asbestos Abatement:

1. The **Contractor** shall furnish all labor, materials, facilities, equipment, services, employee training and testing, and waste transportation and disposal for the removal of asbestos-containing materials (ACM) at the

site of the Work. Asbestos could possibly be encountered in demolition of houses, structures, and piping to be demolished.

2. All asbestos removal work shall be performed in accordance with the requirements established by the EPA, OSHA, Georgia Department of Transportation, NIOSH and State of Georgia EPD regulations; and any other applicable Federal, State and local regulations governing ACM abatement. Whenever there is a conflict or overlap of the above references, the most stringent provisions shall apply.

3. The **Contractor**, or an asbestos abatement subcontractor acceptable to the **County**, must be licensed in Georgia to perform asbestos abatement and meet other qualification requirements specified in this section. The **Contractor** shall include a program for protective equipment, breathing apparatus, work area security, and all other aspects dealing with health and safety in his Health, Safety, and Security Plan. This information may be called for elsewhere in these Specifications, however a submittal is required.

C. Related Work Specified Elsewhere:

1. Section 01210 - Measurement and Payment
2. Section 02000 - Site Work

1.02 SUBMITTALS

A. Submittals shall be made in accordance with the requirements of the General Requirements of the Contract Documents and Section 01300 Submittals. In addition, the following specific information shall be provided:

1. The **Contractor** shall submit to the **County** a schedule of demolition, detailed methods of demolition to be used for each structure, copies of authorization, and permits to demolish the structures.

PART 2 - PRODUCTS

2.01 GENERAL

A. The **Contractor** shall provide all materials and equipment in suitable and adequate quantities as required to accomplish demolition work.

PART 3 - EXECUTION

3.01 SAFETY REQUIREMENTS

A. All work shall be performed in conformance with the laws and regulations pertaining to safety established by Federal, State, and local governments and other authorities having jurisdiction.

3.02 UTILITIES

A. The **Contractor** shall be responsible for maintaining all appropriate utility services during the demolition operations.

B. Sewer lines shall be removed or grouted for their entire lengths, and plugged at both ends with concrete to prevent groundwater infiltrating into the sewer line.

C. Total shutdown of the existing utilities to perform any new construction, to make the required structural or piping modifications, and/or to make or install the required service or system modifications, will not be permitted, except by written request and approval of the **County**.

D. Prior to making any piping or connections or modifications to existing facilities, the **Contractor** shall obtain specified timing and schedule approval from the **County**.

3.03 EQUIPMENT TO BE SALVAGED BY THE COUNTY

A. The following is a partial list of materials to be removed and salvaged. The **County** will identify other materials to be salvaged during the course of the Work. Equipment on this list will be removed by the **Contractor** before the demolition work begins and delivered to a site specified by the **County**.

1. Frames, Grates, and Manhole Covers
2. Fire Hydrants
3. Valves
4. Pumps
5. Meters
6. Backflow Devices

3.04 REMOVAL AND STORAGE OF EQUIPMENT FOR REUSE

A. No structure shall be removed without the approval and consent of the **County** unless shown on the Plans to be removed. The **Contractor** shall maintain all equipment in the same condition as when it was removed. The condition of the structure shall be determined prior to removal by the **County**. The **Contractor** assumes the responsibility for assuring that the material is properly stored and maintained.

3.05 DEMOLITION

A. The Plans define the portion of the structures to be removed. Unless otherwise shown on the Plans, the **Contractor** shall not make rough cuts or breaks that exceed the limits of demolition shown.

B. All equipment, materials, and piping, except as specified hereinbefore, within the limits of the demolition shall become the property of the **Contractor**.

3.06 REMOVAL OF EXISTING PIPING

A. Where existing piping is in conflict with new piping or construction, rerouting or redesign shall be as directed by the **County**.

3.07 REMOVAL OF ASBESTOS-CONTAINING MATERIALS

A. The **Contractor** shall provide all services to perform the work as follows:

1. Remove asbestos containing materials as required by applicable codes and regulations.

2. Isolate each work area and erect temporary staging, containment barriers, and decontamination facilities as required.

3. Remove all ACM from the work area.

4. Thoroughly clean each work area and perform clearance air testing using NIOSH Method 7400.

5. Remove all temporary staging, partitions, and other items installed to perform the work.

6. Dispose of ACM in accordance with applicable Federal, State, and local laws and regulations.

3.08 BACKFILLING

A. The **Contractor** shall backfill all demolished areas to existing ground level as to create positive sheet runoff.

B. Backfill material shall meet the requirements of Section 02315 - Excavation and Backfill, as applicable. Backfill compaction shall be in accordance with the applicable requirements of Section 02324 – Trenching and Trench Backfilling and Section Structures. Rock and debris shall not be used as backfill material. In all areas not backfilled to ground level, the **Contractor** shall erect safety barriers around the excavation and not allow water to accumulate.

3.09 DISPOSAL OF DEMOLITION DEBRIS

A. The **Contractor** shall dispose of demolition debris in accordance with the requirements of Section 02000 - Site Work.

+++ END OF SECTION 02050 +++

SECTION 02060
CRUSHED STONE AGGREGATE

PART 1 - GENERAL

1.01 SCOPE

A. This section includes installation of crushed stone aggregate; and any other similar, incidental, or appurtenant operation that may be necessary to properly complete the Work.

B. The **Contractor** shall provide all services, labor, materials, and equipment required for all installation of crushed stone aggregate and related operations necessary or convenient to the **Contractor** for furnishing complete Work as shown on the Plans or specified in these Contract Documents.

C. Related Work Specified Elsewhere:

1. Section 01210 - Measurement and Payment
2. Section 02324 - Trenching and Trench Backfilling
3. Section 02510 - Pavement Repairs
4. Section 02920 - Site Restoration
5. Section 03300 - Cast-In-Place Concrete

1.02 SUBMITTALS

Submittals shall be made in accordance with the requirements of the General Requirements of the Contract Documents and Section 01300.

1.03 QUALITY ASSURANCE

A. Reference Standards: The **Contractor** shall comply with the applicable provisions and recommendations of the latest editions of the following standards, except as otherwise shown on the Plans or specified in these specifications.

1. AASHTO M147 - 65 - 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.
3. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
4. ASTM D698 – 00a - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3; 600 kN-m/m3).
5. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soils Using Modified Effort (56,000 ft-lbf/ft3; 2,700 kN-m/m3).
6. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

7. ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Coarse aggregate shall be crushed stone of a quality equal to the best Stone Mountain Granite, of solid composition, free from dirt and adherent coatings, and suited for the class of its intended usage.

B. Unless otherwise specified elsewhere in these Specifications or directed by the **County**, gradation of coarse aggregate shall conform to size Number 467, Number 57, or Number 67 as described in ASTM C33.

C. The nominal maximum size of coarse aggregate used in concrete shall not be larger than one-fifth (1/5) of the narrowest dimension between sides of the forms, one-third (1/3) of the depth of slabs, or three-fourths (3/4) of the minimum clear spacing between reinforcing bars as described in ACI 68-50.

D. Sand shall be clean and sharp, free from all deleterious substances, and shall conform to the requirements of ASTM C33.

PART 3 - EXECUTION

3.01 EXAMINATION

The **Contractor** shall verify that subgrade has been inspected and that gradients and elevations are correct and dry.

3.02 AGGREGATE PLACEMENT

A. The **Contractor** shall place coarse aggregates in areas shown on the Plans or directed by the **County**.

B. The **Contractor** shall place and compact coarse aggregate in accordance with the requirements of Section 02315 - Excavation and Backfill for Structures and Section 02324 - Trenching and Trench Backfilling.

C. The **Contractor** shall level and contour surfaces to elevations and gradients indicated on the Plans.

D. The **Contractor** shall add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

E. The **Contractor** shall add water to assist compaction. If excess water is apparent, the **Contractor** shall remove aggregate and aerate to reduce moisture content.

F. The **Contractor** shall use mechanical vibrating tamping in areas inaccessible to compaction equipment.

3.03 TOLERANCES

A. Flatness: Maximum variation of one-quarter (¼) inch measured with a ten- (10-) foot metal straight edge.

B. Scheduled Compacted Thickness: Within one-quarter (¼) inch.

C. Variation from True Elevation: Within one-half (½) inch.

D. Base: Compacted to ninety-five (95) percent modified proctor density as determined by ASTM D1557.

+++ END OF SECTION 02060 +++

SECTION 02100
SITE PREPARATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This Section covers clearing, grubbing, and stripping of the construction site, complete as specified.

B. Clear and grub all of the area within the limits of Construction or as required. The area to be cleared shall be approved by the Owner's Representative prior to the beginning of any clearing.

C. Attention is directed to any Soil Erosion and Sediment Control Ordinances in force.

1.02 RELATED WORK

A. Section 02221: Excavation, Backfill, Fill, and Grading for Pipe

B. Section 02125: Temporary and Permanent Erosion and Sediment Control

PART 2- PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SILTATION CONTROL

Before any clearing and grubbing operations, install all sedimentation and erosion control items.

3.02 TREES TO REMAIN

Prior to starting work, protect trees outside the contract limits with temporary fences, boxing, or other protective barrier. Areas under spread of branches shall not be used for any purpose likely to damage trees including parking or driving of vehicles.

3.03 CLEARING

Clearing consists of the removal of all exposed objectionable matter such as trees, brush, stumps, logs, grass, weeds, roots, organic matter, poles, stubs, rubbish, refuse dumps, sawdust piles, loose boulders of one cubic yard and other debris resting on or protruding through the ground surface. Clearing may be done by any method the **Contractor** elects to use, provided no damage is

done to property, trees, or shrubbery to be retained in, or outside, the Limits of Construction.

3.04 GRUBBING

Grubbing shall consist of the complete removal of all objectionable matter defined under Clearing, which is embedded in the underlying soil. Objectionable roots are defined as matted tree and brush roots, regardless of the size of the roots, and individual roots more than 3/4" in diameter. All grubbed items shall be removed to a minimum depth of 24" below subgrade.

3.05 STRIPPING

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

3.06 DISPOSAL OF CLEARED AND GRUBBED MATERIAL

The cost of disposal (including hauling if necessary) of cleared and grubbed material and debris shall be considered a subsidiary obligation; the cost of which shall be included in the contract prices. The **contractor** shall be responsible for obtaining necessary permits allowing him to burn material and debris on site in a safe manner. The **contractor** shall insure that no damage to adjacent trees, property owners or building shall be incurred.

3.07 PRESERVATION OF TREES

Those trees which are designated for preservation by the Owner shall be carefully protected from damage. Erect such barricades, guards and enclosures for the protection of the trees during all construction operations.

3.08 PRESERVATION OF DEVELOPED PRIVATE PROPERTY

A. Exercise extreme care to avoid causing any unnecessary disturbance to developed private property bordering construction.

B. All soil preservation procedures and replanting operations shall be completed under the supervision of a nursery representative experienced in such operations.

C. Improvements to the land such as fences, walls, outbuildings and other structures which, if necessary, must be removed, shall be replaced with equal quality materials and workmanship.

3.09 ACTIVE UTILITIES

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

3.10 EXISTING SERVICE

Disconnect or arrange for the disconnection of utility service in accordance with regulations governing the utility concerned and as shown on the drawings or which interfere with the work.

3.11 BENCH MARKS

Maintain carefully all benchmarks, monuments, and other reference points. If disturbed, replace as directed by the Engineer.

END OF SECTION 02100

SECTION 02110
CLEARING AND GRUBBING

PART 1 - GENERAL

1.01 SCOPE

A. Work described in this Section includes furnishing all labor, materials, equipment, tools, and incidentals required for all clearing and grubbing including, but not limited to, the removal from the Site of trees, stumps, roots, brush, structures, abandoned utilities, trash, debris, and all other materials found on or near the surface of the ground in the construction area and understood by generally accepted engineering practice not to be suitable for construction of the type contemplated.

B. The extent of route clearing is that minimum degree of clearing necessary to carry out all construction activities, including construction of appurtenances and other additional clearing needed for access purposes. The route clearing shall not exceed the easement, temporary easement, or the signed right of entry agreement.

C. Clearing and grubbing operations shall be coordinated with temporary and permanent erosion control requirements.

D. Clearing operations include, but are not limited to, the following:

1. Protection of existing trees and other vegetation,
2. Removal of trees and other vegetation,
3. Clearing,
4. Removing above-grade improvements,
5. Removing underground improvements,
6. Restoring damaged improvements,
7. Protecting above-grade and underground improvements,
8. Erosion control of disturbed areas.

E. Related Work Specified Elsewhere:

1. Division 1, General Requirements.
2. Section 02125, Temporary and Permanent Erosion and Sediment Control
2. Section 02050, Demolition
4. Section 02200, Earthwork

1.02 JOB CONDITIONS

A. Protection of Existing Improvements:

1. Provide barricades, coverings, or other types of protection necessary to prevent damage to existing improvements.

2. Protect improvements on adjoining properties as well as those on the project site. Restore existing improvements damaged by this work to their original condition, as acceptable to the **County** or property owner, as required. Replace property line monuments (such as iron pins) removed

or disturbed by clearing operations under the direction of a Land Surveyor licensed in the State of Georgia. A submittal is required with data showing the survey and sealed by the licensed land surveyor.

B. Protection of Existing Trees and Vegetation:

1. Protect existing trees and other vegetation to avoid cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip lines, foot or vehicular traffic, and parking of vehicles or equipment within drip line. Provide temporary fences, barricades, or guards as required to protect trees and vegetation that will be left standing.

2. Provide protection for tree roots over one and one-half (1-1/2) inches in diameter that are cut during any construction operation. Coat the cut faces with emulsified asphalt or other acceptable coating that has been specially formulated for horticultural use on cut or damaged plant tissues. Temporarily cover all exposed tree roots with wet burlap to prevent roots from drying out; provide earth cover as soon as possible.

3. Repair or replace damaged trees and vegetation resulting from any construction operation in a manner acceptable to the **County**. A qualified arborist approved by the **County** shall perform tree damage repair at no cost to the **County**. Replace damaged trees that cannot be repaired and restored to full-growth status, as determined by the **County**.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 EXISTING TREES AND VEGETATION

Avoid cutting or injuring trees and vegetation outside easement line and outside areas to be cleared. The **Contractor** shall be responsible for damages outside these lines.

3.02 CLEARING AND GRUBBING

A. Clearing operations shall begin no more than seven (7) days before beginning construction work for any area.

B. Materials to be cleared, grubbed and removed from the project site include but are not limited to vegetation, trees, stumps, roots, lawns, shrubbery, gardens, paving, miscellaneous structures, debris, and abandoned utilities to the minimum practicable extent to complete the work. Limit clearing to a single lane work route without provision for construction vehicles to pass utility operation. Determine and stake limitations of construction easement or right-of-way prior to commencement of work and keep construction activity within such limits.

C. Grubbing shall consist of completely removing roots, stumps, trash, and other debris from all areas to be graded so that topsoil is free of roots and debris. Topsoil is to be left sufficiently clean so that further picking and raking will not be required.

D. All stumps, roots, foundations, and planking embedded in the ground shall be

removed and disposed of. Stumps and roots larger than one (1) inch shall be grubbed and removed to a depth not less than four (4) feet below grade. All holes or cavities that extend below the subgrade elevation of the proposed work shall be filled with crushed rock or other suitable material, compacted to the same density as the surrounding material. Piling and butts of utility poles shall be removed to a minimum depth of two (2) feet below the limits of excavation for structures, trenches and roadway subgrade or two (2) feet below finish grade, whichever is lower.

E. Landscaping features shall include, but are not necessarily limited to: fences, cultivated trees, cultivated shrubbery, property corners, man made improvements, subdivision, and other signs shall be moved off the easement. The **Contractor** shall take extreme care in moving landscape features and shall reestablish these features as directed by the **County.**

F. Surface rocks and boulders shall be grubbed from the soil and removed from the site or used as fill in accordance with Section 02200 - Earthwork.

G. Where the tree limbs interfere with utility wires, or where the trees to be felled are in close proximity to utility wires, the tree shall be taken down in sections to eliminate the possibility of damage to the utility.

H. Any work pertaining to utility poles shall comply with the requirements of the appropriate utility.

I. All fences adjoining any excavation or embankment that, in the **Contractor's** opinion, may be damaged or buried, shall be carefully removed, stored, and replaced. Any fencing that is damaged shall be replaced with new fence material of equal or better quality and construction. The **Contractor** shall be responsible for the new fence material cost if the **County** deems the **Contractor** was negligent.

J. Stumps and roots shall be grubbed and removed to a depth not less than two feet below grade. All holes or cavities that extend below the subgrade elevation of the proposed work shall be filled with crushed rock or other suitable material, compacted to the same density as the surrounding material

K. Burying or burning of residual materials and organics shall not be allowed.

L. The **Contractor** shall utilize special precautions required for the protection and preservation of trees, cultivated shrubs, sod, fences, etc. situated within the construction area but not directly within excavation and/or fill limits. The **Contractor** shall be responsible for repair or replacement of any items damaged as a result of its operations.

M. Remove lawn sod by cutting into maximum size that can be handled without tearing, stripping sod and underlying topsoil, and stockpiling for use in restoring the surface area. Water sod and otherwise maintain sod in viable, growing condition. Alternative means of lawn sod replacement may be approved by the **County**.

N. Remove above-grade structures only where shown on the Drawings or as authorized by the **County**.

3.02 HOLES AND DEPRESSIONS

A. Fill holes, depressions, and voids created or exposed by clearing operations with non-organic soil material approved by the **County**, unless further excavation or earthwork is indicated.

B. Place fill material in horizontal layers not exceeding six (6) inches loose-depth and compact to a ninety-five (95) percent standard Proctor.

3.03 DISPOSAL OF WASTE MATERIALS

A. Disposal General Requirements: Dispose cleared matter daily so as to maintain site in a safe and neat condition throughout the contract period. Owners of the property may remove merchantable timber, buildings, or other items from the work site before the **Contractor** begins operations, and no assurance exists that any such material will be on the work site when the **Contractor** begins work.

B. On-Site Disposal:

1. When authorized by the **County**, cut tree trunks and limbs, over two inches in diameter, into forty-eight- (48-)inch lengths and neatly stack within work limits on the same property as that on which the tree originally grew.

2. On undeveloped property, distribute brush, trees, and limbs less than two inches in diameter, within the work area from which cut, as directed by the **County**. On developed property, remove all such clearing waste and properly dispose of it off-site.

C. The debris resulting from the clearing and grubbing operation shall be hauled to a disposal site secured by the **Contractor** and shall be disposed of in accordance with all requirements of federal, state, county and municipal regulations. No debris of any kind shall be deposited in any stream or body of water, or in any street or alley. No debris shall be deposited upon any private property except with written consent of the property owner. In no case shall any material or debris be left on the project site, shoved onto abutting private properties, or buried on the project site.

3.04 CONSTRUCTION ACCESS ROUTE ON EASEMENT

A. When shown on the Drawings or directed by the **County**, a construction access route shall be built on the sewer easement for the purpose of accessing manholes and performing all other necessary work within the easement.

B. The Construction access route shall be cut (10) ten feet wide, minimum, and (6) six inches deep below existing grade. Filter fabric shall be placed at the bottom of the cut, and surge stone shall be placed on top of the fabric, filling the six- (6-) inch depth along the roadway.

C. The filter fabric for use under the stone shall be as specified in Section 02125.

D. Surge stone shall be 4” to 6” size (4X6) rip rap type stone, or equivalent. Use sound, tough, durable stones resistant to the action of air and water. Slabby or shaley pieces will not be acceptable. Specific gravity shall be two (2.0) or greater.

Stones shall have less than sixty-six (66) percent wear when tested in accordance with AASHTO T-96.

3.06 TREE REMOVAL ON EASEMENTS

A. The contractor shall confirm ownership of all on-site trees within the easement before work commences and submit a tree removal and disposal plan to the **County**.

B. The **County**'s written approval shall be obtained prior to the removal of any trees from the easement.

C. All trees that need further processing (wood chips) on-site or disposal off-site must be processed or disposed of in conformance with Federal, State, and local rules and regulations.

D. The **Contractor** must acquire any additional permits prior to commencement of any type of work done in the easement

E. Stemmed vegetation, such as brush, shrubs, and trees shall be removed at or near the ground level, leaving the root systems intact.

F. Trees shall be felled into the cleared construction area or areas to be cleared and not onto vegetation that will be preserved.

G. Trees that have fallen into water bodies, or beyond the construction area, shall be removed immediately. All damage and remediation costs shall be the **Contractor's** responsibility.

+++ END OF SECTION 02110 +++

SECTION 02125
TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This section includes requirements for the provision, maintenance, and subsequent removal of temporary and/or permanent erosion and sediment controls as shown on the approved plans.

B. The temporary erosion and sediment controls specified herein shall be coordinated with the permanent erosion controls, to assure economical, effective, and continuous erosion and sediment control during construction within acceptable limits. Acceptable limits are as established by the Georgia Erosion and Sedimentation Control Act of 1975, as amended, Section 402 of the Federal Clean Water Act, and applicable codes, ordinances, rules, regulations, and laws of local and municipal authorities having jurisdiction.

C. Land disturbance activities shall not commence until the Land Disturbance Permit Stream Buffer variance, and Notice of Intent, if applicable, have been properly issued and all required meetings have taken place.

D. This section requires the **Contractor** to design project specific devices and practices to meet requirements of the related work and references listed below in conjunction with the **Contractor's** own means, methods, and techniques, schedules and sequences of work, and actual conditions encountered. Design shall be performed by professionals experienced and familiar with storm water and drainage characteristics as well as the requirements of references listed below.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Erosion and Sediment Control Plan
B. Section 02485 - Seeding
C. Section 02486 - Sodding
D. Section 02490 - Trees, Shrubs, and Groundcovers
E. Section 02750 - Bypass Pumping

1.03 REFERENCES

A. DeKalb **County** Soil Erosion and Sedimentation Control Ordinance.
B. DeKalb **County** Comprehensive Stormwater Management and Stormwater Quality Ordinance.
C. Manual for Erosion and Sediment Control in Georgia, as published by the Georgia Soil and Water Conservation Commission (current edition).
D. Federal Clean Water Act.
E. Georgia Erosion and Sedimentation Act of 1975, as amended.
F. Georgia Department of Natural Resources, Environmental Protection Division General NPDES Permit # 100002.

1.04 QUALITY ASSURANCE

The **Contractor** shall provide at least one (1) representative involved in the project's land disturbing activities that has successfully completed the erosion and sediment control education and certification program as administered by the Georgia Soil and Water Conservation Commission; this "certified person" shall have completed as a minimum, the Level 1A (Fundamentals) course. A "certified person" shall be present onsite **at all times** when work is being performed. Failure to maintain a certified person onsite at all times may result in a stop work order or other appropriate enforcement action.

1.05 SUBMITTALS

A. Within fifteen (15) days after the date of the Notice to Proceed, the **Contractor** shall submit a narrative description, working drawings and schedule for proposed temporary erosion and sedimentation controls to the local authority and Engineer for approval. The description and working drawings shall meet the requirements of the Georgia Erosion and Sedimentation Act of 1975 (as amended) and local soil erosion and sedimentation control ordinances. All fines imposed for improper erosion and sedimentation control shall be paid by the **Contractor**.

B. Land disturbance activity shall not commence until the erosion and sedimentation control plans are approved. The **County** will provide a reproducible drawing of plan sheets to the **Contractor** for **Contractor**'s use if necessary. The reproducible drawing will not bear the Design Engineer's seal or logo and is provided only for the **Contractor**'s convenience in obtaining land disturbance permits.

C. The description and working drawings shall indicate controls that will minimize erosion and prevent the off-site transport of sediment in storm water and drainage from the jobsite areas.

D. Submit a written plan to the **County** for both temporary and permanent grassing. The plan shall include selection of species, dates, and rates of application for seeding, fertilizer, and mulching.

E. Submittals shall be made in accordance with the requirements of the General Requirements of the Contract Documents and Section 01300 of these Specifications. Unless otherwise noted, all submittals shall be produced at the Pre-Construction Meeting. In addition, the following information shall be submitted to the **County**:

   i. Certification credentials of all persons that have completed the Georgia Soil and Water Conservation Commission's erosion and sediment control education and certification program and that will be involved in the project shall be provided to the **County** prior to the start of any land disturbing activities.

PART 2 – PRACTICES AND PRODUCTS

2.01 GENERAL

A. The following paragraphs generally describe the erosion and sediment control practices and products typically employed on a utility construction project. The

detailed requirements for these, as well as for other measures which may be needed to achieve effective erosion control, shall be as specified in the Standards and Specifications for General Land Disturbing Activities of the Manual for Erosion and Sediment Control in Georgia.

B. The paragraph titles and alphanumeric codes refer to specific structural and vegetative type practices included in the aforementioned Standards. All practices shall be considered as temporary erosion and sediment control features, except the channel stabilization, gabions and grassing/sodding, trees, shrubs, and groundcovers, which are considered as permanent measures.

2.02 STRUCTURAL PRACTICES

A. CONSTRUCTION EXIT - Co

1. A construction exit consists of a stone-stabilized pad with a geotextile underliner located at any point where traffic will be leaving a construction site to a public right-of-way, street, alley, sidewalk, or parking area.

2. Construction exits are used to reduce or eliminate transport of mud from the construction area.

3. Construction exits shall consist of graded one and one-half- to three and one-half- (1.5- to 3.5-) inch stone meeting National Stone Association grade R-2. The geotextile underliner shall be a non-woven fabric equal to No. C-45NW as manufactured by Contech Construction Products, Inc. or approved equal.

B. CHANNEL STABILIZATION (RIPRAP) - Ch

1. Channel stabilization consists of structures to stabilize an open channel for water conveyance. Such stabilization is typically applied in those locations where the channel banks and bed have been disturbed by excavation for a pipeline crossing.

2. Channels shall be stabilized using a rock riprap lining. The lining shall consist of filter bedding stone and graded riprap stone. Sizes of stone shall be as classified by either the National Stone Association (N.S.A.) or the Department of Transportation (D.O.T.). Riprap stone shall be equal to Georgia Department of Transportation Type 1 or Type 3. Filter bedding stone shall be graded stone not exceeding six (6) inches in diameter. An appropriate geotextile fabric may be substituted for filter stone.

C. GABIONS – Ga

Gabions are large, multi-celled mesh boxes used in channel revetments, retaining walls, abutments, check dams, etc. Boxes shall be constructed of PVC coated wire mesh and filled with four to eight (4” to 8”) inch pieces of durable stone. Stone placement shall be principally by hand or gentle mechanical

dumping in no more than twelve (12) inch layers with PVC coated wire cross and diagonal supports in each cell to retain and support basket sides at those intervals. Minimum size for box gabions shall be 6'-0" x 3'-0" x 3'-0". Minimum size for Reno Mattresses shall be 9'-9" x 6'-6" x 0'-9". Gabions shall be manufactured by Maccaferri, USA or approved equal.

D. TEMPORARY STREAM CROSSING - Sr

1. A temporary stream crossing is a structure installed across a flowing stream for use by construction equipment.

2. Structures may include bridges, round pipes, and pipe arches. The structure shall be large enough to convey the full bank flow of the stream and be designed by the **Contractor** to withstand flows from a two- (2-) year, twenty-four- (24-) hour frequency storm.

E. CHECK DAMS - Cd

1. Check dams are barriers composed of stone or hay bales placed across a natural or constructed drainage way to prevent erosion in areas of concentrated flows.

2. Stone check dams shall not be utilized where the drainage area exceeds five acres. Hay bale check dams shall not be used where drainage areas exceed two (2) acres. Check dams shall not be installed in live streams.

3. Stone check dams should be constructed of graded size two- to ten- (2- to 10-) inch stone.

F. SEDIMENT BARRIER

1. STAKED HAYBALES - Sd1

Hay bale barriers are placed in a single row on natural ground where the most likely erodible areas are located to restrain sediment particles carried by sheet flow.

2. SILT FENCE - Sd1

a. Silt fences are temporary measures to retain suspended silt particles carried by sheet flow.

b. Silt fence consists of silt fabric, as specified in the Georgia Department of Transportation list #36, wood or steel posts, and wire or nail fasteners.

c. Type A silt fence is a non-woven thirty-six- (36-) inch-wide filter fabric and shall be used on developments where the life of the project is greater than or equal to six (6) months. The flow rate (gallon/minute/square foot) is twenty-fine (25). Additionally, Type A fabric has a color mark.

d. Type C silt fence is a woven thirty-six- (36-) inch-wide filter fabric with wire reinforcement. The wire reinforcement is necessary because this fabric allows almost three times the flow rate as Type A silt fence. The flow rate (gallon/minute/square foot) is seventy (70). Additionally, Type C fabric does not have a color mark.

G. INLET SEDIMENT TRAP - Sd2

1. Inlet sediment traps are temporarily protective devices formed around a storm drain inlet to trap sediment.

2. Inlet sediment traps are used to prevent sediment from leaving a site or from entering storm drain systems prior to permanent stabilization of the disturbed area.

H. ROCK FILTER DAM - Rd

1. Rock filter dams are installed across small non-actively flowing drainageways and are applicable for projects that involve grading activity directly in those drainageways.

2. Rock filter dams consist of riprap faced with smaller rock on the upstream side for additional filtering affect.

I. STREAM DIVERSION - PIPED DIVERSION (DV1), PUMPED DIVERSION (DV2), ENGINEERED DIVERSION STRUCTURES (DV3))

1. Installation of water and sewer pipelines designed to cross natural streams shall be accomplished only in “dry channel” conditions (i.e. in the absence of stream flow in the work area). Provisions shall be implemented to divert a constant quantity and quality of stream waters around the construction area by means of adequately sized pipes, pumps, or engineered diversion structures or other methods proposed by the **Contractor** and approved by the **County**. These diversion devices will be maintained throughout the duration of construction within the stream channel. The structures shall be designed by professionals familiar with storm water / drainage characteristics and applicable requirements to withstand flows from a two- (2-) year, twenty-four- (24) hour frequency storm event unless otherwise noted on the drawings. Stream diversion devices shall not be removed until all disturbed areas of the stream channel bottom and banks are returned to original contours and stabilized to prevent erosion. The planning, scheduling, and sequencing of work by the **Contractor** shall be described in a detailed submittal to the **County** for approval. The final implementation schedule will only be determined in conjunction with forecasted weather conditions for the period anticipated for diversion.

a. Piped Diversion - Dv1
Piped diversions shall be installed and implemented in conjunction with and as an extension of Temporary Stream Crossings - (Sr).

Pipes shall be sized as shown on the drawings with sufficient coordination and planning as to their locations, elevations, etc. to allow subsequent water/sewer pipeline construction to occur in “dry channel’ conditions.

Necessary sandbags or other sealing devices, dewatering, etc. shall be provided to accomplish this piped diversion as well as other “Best Management Practices” to ensure that erosion and sedimentation is controlled.

b. Pumped Diversion - Dv2
Pumped diversions shall be installed and implemented in conjunction with and as an extension of Temporary Stream Crossings -(Sr). Pumps and piping shall be sized as shown on the drawings with sufficient coordination and planning as to their locations, elevations, etc. to allow subsequent water/sewer pipeline construction to occur in “dry channel” conditions.

Necessary sandbags or other sealing devices, dewatering, discharge sediment basins, sediment filter socks, “floc logs,” “dirt bags,” etc. shall be provided to accomplish this pumped diversion as well as other “Best Management Practices” to ensure that erosion and sedimentation is controlled.

c. Engineered Diversion Structure - Dv3
Engineered diversion structures such as “Aqua Barrier” by Nilex, Inc., “Portadam” by Portadam Inc, interlocked sheet piling, riprap cofferdams, etc. shall be installed and implemented to allow subsequent water/sewer pipeline construction to occur in “dry channel” conditions. Sequential work elements may be involved to allow the construction area to progress across a stream, and ensuring that the previously completed segment is reasonably restored and stabilized.

Necessary sandbags, geotextiles, linings, or other sealing devices, dewatering, etc, shall be provided to accomplish this manner of diversion as well as other “Best Management Practices” to ensure that erosion and sedimentation is controlled.

2.03 - VEGETATIVE PRACTICES

A. GENERAL

1. Disturbed areas shall be stabilized as construction progresses. For sanitary sewers or water mains installed within easements, the construction corridor shall not exceed one thousand (1,000) linear feet without stabilization. All other projects shall not exceed three hundred (300) linear feet without stabilization

B. DISTURBED AREA STABILIZATION (WITH MULCHING ONLY) - Ds1

1. This practice is applicable where disturbed areas, temporarily idle, have not been established to final grade and/or where permanent vegetative cover is delayed for a period not to exceed six (6) months.

2. Mulch materials shall consist of dry straw or hay, wood chips, erosion control matting or netting, or polyethylene film. The mulch should be uniform, spread over the designated area from two to four (2 to 4) inches thick.

3. Any and all disturbed areas that have not yet reached final grade shall be stabilized with mulch or temporary grassing within fourteen (14) calendar days of disturbance.

C. DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING) - Ds2

1. Temporary seeding is a measure consisting of seeding and mulching to reduce erosion. All disturbed areas shall be seeded when and where necessary to reduce erosion.

2. This practice is applicable where disturbed areas, temporarily idle, have not been established to final grade and/or where permanent vegetative cover is delayed for up to six (6) months.

3. Temporary seeding consists of a grass or grass-legume mixture suitable to the area and season of the year.

D. DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION) - Ds3

See Section 02485 – Seeding
See Section 02486 – Sodding
See Section 02490 – Trees, Shrubs, and Groundcovers

1. Permanent (perennial) vegetation shall consist of planted grasses, trees, shrubs, and/or perennial vines; a crop of perennial vegetation appropriate for the time of year and region (or to match, in kind, pre-existing maintained vegetation); or a crop of annual vegetation and seeding of target crop perennials appropriate for the region (or to match, in kind, pre-existing maintained vegetation), such that within the growing season a seventy (70) percent coverage by perennial vegetation shall be achieved.

2. This practice is applicable on disturbed areas at final grade.

3. Permanent perennial vegetation shall be applied on rough graded areas that will be undisturbed for more than (6) months.

E. DISTURBED AREA STABILIZATION (WITH SODDING) - Ds4

See Section 02485 – Seeding
See Section 02486 – Sodding

1. This practice shall consist of ground preparation, furnishing lime and fertilizer and placement of sod.

2. Sod shall be from local area and delivered to the job site in either industry standard blocks or rolls. Sod shall not be delivered to the job site more than twenty-four (24) hours prior to installation. Sod shall be hand placed with edges butted and cut as required to fit the placement area. The finished installation shall be rolled with a lawn roller and thoroughly watered. The sod will be watered daily for the first five days after installation.

3. Sod shall be anchored on slopes steeper than three to one (3:1).

F. EROSION CONTROL MATTING AND BLANKETS - Mb

1. This practice is a protective covering (blanket) or soil stabilization mat used to stabilize disturbed areas until permanent vegetation on steep slopes, channels, or shorelines can be established.

2. Concentrated flow areas, all slopes steeper than two and one-half to one (2.5:1) and with a height of ten (10) feet or greater, and cuts and fills within stream buffers, shall be stabilized with the appropriate erosion control matting or blankets.

3. All blanket and matting materials shall be on the Georgia Department of Transportation Qualified Products List (QPL #62 for Blankets, QPL #49 for Matting).

G. JOINT PLANTING STABILIZATION (rip-rap and willow stakes)
Joint planting is a system that installs live willow stakes between rip-rap (type 3) placed previously along the stream bank. It is installed to increase the effectiveness of the rock system by forming a living root matt in the base upon which rock has been placed and improve the environmental function and aesthetics of the rock bank. The rock shall be principally placed by hand or gentle mechanical dumping. Willow stake density of installation shall be 3 to 5 cuttings per square yard. Cuttings shall be two (2) inches in diameter and three and one–half (3.5) feet in length. The cutting shall be freshly cut and alive. Two thirds (2/3) of live stake shall be in the ground below the previously placed rock. Only native species willow stakes shall be used.

PART 3 - EXECUTION

3.01 GENERAL

A. At the Preconstruction Conference, the **Contractor** shall submit a schedule for accomplishing the temporary erosion control work for specific conditions to be encountered on the project.

B. The **Contractor** shall install all erosion and sediment control devices as required by actual field conditions, as shown on the approved plans, or as directed by the **County** or by any agency having jurisdiction in the locale of the project.

C. The erosion and sediment control devices shall be installed by the **Contractor** before land disturbing activities begin.

D. The **County** has the authority to direct the **Contractor** to provide immediate, additional temporary erosion control measures to prevent contamination of adjacent waterways and drainage ways. Additional erosion control measures may be used to correct conditions that develop during construction that were not foreseen during the design stage or that are needed prior to installation of the permanent erosion control features.

E. The **County** may limit the area of excavation in progress based on the **Contractor's** capability and progress in keeping the finish grading, mulching, and seeding current, in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures, such as mulching or temporary seeding, shall be taken immediately to the extent feasible and justified.

F. The **Contractor** shall incorporate all permanent erosion control features (grassing and sodding) into the project at the earliest practicable time.

3.02 INSTALLATION

A. Erosion control measures shall be designed by professionals familiar with storm water / drainage characteristics, installed, and maintained in accordance with the "Manual for Erosion and Sediment Control in Georgia" published by the Georgia Soil and Water Conservation Commission.

3.03 INSPECTION

A. Upon completion of installation, the **County** or local government authority shall inspect the erosion and sediment control devices for proper installation, flaws, defects, or other damage. The **Contractor** shall repair or replace, at its expense, the unacceptable portions as directed by the **County** or local government authority.

B. All erosion and sediment control devices shall be inspected by the **Contractor** at least weekly and after each rainfall occurrence.

C. All projects that require compliance with General NPDES Permit 100002 guidelines shall have inspections and monitoring in accordance with the specific Comprehensive Monitoring Plan and Section 02275 – Storm Water Discharges of these specifications.

3.04 MAINTENANCE

A. The **Contractor** shall maintain the erosion and sediment control devices until the project is completed and all disturbed areas are stabilized. Maintenance of the

devices shall include: removal and disposal of silt accumulation; replacement of damaged or deteriorated devices; other repairs; and the installation of additional devices should those devices installed prove to be inadequate. The **Contractor** shall provide this maintenance at no additional cost to the **County**.

Silt shall be cleaned out once it has accumulated to half the height of the device or when half of the available sediment storage capacity has been attained.

3.05 REMOVAL

A. Temporary erosion and sediment devices shall remain in place until such time as a satisfactory stand of grass has been established, unless the **County** or local government authority directs earlier removal. Damaged or otherwise unusable devices shall be removed from the site and disposed of properly.

B. After erosion and sediment device removal, the **Contractor** shall dress out any disturbed areas in the vicinity of the removed device and grass according to these Specifications.

+++ END OF SECTION 02270 +++

SECTION 02140
DEWATERING

PART 1 - GENERAL

1.01 SCOPE

A. Construct all permanent Work in areas free from water. Design, construct, and maintain all dikes, levees, cofferdams, diversion, and drainage channels as necessary to maintain the areas free from water and to protect the areas to be occupied by permanent work from water damage. Remove temporary works after they have served their purpose.

B. The **Contractor** shall be responsible for the stability of all temporary and permanent slopes, grades, foundations, materials, and structures during the course of the Contract. Repair and replace all slopes, grades, foundations, materials, and structures damaged by water, both surface and sub-surface, to the lines, grades and conditions existing prior to the damage at no additional cost to the **County**.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 CARE OF WATER

A. Except where the excavated materials are designated as materials for permanent work, material from required excavation may be used for dikes, levees, cofferdams, and other temporary backfill if approved by the **County**.

B. Furnish, install, maintain, and operate necessary pumping and other equipment for dewatering the various parts of the Work and for maintaining the foundation and other parts free from water as required for constructing each part of the Work.

C. Install all drainage ditches, sumps, and pumps to control excessive seepage on excavated slopes, to drain isolated zones with perched water tables, and to drain impervious surfaces at final excavation elevation.

D. After they have served their purpose, remove all temporary protective work at a satisfactory time and in a satisfactory manner. All diversion channels and other temporary excavations in areas where the compacted fill or other structures will be constructed shall be cleaned out, backfilled, and processed under the same Specifications as those governing the compacted fill.

E. When the temporary works will not adversely affect any item of permanent work or the planned usage of the Project, the **Contractor** shall receive approval from the **County** to leave such temporary works in place. In such instances, breaching of

dikes, levees, and cofferdams may be required.

3.02 DEWATERING

A. By the use of well points, pumps, tile drains, or other approved methods, the **Contractor** shall prevent the accumulation of water in excavated areas. Should water accumulate, it shall be promptly removed.

B. As directed by the **County,** excavations shall be continuously dewatered to maintain a groundwater level no higher than two (2) feet below the lowest point in the excavation.

C. The **Contractor** shall use piezometric observation wells to monitor the groundwater level and to ensure proper dewatering prior to excavation below the static water table. The number of wells required will vary depending on the size and depth of structures.

D. No separate payment will be made for dewatering required to accomplish the work.

+++ END OF SECTION 02140 +++

SECTION 02224
PIPE BORING AND JACKING

PART 1 – GENERAL

1.01 SCOPE

A. The work covered by this Section includes furnishing all labor, materials, and equipment required to bore and jack casings or construct tunneled crossings and to properly complete pipeline construction as described herein and/or shown on the Drawings.

B. General: Supply all materials and perform all work in accordance with applicable American Society for Testing and Materials (ASTM), American Water Works Association (AWWA), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable. If requested by the **County**, submit evidence that the manufacturer has consistently produced products of satisfactory quality and performance over a period of at least two (2) years.

1.02 SUBMITTALS

A. Submittals shall be made in accordance with the requirements of the General Requirements of the Contract Documents and Section 01300 - Submittals. In addition, the following specific information shall be provided:

B. Method Submittals: As directed by the **County,** the **Contractor** shall provide for the County's approval, a detailed plan for the methods proposed for the construction of the casing or tunnel. These plans shall address the following:

1. Tunneling Method:

a. Groundwater Control: The **Contractor** shall control the groundwater throughout the construction of the casing. The groundwater shall be controlled by dewatering (well points, sumps, or deep wells), grouting, freezing, or other method approved by the **County**. The **Contractor** shall prepare a written, detailed plan for controlling groundwater, citing similar installation conditions and results. This plan shall be submitted to the **County** prior to any construction of the casing.
b. Face Protection: The face of the excavation shall be protected from the collapse of the soil into the casing or tunnel.
c. Casing Design: Design of the bore pit and required bearing to resist jacking forces is the responsibility of the **Contractor**. The excavation method selected shall be compatible with expected ground conditions. The lengths of the casing shown on the Drawings are the minimum lengths required. The length of the casing may be extended for the convenience of the **Contractor**, with the approval of the **County**, at no additional cost. Due to restrictive right-of-way and construction easements, boring and jacking casing lengths less than the nominal length may be necessary.

2. Bore and Jack Method:
    a. With **County** approval, the **Contractor** has the option to select the bore and jack method, including groundwater control, except as restricted herein.
    b. The **Contractor** shall submit working drawings, written procedures, and calculations describing in detail the proposed bore and jack method and entire operation. This shall include, but not be limited to, groundwater control, ground stabilization if proposed, excavation procedures, control of casing alignment and grade, support of face, detection of surface movement, procedure for installing pipes and anchors and placement of an approved fill material between pipe and casing. If, in opinion of the **Contractor**, modifications to the methods are required during construction, working drawings shall be submitted for **County** approval delineating such modifications, including reasons for the modifications. Preparation of these drawings will be at no cost to the **County**.

C. Material Submittals: The **Contractor** shall provide for the **County**'s approval, shop drawings, proposed construction drawings and other pertinent specifications and product data as follows:

1. Shop drawings for casing pipe and tunnel liner plate showing sizes and connection details
2. Design mixes for concrete and grout
3. Casing spacers

D. Experience Submittals:

Boring and jacking casings and tunnel construction is deemed to be specialty contractor work. If the **Contractor** elects to perform the work, the **Contractor** shall provide evidence of experience as required by the General Requirements of the Contract Documents. The **Contractor** proposed to do the work shall have a minimum of five (5) continuous years of experience in steel casing and tunnel construction. Evidence of this experience shall be provided with the shop drawings for approval by the **County**.

1.03 STORAGE AND PROTECTION

All materials shall be stored and protected in accordance with the Manufacturer's recommendations and as approved by the **County**.

PART 2 – PRODUCTS

2.01 MATERIALS AND CONSTRUCTION

A. Casing:

1. The casing shall be new unused pipe made from steel plate having minimum yield strength of 35,000 psi. The steel plate shall also meet the chemical requirements of ASTM A36.

2. As directed by the **County,** the outside of the casing pipe shall be coated with coal tar epoxy having a minimum dry film thickness of sixteen (16) mils. Surface preparation shall be SSPC-SP-10. Epoxy shall have a minimum solids content of sixty-five (65) percent by volume and shall be air or airless spray applied, minimum drying time shall be seven (7) days. Brushing shall be permitted in small areas only. All coating and recoating shall be done in strict accordance with the manufacturer's recommendations. Epoxy shall be Tnemec, Kop-Coat, Valspar, or approved equal and submitted for approval by the **County**.
3. Minimum casing thicknesses are shown on the Drawings. Actual thicknesses shall be determined by the casing installer, based on an evaluation of the required forces to be exerted on the casing when jacking and all calculations shall be submitted for approval by the **County**. Any buckling of the casing due to jacking forces shall be repaired at no additional cost to the **County**.
4. Minimum diameters of casing are shown on the Drawings. Larger casings, with the **County's** approval, may be provided at no additional cost to the **County**, for whatever reasons the **Contractor** may decide, whether due to casing size availability, line and grade tolerances, soil conditions, etc.

B. Liner Plate:

1. Liner plates shall be of the thickness shown on the Drawings. The liner plates shall be either the four (4) flange-type or the two (2) flange lap-joint-type. Bolts and nuts used with the two- (2)-flange plates shall be a minimum of five–eighths (5/8) inch in diameter and shall conform to the latest revision of ASTM A307 for plate thickness less than 0.209 inch, and ASTM A449 for plate thickness equal to or greater than 0.209 inch. Bolts and nuts used with four- (4-) flange plates shall be not less than one-half (½) inch in diameter for plate thicknesses to and including 0.179 inch and not less than five-eighths (5/8) inch in diameter for plates of greater thickness. The bolts and nuts shall be quick acting coarse thread and shall conform to ASTM A307, Grade A. Each ring shall have two- (2-) inch-diameter half-couplings and plugs for grouting, located as shown on the Detail Drawings. Liner plates, bolts, and calculations shall be submitted to the **County** for approval.

C. Casing Spacers: Casing spacers shall meet one of the following requirements:

1. Casing spacers shall be flanged, bolt-on style with a two-section stainless steel shell lined with a PVC liner, minimum 0.09-inch-thick also having a hardness of eighty-five to ninety (85 - 90) durometer. Runners shall be attached to stainless steel risers that shall be properly welded to the shell. The height of the runners and risers shall be manufactured such that the pipe does not float within the casing. Casing spacers shall be Cascade Waterworks Manufacturing Company, Advanced Products & Systems, Inc., or approved equal.
2. Casing spacers shall be a two-section, flanged, bolt-on style constructed of heat-fused PVC coated steel, minimum fourteen- (14-)gauge band and ten- (10-)gauge risers, with two- (2-) inch-wide fiberglass reinforced

polyester insula duty PVC inner liner, minimum 0.09-inch-thick, having a hardness of eighty-five to ninety (85-90) durometer, and all stainless steel hardware shall be Pipeline Seal and Insulator, Ltd., or approved equal.

3. Casing spacers shall be designed for the general configuration shown in the Plans, including provisions for other conduits to be installed with the carrier pipe.

D. Carrier Pipe: Carrier pipes shall be as specified in Section 02665, Water Mains, and Accessories, or Section 02665 - Transmission Water Mains. All joints of pipe in casing shall be restrained.

E. Surface Settlement Markers: Surface settlement markers within pavement areas shall be P.K. nails. Surface settlement markers within non-paved areas shall be wooden hubs. The **Contractor** may submit alternate methods to the **County** for approval.

2.02 EQUIPMENT

A. Casings

1. A cutting head shall be attached to a continuous auger mounted inside the casing pipe.
2. On casing pipe for water lines over sixty (60) feet in length, the installation equipment shall include a steering head and a grade indicator.
3. The steering head shall be controlled manually from the bore pit. The grade indicator shall consist of a water level attached to the casing, which would indicate the elevation of the front end of the casing or some other means for grade indication approved by the **County**.

B. Tunnels

1. Tunnel Boring Machine (TBM)
   a. The TBM's design shall be submitted for approval by the **County**. The TBM shall be minimally equipped with disc cutters of diameter nineteen (19) inches or greater designed for operation at thrusts of up to seventy (70) kips per cutter.
   b. The TBM shall afford adequate protection against loss of ground and permit ground support adjacent to the tunnel face, as required by ground conditions.
   c. The TBM shall be equipped with a dust control system that includes a water spray system, dust shield, and dust scrubber system.
   d. The method used to advance the TBM shall ensure its correct alignment at all times, without binding or imposing excessive loads on the primary tunnel supports or upon the surrounding ground.
   e. The TBM shall be equipped with a roll indicator and laser target system, which allows the operator to observe the machine's alignment and orientation (predictor system) from the control station.
   f. The TBM shall be grounded in accordance with the latest requirements of the National Electrical Code and equipped with ground fault protection.

2. Other tunneling Equipment
    a. Power machinery and tools within the tunnel shall be operated by electricity, compressed air, diesel with approved scrubber, or other approved power. Electrical tools and equipment shall be grounded in accordance with the latest equipments of the National Electrical Code.
    b. All electrical equipment and power receptacles shall have appropriate ground fault protection.
    c. Provide temporary electrical lights to properly and safely illuminate all part of the shafts and tunnel including special illumination at the working face. Lighting circuits shall be thoroughly insulated and separated from power circuits, and lights shall be enclosed in wire cages. Secure electrical permits required for successful completion of this work.

PART 3 – EXECUTION

3.01 GENERAL

A. Interpretation of soil investigation reports and data, investigating the site and determination of the site soil conditions prior to bidding is the sole responsibility of the **Contractor**. Rock and/or water, if encountered, shall not entitle the **Contractor** to additional compensation. The **Contractor** shall examine the geotechnical report and borings and obtain all additional information as required to assure that the system provided will be capable of operating successfully given groundwater conditions, soil type, rock profile, potential for obstructions and all geotechnical parameters pertinent to this type of microtunneling. With approval from the **County**, the **Contractor** may perform additional soil investigation at no cost to the **County**.

B. When water is encountered, provide and maintain a dewatering system of sufficient capacity to remove water on a twenty-four (24-) hour basis keeping excavations free of water until the backfill operation is in progress. Dewatering shall be carried out in such a manner that removal of soil particles is held to a minimum. Dewatering shall comply with the approved Temporary and Permanent Erosion and Sediment Control Plan.

C. Methods of dewatering shall be at the option and responsibility of the **Contractor**. Maintain close observation to detect settlement or displacement of surface facilities due to dewatering. Should settlement or displacement be detected, notify the **County** immediately and take such action as necessary to maintain safe conditions and prevent damage.

D. Casing and tunnel construction shall be performed so as not to interfere with, interrupt or endanger roadway surface and activity thereon, and minimize subsidence of the surface, structures, and utilities above and in the vicinity of the work. Support the ground continuously in a manner that will prevent loss of ground and keep the perimeters and face of the casing, passages and shafts stable. The **Contractor** shall be responsible for all settlement resulting from operations and shall repair and restore all damaged property to its original or better condition and is responsible for all associated damages at no cost to the **County**.

3.02 SAFETY

A. Provide all necessary bulkheads and shields to ensure complete safety to all traffic, persons, and property at all times during the work. Perform the work in such a manner as to not permanently damage the roadbed or interfere with normal traffic over it in those areas immediately adjacent and outside the active project work area.

B. Perform all activities in accordance with the Occupational Safety and Health Act of 1970, OSHA, PL-596), as amended, applicable regulations of the Federal Government, OSHA 29CFR 1926 and applicable criteria of ANSI A10.16-81, "Safety Requirements for Construction of Tunnel Shafts and Caissons."

3.03 SURFACE SETTLEMENT MONITORING

A. Provide surface settlement markers, placed as specified and as directed by the **County**. The **Contractor** shall place settlement markers outside the pavement area, along the centerline of the casing or tunnel at twenty- (20-)foot intervals. Markers shall also be placed at each shoulder of the roadway, at each edge of pavement, at the centerline of the pavement, and at ten and twenty-five (10 and 25) feet offset in each direction from the centerline of the casing. Tie settlement markers to benchmarks and indices sufficiently removed as not to be affected by the **Contractor's** operations.

B. Make observations of surface settlement markers, placed as required herein, at intervals acceptable to the **County**. In the event settlement or heave on any marker exceeds one (1) inch, the **Contractor** shall immediately cease work and, using a method submitted to and approved by the **County**, take immediate action to restore surface elevations to those existing prior to start of the **Contractor's** operations.

C. Take readings and permanently record surface elevations prior to the start of dewatering operations and/or shaft excavation. The following schedule shall be used for obtaining and recording elevation readings: all settlement markers, once a week; all settlement markers within fifty (50) feet of the casing or tunnel heading, at the beginning of each day; more frequently at the **County's** direction if settlement is identified. Make all elevation measurements to the nearest one-hundredth (0.01) of a foot.

D. The **Contractor** shall cooperate fully with jurisdictional personnel. Any settlement shall be corrected by and at the expense of the **Contractor**.

E. Promptly report any settlement and horizontal movement immediately to the **County** and take immediate remedial action at no cost to the **County**.

3.04 BORING AND JACKING

A. Shaft

1. Conduct boring and jacking operations from a shaft excavated at one (1) end of the section to be bored. Where conditions and accessibility are suitable, place the shaft on the lower elevation end of the bore.
2. The shaft shall be rectangular and excavated to a width and length required for ample working space. If necessary, sheet and shore shaft properly on all sides. Shaft sheeting shall be timber or steel piling of ample strength to safely withstand all structural loadings of whatever nature due to site and soil conditions. Keep preparations dry during all

operations. Perform shaft dewatering operations as necessary to maintain the integrity of the shaft and foundation.

3. The bottom of the shaft shall be firm and unyielding to form an adequate foundation upon which to work. In the event the shaft bottom is not stable, excavate to such additional depth as required and place a gravel sub-base or a concrete sub-base to create the support necessary to perform the required boring and jacking operation at no extra cost to the **County**.

B. Jacking Rails and Frame

1. Set jacking rails to proper line and grade within the shaft. Secure rails in place to prevent settlement or movement during operations. The jacking rails shall cradle and hold the casing pipe on true line and grade during the progress of installing the casing.
2. Place backing between the heels of jacking rails and the rear of the shaft. The backing shall be adequate to withstand all jacking forces and loads. The **Contractor** shall submit calculations detailing the wall pressures exerted by the jacking operations for the full length of the jack distance.
3. The jacking frame shall be of adequate design for the magnitude of the job. Apply thrust to the end of the pipe in such a manner to impart a uniformly balanced load to the pipe barrel without damaging the joint ends of the pipe.

C. Boring and jacking of casing pipes shall be accomplished by the dry auger boring method without jetting, sluicing, or wet boring.

D. Auger the hole and jack the casing through the soil simultaneously.

E. Bored installations shall have a bored-hole diameter essentially the same as the outside diameter of the casing pipe to be installed.

F. Execute boring ahead of the casing pipe with extreme care, commensurate with the rate of casing pipe penetration. Boring may proceed slightly in advance of the penetrating pipe and shall be made in such a manner to prevent any voids in the earth around the outside perimeter of the pipe. Make all investigations and determine if the soil conditions are such as to require the use of a shield.

G. Alignment and grade shall be monitored with a state-of-the-art laser system. As the casing is installed, check the horizontal and vertical alignment frequently. Make corrections prior to continuing operation.

H. Any casing pipe damaged in jacking operations shall be repaired, if approved by the **County**, or removed and replaced at the **Contractor's** own expense.

I. Lengths of casing pipe, as long as practical, shall be used except as restricted otherwise. Joints between sections shall be completely welded in accordance with AWS recommended procedures. Prior to welding the joints, the **Contractor** shall ensure that both ends of the casing sections being welded are square.

J. The **Contractor** shall submit for approval to the **County** a contingency plan **County** that will allow the use of a casing lubricant, such as bentonite, in the event excessive frictional forces jeopardize the successful completion of the casing installation.

K. Once the jacking procedure has begun, it shall be continued without stopping until completed, subject to weather and conditions beyond the control of the **Contractor**.

L. Care shall be taken to ensure that casing pipe installed by boring and jacking method will be at the proper alignment and grade.

M. The **Contractor** shall maintain and operate pumps and other necessary drainage system equipment to keep work dewatered at all times.

N. Adequate sheeting, shoring and bracing for embankments, operating pits and other appurtenances shall be placed and maintained to ensure that work proceeds safely and expeditiously. Upon completion of the required work, sheeting, shoring, and bracing shall be left in place, cut off, or removed, as directed by the **County**.

O. Refer to Section 02200 - Earthwork, and Section 02324 - Trenching and Trench Backfilling, for additional information related to trench excavation, all classes and types of excavation, the removal of rock, muck and debris, and the excavation of all working pits and backfill.

3.05 TUNNELS

A. Shaft Excavation

1. Excavate in such a manner that overbreak is held to a minimum. In soil and mixed-face conditions, install primary support in continuous and close contact with the excavated surface to control water inflow and prevent ground loss, so that adjacent structures are not affected by ground movements. Excavation in soil shall not be advanced ahead of the previously installed primary support any more than is necessary for the installation of the succeeding section of primary support.
2. Whenever shaft sinking is suspended, the **Contractor** shall complete prairie support to the excavated surfaces and keep all dewatering system(s) operating. The **Contractor** shall have qualified personnel periodically check conditions that might threaten the excavation stability.
3. Remove excavated soil and rock from the site and dispose of properly complying with all applicable local, state, and federal requirements regarding materials, methods of work, and disposal of excess and waste materials. All required inspections, permits, and fees are the **Contractor's** responsibility and at no cost to the **County**. **County**.
4. Remove sheeting used for shoring from the shaft and off the job site. The removal of sheeting, shoring, and bracing shall be done in such a manner as not to endanger or damage new or existing structures, private or public properties and to avoid cave-ins or sliding in the banks.

B. Tunnel Excavation

1. Excavate in such a manner that overbreak is held to a minimum.
2. Where water inflows in the tunnel face are large and increasing, the **County** shall be notified of the conditions requiring the supplemental actions. The **Contractor** shall take all necessary actions to mitigate the water flows, including, but not limited to, drilling probe holes, relief holes, and ground treatment holes in the tunnel face, and to carry out consolidation grouting before proceeding.
3. Whenever tunneling is suspended, the **Contractor** shall complete installation of the primary support for that excavation cycle, and have qualified personnel periodically check conditions that might threaten tunnel stability.

4. Remove excavated rock from the excavation of the TBM erection as well as from transit and reception chambers, and dispose of properly at a location secured by the **Contractor**.

C. The **Contractor** shall submit to the **County** for approval, a grouting schedule based on liner plate completion in time intervals and distances. The liner plates shall be installed progressively as excavation proceeds. Excavation shall not continue more than twenty-four (24) inches past the end of the liner plate already in place. At this time, an additional section of liner shall be installed before excavation shall continue. Grout shall be placed under pressure in the annular void as the excavation proceeds. Grout shall be continuously placed as close to the heading as possible, using grout stops if necessary. Grout shall be injected in the lower holes first, moving upward as the back space is filled. Threaded plugs shall be installed after filling each grout hole.

3.06 VENTILATION AND AIR QUALITY

Provide, operate, and maintain for the duration of the casing project, a ventilation system to meet safety and OSHA requirements.

3.07 ROCK EXCAVATION IN CASING

A. In the event that rock is encountered during the installation of the casing pipe that, in the opinion of the **County**, cannot be removed through the casing, the **County** may authorize the **Contractor** to complete the crossing with a tunnel.
B. With the **County's** approval, the **Contractor** may continue to install the casing and remove the rock through the casing at no additional cost to the **County**.

3.08 INSTALLATION OF PIPE

A. After construction of the casing or tunnel is complete, and has been accepted by the **County**, install the pipeline in accordance with the Drawings and Specifications.
B. Check the alignment and grade of the casing and submit a plan to the **County** for approval to set the pipe at proper alignment, grade, and elevation, without any sags or high spots.
C. The carrier pipe shall be held in the casing pipe by the use of casing spacers. The casing spacers shall be designed by the **Contractor** such that the carrier pipe can be installed in the casing. For tunnels, the carrier pipe will be held in place with a steel strap per the details.
D. With **County** approval and as directed by the **County**, close the ends of the casing or tunnel with four- (4-) inch brick walls, plastered with Portland cement mortar and waterproofed with asphaltic roofing cement.

3.09 SHEETING REMOVAL

Remove sheeting used for shoring from the shaft and off the job site. The removal of sheeting, shoring, and bracing shall be done in such a manner so as not to endanger or damage either new or existing structures or private or public properties, and to avoid cave-ins, subsidence, or sliding in the banks.

+++ END OF SECTION 02224 +++

SECTION 02231
TREE PROTECTION AND TRIMMING

PART 1 - GENERAL

1.01 SCOPE

A. This section includes the protection and trimming of trees that interfere with, or are affected by, execution of the Work, whether temporary or new construction.

B. Related Work specified elsewhere:

1. Section 02324 - Trenching and Trench Backfilling
2. Section 02920 - Site Restoration

1.02 SUBMITTALS

A. Submittals shall be made in accordance with the requirements of the General Requirements of the Contract Documents and Section 01300. In addition, the following specific information shall be provided:

1. Product Data: For each type of product indicated.

2. Qualification Data: For firms and persons specified in the “Quality Assurance” Article to demonstrate their capabilities and experience. The **Contractor** shall include lists of completed projects with project names and addresses, names and addresses of engineers and owners, and other information specified.

3. Certification: From a qualified forester that trees indicated to remain have been protected during construction according to recognized standards and that the trees were promptly and properly treated and repaired when damaged.

4. Maintenance Recommendations: From a certified arborist for care and protection of trees affected by construction during and after completing the Work.

1.03 QUALITY ASSURANCE

A. Reference Standards: The **Contractor** shall comply with the applicable provisions and recommendations of the latest editions of the following standards, except as otherwise shown on the Plans or specified in these Specifications.

1. Hortus Third: Concise Dictionary of Plants Cultivated in the U.S. and County, 1976.
2. Standardized Plant Names (American Joint Committee on Horticulture Nomenclature).
3. National Arborist Association “Pruning Standards for Shade Trees”, latest revision.

4. ANSI A 300 – Trees, Shrubs, and Other Woody Plant Maintenance – Standard Practices.
5. ASTM D 448 – Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
6. ASTM D 5268 – Standard Specification for Topsoil Used for Landscaping Purposes.

B. Forester Qualifications: A forester licensed in the State of Georgia.

C. Tree Pruning Standards: The **Contractor** shall comply with the requirements of ANSI A300 unless more stringent requirements are indicated.

D. Pre-installation Conference: The **Contractor** shall conduct a pre-installation conference at the site of the Work.

Before starting tree protection and trimming, the **Contractor** shall meet with representatives of authorities having jurisdiction, including, the **County**, consultants, and other concerned entities. The **Contractor** shall review tree protection and trimming procedures and responsibilities. The **Contractor** shall notify participants at least three (3) working days before convening the conference. The **Contractor** shall record discussions and agreements and furnish a copy to each participant.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D448, Size 24, with ninety (90) to one hundred (100) percent passing a two and one-half- (2½-) inch sieve and not more than ten (10) percent passing a three-quarter- (¾-) inch sieve.

B. Topsoil: Fertile, friable, surface soil, containing natural loam and complying with the requirements of ASTM D5268. The **Contractor** shall provide topsoil that is free of stones larger than one (1) inch in any dimension and free of other extraneous or toxic matter harmful to plant growth. The **Contractor** shall obtain topsoil only from well-drained sites where soil occurs in depth of four (4) inches or more; the **Contractor** shall not obtain topsoil from bogs or marshes.

C. Filter Fabric: Manufacturer's standard, non-woven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.

D. Webbed Fabric Fence (temporary fencing): Orange polyethylene webbed fabric, forty-six (46) inches high supported by six (6) feet steel channel posts, five (5) feet on center. The **Contractor** shall set posts two (2) feet below grade.

E. Chain Link Fence: Shall meet the requirements set by Owner and or Engineer.

PART 3 - EXECUTION

3.01 IDENTIFICATION

A. Prior to any construction, the **Contractor** shall flag all trees on the site of the Work scheduled to be protected. All flagging shall be approved by the **County** prior to startup of the Work and construction activities. The **County** shall be notified immediately of any conflicts with proposed Work, structures, or utilities.

3.02 PREPARATION

A. Temporary Fencing: The **Contractor** shall install temporary fencing as indicated on the Plans or outside the drip line of trees to protect remaining vegetation from construction damage.

The **Contractor** shall install chain link fence according to the requirements of set by Owner and or Engineer.

B. The **Contractor** shall protect tree root systems from damage due to noxious materials caused by runoff or spillage while mixing, placing, or storing construction materials. The **Contractor** shall protect root systems from flooding, eroding, or excessive wetting caused by dewatering operations.

C. The **Contractor** shall not store construction materials, debris, or excavated material within the drip line of remaining trees. The **Contractor** shall not permit vehicles or foot traffic within the drip line. The **Contractor** shall prevent soil compaction over root systems.

D. The **Contractor** shall not allow fires under or adjacent to remaining trees or other plants.

3.03 EXCAVATION

A. The **Contractor** shall install shoring or other protective support systems to minimize sloping or benching of excavations that could endanger trees.

B. The **Contractor** shall not excavate within drip line of trees, unless otherwise indicated or approved by the **County**

C. Where excavation for new construction is required within drip line of trees, the **Contractor** shall hand-clear and excavate to minimize damage to root systems. The **Contractor** shall use narrow-tine spading forks and comb soil to expose roots.

1. The **Contractor** shall relocate roots in backfill areas where possible. If encountering large, main lateral roots, the **Contractor** shall expose roots beyond excavation limits as required to bend and relocate them without breaking. If encountered immediately adjacent to the location of new construction and relocation is not practical, the **Contractor** shall cut roots approximately three (3) inches back from new construction.

2. The **Contractor** shall not allow exposed roots to dry out before placing permanent backfill. The **Contractor** shall provide temporary earth cover or pack with peat moss and wrap with burlap. The Contactor shall water and maintain earth in a moist condition. The **Contractor** shall temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

D. Where utility trenches are required within drip line of trees, the **Contractor** shall tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.

Root Pruning: The **Contractor** shall not cut main lateral roots or taproots. The **Contractor** shall cut only smaller roots that interfere with installation of utilities. The **Contractor** shall cut roots with sharp pruning instruments. The **Contractor** shall not break or chop roots.

3.04 REGRADING

A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, the **Contractor** shall slope grade away from trees as recommended by the forester, unless otherwise directed by the **County**.

B. Root Pruning: The **Contractor** shall prune tree roots exposed during grade lowering. The **Contractor** shall not cut main lateral roots or taproots. The **Contractor** shall cut only smaller roots. The **Contractor** shall cut roots with sharp pruning instruments. The **Contractor** shall not break or chop roots.

C. Minor Fill: Where existing grade is six (6) inches or less below elevation of finish grade, the **Contractor** shall fill with topsoil. The **Contractor** shall place topsoil in a single un-compacted layer and hand grade to required finish elevations.

D. Moderate Fill: Where existing grade is more than six (6) inches, but less than twelve (12) inches below elevation of finish grade, the **Contractor** shall place drainage fill, filter fabric, and topsoil on existing grade as follows:

1. Carefully place drainage fill against tree trunk approximately two (2) inches above elevation of finish grade and extend not less than eighteen (18) inches from the tree trunk on all sides. For balance of area within drip line perimeter, the **Contractor** shall place drainage fill up to six (6) inches below elevation of grade.

2. The **Contractor** shall place filter fabric with edges overlapping six (6) inches minimum.

3. The **Contractor** shall place fill layer of topsoil to finish grade. The **Contractor** shall not compact drainage fill or topsoil. The **Contractor** shall hand-grade to required finish elevations.

3.05 TREE PRUNING

A. The **Contractor** shall prune remaining trees affected by temporary and new construction.

B. The **Contractor** shall prune remaining trees to compensate for root loss caused by damaging or cutting root system. The **Contractor** shall provide subsequent maintenance during Contract period as recommended by the forester.

C. Pruning Standards: The **Contractor** shall prune trees according to the most current revision of ANSI A300 following the following types of pruning:

1. Crown cleaning
2. Crown thinning
3. Crown raising
4. Crown reduction
5. Vista pruning
6. Crown restoration

D. The **Contractor** shall cut branches with sharp pruning instruments. The **Contractor** shall not break or chop branches.

E. The **Contractor** shall chip branches removed from trees. The **Contractor** shall spread chips where indicated or as directed by the **County**.

3.06 TREE REPAIR AND REPLACEMENT

A. The **Contractor** shall promptly repair trees damaged by construction operations within twenty-four (24) hours. The **Contractor** shall treat damaged trunks, limbs, and roots according to written instructions of the certified arborist.

B. The **Contractor** shall remove and replace dead and damaged trees that the certified arborist determines to be incapable of restoring to a normal growth pattern.

C. The **Contractor** shall aerate surface soil compacted during construction ten (10) feet beyond drip line and no closer than thirty six (36) inches to tree trunk. The **Contractor** shall drill two- (2-) inch-diameter holes a minimum of twelve (12) inches deep at twenty-four (24) inches on center. The **Contractor** shall backfill holes with an equal mix of augered soil and sand.

3.07 DISPOSAL OF WASTE MATERIALS

A. Burning at the site of the Work is not permitted.

B. Disposal: The **Contractor** shall remove excess excavated material, displaced trees, and excess chips from the site and dispose of them at an approved location.

3.08 MAINTENANCE

A. All protected trees that have been root pruned shall be watered deeply twice a week during periods of hot, dry, windy weather (defined as when daily temperatures rise over eighty-five (85) degrees with no rain in the last 72 hours).

3.09 REPLACEMENT

A. The **Contractor** shall be responsible for replacement of all protected trees that are damaged or destroyed during the construction period. Replacement shall be in equal caliper inches (D.B.H.) to those trees damaged or destroyed and shall be in like species unless otherwise determined by the **County**.

3.10 ADJUSTING AND CLEANING

A. At the end of the construction period, the **Contractor** shall remove all protection fencing, trash, and debris within the protection area and finish grade and cover in accordance with the requirements of these Specifications.

+++ END OF SECTION 02231 +++

SECTION 02316
ROCK REMOVAL

PART 1 – GENERAL

1.01 RELATED SECTIONS

A. Section 01300 Submittals.

B. Section 02324 Trench and Trenching Backfilling.

1.02 DEFINITION

A. Rock: any solid material in excess of 1.0 cy and which cannot be removed by means of mechanical excavating equipment having 1.25 to 2.0 cy bucket. Frozen material not classified as rock.

B. PPV: peal particle velocity.

1.03 MEASUREMENT PROCEDURES

A. Mass rock:

1. Rock quantities will be taken from cross section showing original rock surface and actual grade line set by Engineer/Architect, except that minimum depth or rock required to excavated to be considered as 1 ft.

2. Volume of individual boulders and rock fragments will be determined by measuring three maximum mutually perpendicular dimensions.

B. Trench rock: rock quantities measured will be actual volume removed within following limits:

1. Width for trench excavation as indicated.

2. Width for excavation for structures to be bounded by vertical planes up to 1.5 ft outside and parallel to neat lines for footings as indicated.

3. Depth from rock surface elevations immediately prior to excavation, to elevation as indicated.

4. Where design elevation is less than 1 ft below original rock surface depth will be considered to be 1 ft blow original rock surface.

C. Replacement imported fill: Imported fill quantities will be measured in cubic yards, compacted in place.

D. Quantities for measurement purposes are indicated in Tender Form. If no quantities are provided, rock removal and fill replacement considered inclusive to the work and will not be measured.

E. **Contractors** shall provide all survey equipment needed and provide assistance to Engineer/Architect in taking cross sections. Sections shall be taken at 15 ft intervals for mass and trench rock excavation. Sections will be submitted to **contractor's** site representative for verification. Additional sections shall be taken at points or significant change in elevation or at any other locations as determined by Engineer/Architect. **Contractor** to schedule work to allow sufficient time for Engineer/Architect to take necessary sections

1.04 SUBMITTALS

A. Blasting Operation

1. Submit to Engineer/Architect and local authorities having jurisdiction for approval, written proposal of operations for removal of rock by blasting, in accordance with Section 01300 Submittals.

2. Indicate proposed method of carrying out work types and quantities of explosives to be used, loading charts and drill hole patterns, type of caps, blasting techniques, blast protection measures for items such as flying rock, vibration, dust and noise control. Include details on protective measures, time of blasting and other pertinent details.

3. Submit records to Engineer/Architect at end of each shift. Maintain complete and accurate records for drilling and blasting operations.

4. Prior to any blasting operations, the **contractor** shall carry out a preblast survey. This survey will be conducted by an independent agency. The survey report will be submitted to the Engineer/Architect for review.

5. No blasting shall take place without a minimum of 48 hours notice to the Engineer/Architect.

1.05 QUALIFICATIONS

A. Retain licensed explosives expert to program and supervise blasting work, to interpret recommendations of preblasting report, and to determine precautions, preparation and operations techniques.

1.06 BLASTING AND VIBRATION CONTROL

A. Reduce ground vibrations to avoid damage to structures or remaining rock mass.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PROTECTION

A. Prevent damage to surroundings and injury to persons in accordance with GDOT Requirements. Sound warnings and display signs when blasting to take place.

3.02 ROCK REMOVAL

A. Coordinate this Dekalb Health and Safety requirements.
B. Remove rock to alignments, profiles, and cross sections as indicated.
C. Explosive blasting is not permitted at locations indicated.
D. Do blasting operations in accordance with local and provincial codes, requirements of authority having jurisdiction.
E. Use rock removal procedures to produce uniform and stable excavation surfaces. Minimize overbreak, and to avoid damage to adjacent structures.
F. Excavate rock to horizontal surfaces.
G. Scale, pressure wash and broom clean rock surfaces which are to bond to concrete.
H. Excavate trenches to lines and grades to minimum of 300 mm below pipe invert indicated. Provide recesses for bell and spigot pipe to ensure bearing will occur uniformly along barrel of pipe.
I. Cut trenches to widths as indicated.
J. Use preshearing, cushion blasting or other smooth wall drilling and blasting techniques directed by Engineer/Architect.
K. Remove boulders and fragments which may slide or roll into excavated areas.
L. Correct unauthorized rock removal at no extra cost, in accordance with Section 02315 Excavating, Trenching and Backfilling.

3.03 ROCK DISPOSAL

A. Dispose of surplus removed rock off site. Dispose in locations acceptable to authorities having jurisdiction and Engineer/Architect.

END OF SECTION 02316

SECTION 02324
TRENCHING AND TRENCH BACKFILLING

PART 1 - GENERAL

1.01 SCOPE

A. The Work covered under this section consists of furnishing all labor, equipment, and materials and performing all operations in connection with the trench excavation and backfill required to install the pipelines shown on the Plans and as specified in these Specifications.

B. Excavation shall include the removal of all trees, stumps, brush, debris, or other obstacles that remain after the site preparation operations and that may obstruct the Work. Excavation shall also include the excavation and removal of all earth, rock, or other materials to the extent necessary to install the pipe and appurtenances in conformance with the lines and grades shown on the Plans and as specified in these Specifications.

C. Backfill shall include the refilling and compaction of the fill in the trenches and excavations up to the surrounding ground surface or road grade at crossing.

D. Trenches are divided into five areas:

1. Foundation: The area beneath the bedding, sometimes also referred to as trench stabilization.

2. Bedding: The area above the trench bottom (or foundation) and below the bottom of the barrel of the pipe.

3. Haunch: The area above the bottom of the barrel of the pipe up to a specified height above the bottom of the barrel of the pipe.

4. Initial Backfill: The area above the haunching material and below a plane 12 inches above the top of the barrel of the pipe.

5. Final Backfill: The area above a plane 12 inches above the top of the barrel of the pipe.

E. The choice of method, means, techniques, and equipment rests with the **Contractor**. The **Contractor** shall select the method and equipment for trench excavation and backfill depending upon the type of material to be excavated and backfilled, the depth of excavation, the amount of space available for operation of equipment, storage of excavated material, proximity of man-made improvements to be protected, available easement or right-of-way, and prevailing practice in the area.

F. When hazardous or contaminated materials are encountered while performing trench excavation, the **Contractor** shall stop work and report the hazardous or

contaminated materials to the **County** immediately. The **County** will instruct the **Contractor** on the required procedures.

G. Related Work Specified Elsewhere:

1. Section 01210 - Measurement and Payment
2. Section 02140 - Dewatering

1.02 SUBMITTALS

A. Submittals shall be made in accordance with the requirements of the General Requirements of the Contract Documents and Section 01300. In addition, the following specific information shall be provided:

1. The **Contractor** shall submit a work plan for trenching and trench backfilling with complete written description that identifies details of the proposed method of construction and the sequence of operations for construction relative to trenching and trench backfilling. The descriptions, with supporting illustrations, shall be sufficiently detailed to demonstrate to the **County** that the procedures meet the requirements of the Plans and these Specifications.

2. The **Contractor** shall submit a dewatering plan in accordance with the requirements of Section 02140 - Dewatering.

3. The **Contractor** shall submit backfill material sources and product quality information.

4. The **Contractor** shall submit record documents in accordance with the requirements of the General Conditions. The **Contractor** shall record locations of sewers, as installed, referenced to survey benchmarks. The **Contractor** shall include locations of utilities encountered or rerouted. The **Contractor** shall give horizontal dimensions, elevations, inverts, and gradients. The **Contractor** shall use either GPS technology or a conventional survey to locate utilities.

5. The laboratory shall submit the following reports directly to the Engineer/**County** from the testing services, with a copy to the **Contractor**.

a. Test reports on borrow material
b. Verification of each footing subgrade
c. Field density test reports
d. One (1) optimum moisture-maximum density curve for each type of soil encountered
e. Report of actual unconfined compressive strength and/or results of bearing tests of each of the strata tested

1.03 QUALITY ASSURANCE

A. Reference Standards: The **Contractor** shall comply with the applicable provisions and recommendations of the latest editions of the following standards, except as otherwise shown on the Plans or specified in these Specifications.

1. ASTM C33 - Concrete Aggregates
2. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
3. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 or 600 kN-m/m^3)
4. ASTM D2922 - Standard Test Method for Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)
5. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method
6. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 or 2,700 kN-m/m^3)
7. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

B. Density: All references to "maximum dry density" shall mean the maximum dry density defined by ASTM D1557, except that for cohesionless, free-draining soils, "maximum dry density" shall mean the maximum index density as determined by ASTM D4253. Determination of the density of foundation, bedding, haunching, or backfill materials in place shall meet the requirements of ASTM D1556 and ASTM D2922.

C. Sources and Evaluation Testing: Testing of materials to certify conformance with these Specifications shall be performed by an independent testing laboratory approved by the **County**.

1.04 SAFETY

The **Contractor** shall perform all trench excavation and backfilling activities in accordance with the Occupational Safety and Health Act of 1970 (PL 91-596), as amended. The **Contractor** shall pay particular attention to the Safety and Health Regulations Part 1926, Subpart P "Excavation, Trenching & Shoring" as described in OSHA publication 2226.

1.05 TESTING

A. Tests and analysis of fill and borrow material shall be performed in accordance with the requirements of ASTM D1557.

B. Testing shall be performed by an approved independent commercial testing laboratory. The **Contractor** shall coordinate testing.

C. Compaction testing shall be performed in accordance with the requirements of ASTM D1556 or ASTM D2292.

D. If tests indicate Work does not meet specified requirements, the **Contractor** shall remove Work, replace, and retest at no cost to the **County**.

1.06 JOB CONDITIONS

A. All operations shall be performed by the **Contractor** in strict conformance with OSHA and any applicable local safety requirements. The **Contractor** shall pay particular attention to safety regulations for excavations and entering confined spaces.

B. Test borings and other exploratory operations may be made by the **Contractor** with **County** approval at no cost to the **County**.

C. The **Contractor** shall verify that survey benchmarks and intended elevations for the Work are as indicated on the Plans.

D. It is intended that the Plans show the locations of all known existing surface and subsurface structures. However, the locations of many gas mains, water mains, conduits, sewers, is unknown and the **County** assumes no responsibility for failure to show any or all of these structures on the Plans or to show them in their exact locations. It is mutually agreed that such failure will not be considered sufficient basis for claims for Extra Work or for increasing the pay quantities, unless an obstruction encountered is such as to necessitate substantial changes in the lines or grades or requires the building of special structures, provisions for which are not made in the Plans. Any substantial change shall be determined and approved by the **County**.

E. The **Contractor** shall locate existing underground utilities in the site of the Work. If utilities are to remain in service and in place, the **Contractor** shall provide adequate means of support and protection during trenching and trench backfilling.

F. Utilities Notification Prior to Construction:

1. Georgia law mandates that, before beginning all mechanical digging or excavation work, the **Contractor** shall contact Georgia 811 by using eRequest on www.Georgia811.com or by calling 811 or 1-800-282-7411.
2. The **Contractor** may utilize EDEN (Excavation Digging Event Notification) web application that enables Members and Professional Excavators to create, manage, respond to, and edit Georgia 811 Locate Request Tickets.
3. The **Contractor** shall retain all records of notification and responses during the course of the project until final Payment.

G.. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, the **Contractor** shall consult the utility owner immediately for directions. The **Contractor** shall cooperate with utility companies in keeping respective services and facilities in operation. The **Contractor** shall repair damaged utilities to the satisfaction of the utility owner and shall be responsible for all costs associated with the repair or replacement of the damaged utility facilities.

H. Unless specified otherwise in other Specifications Sections, the **Contractor** shall not interrupt existing utilities serving any facilities, during occupied hours, except when permitted in writing by the **County** and then only after acceptable temporary, utility services have been provided.

I. The **Contractor** shall provide a minimum of forty-eight- (48-) hour notice to the **County** and utility owner, and shall receive written notice to proceed before interrupting any utility.

J. The **Contractor** shall demolish and completely remove from the site of the Work existing underground utilities indicated on the Plans to be removed. The **Contractor** shall coordinate with utility companies for shut-off of services if lines are active. No separate payment will be made by the **County**.

K. The **Contractor** shall protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in or loose soil from falling into excavations. Where indicated in the Plans or directed by the **County**, the **Contractor** shall use augured piles and lagging. Augured piles shall be used instead of vibratory driven piles when near structures or existing sewers.

L. The **Contractor** shall notify the **County** of unexpected subsurface conditions and discontinue work in affected area until the **Contractor** receives notification to resume work.

M. The **Contractor** shall protect the bottom of the trench and soil adjacent to and beneath trench from frost.

N. The **Contractor** shall prevent surface water run-off into a trench.

PART 2 - PRODUCTS

2.01 TRENCH FOUNDATION MATERIALS

Crushed stone shall be utilized for trench foundation (trench stabilization) and shall meet the requirements of the Georgia Department of Transportation Specifications Construction of Transportation Systems 800.2.01, Group I (limestone, marble, or dolomite) or Group II (quartzite, granite, or gneiss). Stone size shall be between No. 57 and No. 4, inclusive.

2.02 BEDDING AND HAUNCHING MATERIALS

A. Unless specified otherwise, bedding and haunching materials shall be crushed stone as specified below.

B. Crushed stone utilized for bedding and haunching shall meet the requirements of Section 02060 - Crushed Stone Aggregate and of the Georgia Department of Transportation Specifications Construction of Transportation Systems 800.2.01, Group I (limestone, marble, or dolomite) or Group II (quartzite, granite, or gneiss). Stone size shall be No. 57.

C. Filter Fabric - Non-Woven Type:

1. Filter fabric associated with bedding shall be a UV stabilized, spun-bonded, continuous filament, needle-punched, polypropylene, nonwoven geotextile.

2. The fabric shall have an equivalent open size (EOS or AOS) of 120 to 70. The fabric shall also conform to the minimum property values listed in the following table:

Fabric Property	**Unit**	**Test Procedure**	**Average Value**	
			Typical	**Min-imum**
Weight	oz/yd^2	ASTM D 3776	8.3	
Thickness	mils	ASTM D 1777	105	
Grab Strength	lbs	ASTM D 4632	240	210
Grab Elongation	%	ASTM D 4632	>50	50
Tear Strength	lbs	ASTM D 4533	100	85
Mullen Burst	psi	ASTM D 3786	350	320
Puncture Resistance	lbs	ASTM D 4833	115	100
Permittivity	sec^{-1}	ASTM D 4491	1.7	
Water Permeability	cm/sec	ASTM D 4491	0.4	
Water Flow Rate	gpm/ft^2	ASTM D 4491	120	
UV Resistance (500 hrs)	%	ASTM D 4355	>85	
pH			2 - 13	

3. If directed by the **County**, the filter fabric manufacturer shall furnish the services of a competent factory representative to supervise and/or inspect the installation of pipe. This service will be furnished for a minimum of 10 days during initial pipe installation.

4. Filter fabric shall be equal to TenCate Polyfelt TS 700, Trevira Fiber Company 1125, or Supac 7-MP.

2.03 INITIAL BACKFILL

A. Initial backfill material shall be crushed stone as specified for bedding and haunching materials or earth material meeting the requirements of this section.

2.04 FINAL BACKFILL

A. Final backfill material for unpaved areas shall be general excavated earth materials, shall not contain rock larger than two (2) inches at its greatest diameter, cinders, stumps, limbs, man-made wastes, and other unsuitable materials. If materials excavated from the trench are not suitable for use as final backfill material, the **Contractor** shall provide select material conforming to the requirements of this section, including compaction requirements.

B. Final backfill material for paved areas shall be crusher run. The **Contractor** shall install crusher run to the sub-base elevation in paved areas.

2.05 SELECT BACKFILL

Select backfill shall be imported materials that meet the requirements as specified for bedding, haunching, initial backfill or final backfill materials, including compaction requirements.

2.06 CONCRETE

Concrete for bedding, haunching, initial backfill, or encasement shall have a compressive strength of not less than three-thousand (3,000) psi, with not less than five and one-half (5½) bags of cement per cubic yard and a slump between three and five (3 and 5) inches. Ready-mixed concrete shall be mixed and transported in accordance with the requirements of ASTM C94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

2.07 FLOWABLE FILL

Flowable fill, where required for trench backfill, shall be submitted for approval and meet the requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, Section 600 for Excavatable or Non-Excavatable type.
http://www.dot.ga.gov/PartnerSmart/Business/Source/specs/ss600.pdf#search=section%20600 The **Contractor** shall receive direction from the **County** on which type of flowable fill shall be used on a case-by-case basis.

1. Flowable fill is a mixture of Portland cement, fly ash, fine aggregate, air entraining admixture, and water. Flowable fill contains low cementitious content for reduced strength development.
2. Ensure flowable fill is manufactured at plants that qualify at approved sources according to the Standard Operating Procedure for Quality Assurance for Ready-Mix Concrete Plants in Georgia.

2.08 GRANULAR MATERIAL

Granular material, where required for trench backfill, shall be sand, river sand, crushed stone or aggregate, pond screenings, crusher run, recycled concrete, or other angular material. Granular material shall meet gradation requirements for Size No. 57 or finer.

2.09 COMPACTION EQUIPMENT

Compaction equipment shall be of suitable type and adequate to obtain the amount of compaction specified. Compaction equipment shall be operated in strict accordance with the manufacturer's instructions and recommendations and shall be maintained in such condition that it will deliver the manufacturer's rated compaction effort.

PART 3 - EXECUTION

3.01 PREPARATION OF PIPELINE EASEMENT

A. Preparation of pipeline easement shall be performed in accordance with the requirements of Section 02200 - Earthwork. Where clearing or partial clearing of the easement is necessary, the **Contractor** shall clean the easement prior to the start of trenching. The **Contractor** shall cut trees and brush as near to the surface of the ground as practicable, remove all stumps, and pile for disposal. The **Contractor** shall not permit excavated materials to cover brush or trees prior to disposal.

The **Contractor** shall not remove any trees without approval from the **County**.

B. Trees and shrubs farther than ten (10) feet from pipe centerline shall not be removed unless designated for removal by the **County** and within the easement. The **Contractor** shall protect all other trees and shrubs.

3.02 DISPOSAL OF CLEARED MATERIAL

The **Contractor** shall bear all costs of disposing of trees, stumps, brush, roots, limbs, and other waste materials from the clearing operation. Material shall be disposed of in such a manner as to meet all the requirements of Federal, State, and local regulations regarding health, safety, and public welfare. All cleared material shall be disposed of offsite in an approved location and at the **Contractor's** expense.

3.03 OBSTRUCTIONS

This item refers to obstructions that may be removed and do not require replacement. The **Contractor** shall remove obstructions within the trench area or adjacent thereto such as tree roots, stumps, abandoned piling, concrete structures, logs, and debris of all types without additional compensation. The **County** may make changes in the trench alignment to avoid major obstructions, if such alignment changes can be made within the easement or right-of-way without adversely affecting the intended function of the facility. The **Contractor** shall dispose of obstructions removed from the excavation in accordance with the requirements of this section.

3.04 TRENCH EXCAVATION

A. Topsoil and grass shall be stripped a minimum of six (6) inches over the trench excavation site and stockpiled separately for replacement over the finished grading areas.

B. Trenches shall be excavated to the lines and grades shown on the Plans with the centerlines of the trenches on the centerlines of the pipes and to the dimensions that provide the proper support and protection of the pipe and other structures and accessories.

C. Trench Width for Pipelines:

1. The sides of all trenches shall be vertical, as much as possible, to a minimum of one (1) foot above the top of the pipe. Unless otherwise indicated on the Plans, the maximum trench width shall be equal to the sum of the outside diameter of the pipe plus two (2) feet. The minimum trench width shall be that which allows the proper consolidation of the haunching and initial backfill material.

2. The **Contractor** may, with the County's approval, excavate the top portion of the trench to the maximum width within the construction easement or right-of-way that will not cause unnecessary damage to adjoining structures, roadways, pavement, utilities, trees, or private property. Where necessary to protect adjoining structures, roadways, pavement, utilities, trees, or private property, the **Contractor** shall provide sheeting and shoring. The **Contractor** shall use trench boxes to stabilize the trench meeting minimum structural loading. The **Contractor** shall ensure that all shop drawings from the supplier of the trench boxes have been stamped by a Professional Engineer registered in Georgia. The **Contractor** shall also submit to the **County** for approval the sheeting and shoring.

3. Where rock is encountered in trenches, the **Contractor** shall excavate to remove boulders and stones to provide a minimum of six- (6-) inch clearance between the rock and any part of the pipe or manhole. The maximum allowable width of rock excavation for payment shall be the outer diameter of the pipe bell to be installed plus twenty-four (24) inches.

4. Wherever the prescribed maximum trench width is exceeded, the **Contractor** shall use the next higher Class or Type of bedding and haunching as shown on the Plans for the full trench width as actually cut. The excessive trench width may be due to unstable trench walls, inadequate or improperly placed bracing and sheeting which causes sloughing, accidental over-excavation, intentional over-excavation necessitated by the size of the **Contractor's** tamping and compaction equipment, intentional over-excavation due to the size of the **Contractor's** excavation equipment, or other reasons beyond the control of the **County** and the cost is borne by the **Contractor**.

D. Depth:

1. The trenches shall be excavated to the required depth or elevation that allows for the placement of the pipe and bedding to the dimensions shown on the Plans.

2. Where rock is encountered in trenches for pipelines, the **Contractor** shall excavate to the minimum depth that will provide clearance below the pipe barrel of eight (8) inches for pipe twenty-one (21) inches in diameter and smaller and 12 inches for larger pipe and manholes. The **Contractor** shall remove boulders and stones to provide a minimum of six (6) inches clearance between the rock and any part of the pipe, manhole, or accessory.

E. Excavated Materials:

1. Excavated materials shall be placed a minimum of two (2) feet from the top edge of the open trench and may be used for backfilling as required. Topsoil shall be carefully separated and lastly placed in its original location.

2. Excavated materials shall not be placed in public roadways. Excavated materials not used or useful as backfill shall be immediately disposed of away from the site of the Work.

3. Excavated material shall be placed sufficiently back from the edge of the excavation to prevent caving of the trench wall, to permit safe access along the trench and not cause any drainage problems. Excavated material shall be placed so as not to damage existing landscape features or man-made improvements.

3.05 SHORING, SHEETING, AND BRACING OF TRENCHES

A. The **Contractor** shall sheet and brace the trench as required by Federal, State, and local laws and regulations. Shoring, sheeting, and bracing shall be designed by a Professional Engineer registered in the State of Georgia. OSHA standards shall be used to prevent caving during excavation in unstable material, or to protect adjacent structures, property, workers, and the public. The **Contractor** shall increase trench widths accordingly by the thickness of the sheeting. The **Contractor** shall maintain sheeting in place until the pipe has been placed and backfilled at the pipe zone. Shoring and sheeting shall be removed, as the backfilling is done, in a manner that will not damage the pipe or permit voids in the backfill. All sheeting, shoring, and bracing of trenches shall conform to the safety requirements of the Federal, State, or local public agencies having jurisdiction. The most stringent of these requirements shall apply.

B. Sheeting, bracing, and shoring shall be performed in the following instances:

1. Where sloping of the trench walls does not adequately protect persons within the trench from slides or cave-ins.
2. In caving ground.
3. In wet, saturated, flowing, or otherwise unstable materials, the sides of all trenches and excavations shall be adequately sheeted, braced, and shored.
4. Where trenches and other excavations are within ten (10) feet from existing buildings and structures or where necessary to prevent damage to

adjoining buildings, structures, roadways, pavement, utilities, trees, or private properties, which are required to remain, whichever is more stringent.

5. Where necessary to maintain the top of the trench within the available construction easement or right-of-way.

C. In all cases, excavation protection shall strictly conform to the requirements of the Occupational Safety and Health Act of 1970, as amended.

D. Timber: Timber for shoring, sheeting, or bracing shall be sound, free of large or loose knots, and in good, serviceable condition. Size and spacing shall be in accordance with OSHA regulations.

E. Steel Sheeting and Sheet Piling: Steel sheet piling shall be the continuous interlock type. The weight, depth, and section modulus of the sheet piling shall be sufficient to restrain the loads of earth pressure and surcharge from existing foundations and live loads. Procedures for installation and bracing shall be so scheduled and coordinated with the removal of the earth that the ground under existing structures shall be protected against lateral movement at all times. The **Contractor** shall provide closure and sealing between sheet piling and existing facilities.

F. Trench Shield: A trench shield or box may be used to support the trench walls. The use of a trench shield does not necessarily preclude the additional use of bracing and sheeting. When trench shields are used, care must be taken to avoid disturbing the alignment and grade of the pipe or disrupting the haunching of the pipe as the shield is moved. When the bottom of the trench shield extends below the top of the pipe, the trench shield shall be raised in 6-inch increments with specified backfilling occurring simultaneously. At no time shall the trench shield be "dragged" with the bottom of the shield extending below the top of the pipe.

G. The **Contractor** shall remove bracing and sheeting in units when backfill reaches the point necessary to protect the pipe and adjacent property. The **Contractor** shall leave sheeting in place when in the opinion of the **County** it cannot be safely removed or is within three (3) feet of an existing structure, utility, or pipeline. The **Contractor** shall cut off any sheeting left in place at least three (3) feet below the surface.

H. Sheet piling within three (3) feet of an existing structure or pipeline shall remain in place, unless otherwise directed by the **County**.

I. If, in the opinion of the **County**, the material furnished for supporting excavation is not of the proper quality or sufficient size, or not properly placed to insure the safety of the Work or of adjacent structures or property, the **Contractor** shall, upon notice by the **County**, forthwith procure and place satisfactory supports, or place said supports in a satisfactory manner and upon his failure so to do, the **County** may order the **Contractor** to stop work until said notice has been complied with and without entitling the **Contractor** to any claim for extra compensation, damage, or delay.

J. When required by the **County**, a shoring plan shall be submitted by the **Contractor** for approval prior to construction of the particular portion of the Work.

K. All supports in excavations shall be withdrawn in stages on both sides of trenches (to prevent lateral movement of the pipe) as the backfilling is being done, except where, and to such extent as the **County** shall order, or where the **County** shall permit the same to be left in place, at the **Contractor's** expense and upon the **Contractor's** request. The **Contractor** shall cut off any sheeting left in place, at least three (3) feet below finished grade whenever ordered by the **County**.

3.06 TRENCH ROCK EXCAVATION

A. Rock excavation shall be performed in accordance with the requirements of Section 02316 - Rock Removal.

B. Definition of Trench Rock: Any material that requires drilling and blasting, and occupies an original volume of at least one (1) cubic yard. Rock shall be considered as material that cannot be removed with a crawler tractor equal to a D-8 Caterpillar, equipped with a single-tooth ripper or by an excavator trackhoe equal to a Caterpillar 225 rated with a ¾-cubic-yard capacity with a bucket curling pullout capacity of 25,000 pounds.

C. Blasting: The **Contractor** shall exhaust other practical means of excavating prior to utilizing blasting as a means of excavation. The **Contractor** shall provide licensed, experienced workmen to perform blasting. The **Contractor** shall conduct blasting operations in accordance with all existing ordinances and regulations and gain all required permits at their cost. The **Contractor** shall protect all buildings and structures from the effects of the blast. The **Contractor** shall repair any resulting damage. If the **Contractor** repeatedly uses excessive blasting charges or blasts in an unsafe or improper manner, the **County** may direct the **Contractor** to employ an independent blasting consultant to supervise the preparation for each blast and approve the quantity of each charge at the **Contractor**'s expense.

D. Disposal of Rock: The **Contractor** shall dispose of rock, off site, that is surplus or not suitable for use as riprap or backfill in a lawful manner.

E. The **Contractor** shall notify the **County** prior to any blasting. Additionally, the **Contractor** shall notify the **County** and local fire department before any charge is set.

F. The **Contractor** shall employ an independent, qualified specialty subcontractor, approved by the **County**, to: monitor the blasting by use of a seismograph; identify the areas where light charges must be used; conduct pre-blast and post-blast inspections of structures, including photographs or videos; and maintain a detailed written log.

3.07 DEWATERING EXCAVATIONS

A. Dewatering shall be performed in accordance with the requirements of Section 02140 - Dewatering.

B. The **Contractor** shall dewater excavations continuously to maintain a water level at least two (2) feet below the bottom of the trench.

A. The **Contractor** shall control drainage in the vicinity of excavations so the ground surface is properly pitched to prevent water running into the excavation.

D. The **Contractor** shall maintain sufficient pumping equipment, in good working order, available at all times, to remove any water that accumulates in excavations. Where pipes cross natural drainage channels, the Work shall be conducted in such a manner that unnecessary damage or delays in the Work shall be prevented. The **Contractor** shall make provisions for the satisfactory disposal of surface water to prevent damage to public or private property.

E. In all cases, accumulated water in the trench shall be removed before placing bedding or haunching, laying pipe, placing concrete, or backfilling.

F. Where dewatering is performed by pumping the water from a sump, crushed stone shall be used as the medium for conducting the water to the sump. Sump depth shall be at least two (2) feet below the bottom of the trench. Pumping equipment shall be of sufficient quantity and/or capacity to maintain the water level in the sump at least two (2) feet below the bottom of the trench. Pumps shall be a type such that intermittent flows can be discharged. A standby pump shall be required in the event the operating pump or pumps clog or otherwise stop operating.

G. The **Contractor** shall dewater trenches by use of a well point system when pumping from sumps does not lower the water level at least 2 feet below the trench bottom. Where soil conditions dictate, the **Contractor** shall construct well points cased in sand wicks. A casing of six (6) to ten (10) inches in diameter shall be jetted into the ground, followed by the installation of the well point, filling the casing with sand, and withdrawing the casing.

3.08 TRENCH FOUNDATION AND STABILIZATION

A. The bottom of the trench shall provide a foundation to support the pipe and its specified bedding. The trench bottom shall be graded to support the pipe and bedding uniformly throughout its length and width.

B. If, after dewatering as specified above, the trench bottom is spongy, or if the trench bottom does not provide firm, stable footing, and the material at the bottom of the trench will still not adequately support the pipe, the trench will be determined to be unsuitable and the **Contractor** shall then stabilize the trench by over-excavating the trench bottom and filling it with crushed stone.

C. Where the replacement of unsuitable material with crushed stone does not provide an adequate trench foundation, the trench bottom shall be excavated to a depth of at least 2 feet below the specified trench bottom. The **Contractor** shall place filter fabric in the bottom of the trench and support the fabric along the trench walls until

the trench stabilization, bedding, haunching, and pipe have been placed at the proper grade. The ends of the filter fabric shall be overlapped above the pipe.

D. Where trench stabilization is provided, the trench stabilization material shall be compacted to a minimum ninety (90) percent of the maximum dry density, unless shown on the Plans or specified otherwise in these Specifications.

3.09 BEDDING AND HAUNCHING

A. Prior to placement of bedding material, the trench bottom shall be free of any water, loose rocks, boulders, or large dirt clods.

B. Bedding material shall be placed to provide uniform support along the bottom of the pipe and to place and maintain the pipe at the proper elevation. The initial layer of bedding placed to receive the pipe shall be brought to the grade and dimensions indicated on the Plans. All bedding shall extend the full width of the trench bottom. The pipe shall be placed and brought to grade by tamping the bedding material or by removal of the excess amount of the bedding material under the pipe. Adjustment to grade and line shall be made by scraping away or filling with bedding material. Wedging or blocking up of pipe shall not be permitted. Applying pressure to the top of the pipe, such as with a backhoe bucket, to lower the pipe to the proper elevation or grade shall not be permitted. Each pipe section shall have a uniform bearing on the bedding for the length of the pipe, except immediately at the joint.

C. At each joint, the **Contractor** shall excavate bell holes of ample depth and width to permit the joint to be assembled properly and to relieve the pipe bell of any load.

D. After the pipe section is properly placed, the **Contractor** shall add the haunching material to the specified depth. The haunching material shall be shovel sliced, tamped, vigorously chinked, or otherwise consolidated to provide uniform support for the pipe barrel and to fill completely the voids under the pipe, including the bell hole. Prior to placement of the haunching material, the bedding shall be clean and free of any water, loose rocks, boulders, or dirt clods.

E. Gravity Sewers and Accessories: The **Contractor** shall lay pipe with Class "B" bedding, unless otherwise shown on the Plans, specified in these Specifications, specified by the manufacturer, or directed by the **County**.

1. Class "A": The **Contractor** shall excavate the bottom of the trench flat at a minimum depth as shown on the Plans, below the bottom of the pipe barrel. The **Contractor** shall lay pipe to line and grade on concrete block. The **Contractor** shall place concrete to the full width of the trench and to a height of one-quarter of the outside diameter of the pipe above the invert.

2. Class "B": The **Contractor** shall excavate the bottom of the trench flat at a minimum depth as shown on the Plans, below the bottom of the pipe barrel. The **Contractor** shall place and compact bedding material to the proper grade. Haunching material shall then be carefully placed by hand

and compacted to provide full support under and up to the centerline of the pipe.

3. Class "C": The **Contractor** shall excavate the bottom of the trench flat at a minimum depth as shown on the Plans, below the bottom of the pipe barrel. The **Contractor** shall place and compact bedding material to the proper grade. Haunching material shall then be carefully placed by hand and compacted to provide full support under and up to a height of one-quarter the outside diameter of the pipe above the bottom of the pipe barrel.

4. Type 5: The **Contractor** shall excavate the bottom of the trench flat at a minimum depth as shown on the Plans, below the bottom of the pipe barrel. The **Contractor** shall place and compact bedding material to the proper grade before installing pipe. After the pipe has been brought to the proper grade, haunching material shall be carefully placed by hand and compacted to the top of the pipe.

F. Manholes: The **Contractor** shall excavate to a minimum of twelve (12) inches below the planned elevation of the base of the manhole. The **Contractor** shall place and compact crushed stone bedding material to the required grade before constructing the manhole.

G. Excessive Width and Depth:

1. Gravity Sewers: If the trench is excavated to excess width, the **Contractor** shall provide the bedding class with the next higher bedding factor. Type 5 Bedding may be used in lieu of Class "A" bedding, where Class "A" bedding is necessitated by excessive trench width.

2. If the trench is excavated to excessive depth, the **Contractor** shall provide crushed stone to place the bedding at the proper elevation or grade.

H. Compaction: Bedding and haunching materials under the pipe, manholes, and accessories shall be compacted to a minimum of ninety (90) percent of the maximum dry density, unless shown or specified otherwise in these Specifications.

3.10 INITIAL BACKFILL

A. Initial backfill shall be placed to anchor the pipe, protect the pipe from damage by subsequent backfill, and ensure the uniform distribution of the loads over the top of the pipe.

B. The **Contractor** shall place initial backfill material carefully around the pipe in uniform layers to a depth of at least twelve (12) inches above the pipe barrel. Layer depths shall be a maximum of six (6) inches.

C. The **Contractor** shall backfill on both sides of the pipe simultaneously to prevent side pressures.

D. The **Contractor** shall compact each layer thoroughly with suitable hand tools or tamping equipment.

E. Initial backfill shall be compacted to a minimum ninety (90) percent of the maximum dry density, unless shown or specified otherwise in these Specifications.

3.11 CONCRETE ENCASEMENT FOR PIPELINES

A. Where concrete encasement is shown on the Plans for pipelines, the **Contractor** shall excavate the trench to provide a minimum of twelve (12) inches clearance from the barrel of the pipe. The **Contractor** shall lay the pipe to line and grade on solid concrete blocks or solid bricks. In lieu of bedding, haunching, and initial backfill, the **Contractor** shall place concrete to the full width of the trench and to a height of not less than twelve (12) inches above the pipe barrel. The **Contractor** shall properly brace the pipeline in order to prevent floating of piping during concrete encasement placement. The **Contractor** shall not backfill the trench for a period of at least twenty-four (24) hours after concrete is placed.

3.12 FINAL BACKFILL

A. The **Contractor** shall backfill carefully to restore the ground surface to its original condition.

B. Except as specified otherwise in this section, the top six (6) inches shall be topsoil obtained as specified in this section.

C. Excavated material that is unsuitable for backfilling shall be disposed of offsite.

D. If materials excavated from the trench are not suitable for use as backfill materials, the **Contractor** shall provide select backfill material conforming to the requirements of this section.

E. After initial backfill material has been placed and compacted, the **Contractor** shall backfill the trench with final backfill material. The **Contractor** shall place backfill material in uniform layers, compacting each layer thoroughly as follows:

1. In six- (6-) inch inch layers, if using light power tamping equipment, such as a "jumping jack"

2. In twelve- (12) -inch layers, if using heavy tamping equipment, such as hammer with tamping feet

3. In twenty-four- (24-) inch layers, if using a Hydraram HARDOX-400 compactor.

F. Settlement: If the trench settles, the **Contractor** shall excavate, re-fill, compact, and grade the surface to conform to the adjacent surfaces.

G. Final backfill shall be compacted to a minimum ninety (90) percent of the maximum dry density, unless specified otherwise.

3.13 ADDITIONAL MATERIAL

A. Where final grades above the pre-construction grades are required to maintain minimum cover, additional fill material shall be as shown on the Plans. The **Contractor** shall utilize excess material excavated from the trench, if the material is suitable. If excess excavated materials are not suitable, or if the quantity available is not sufficient, the **Contractor** shall provide additional suitable fill material.

3.14 BACKFILL WITHIN RIGHTS-OF-WAY

A. The **Contractor** shall compact backfill underlying pavements and sidewalks, and backfill under dirt and gravel roads to a minimum ninety-five (95) percent of the maximum dry density.

3.15 BACKFILL WITHIN GEORGIA DOT RIGHTS-OF-WAY

Backfill within the GDOT rights-of-way shall meet the requirements stipulated in the "Utility Accommodation Policy and Standards," published by GDOT.

3.16 FLOWABLE FILL

A. Where flowable fill is required, and approved by the **County**, the **Contractor** shall excavate the trench to provide a minimum of six (6) inches clearance on either side of the pipe barrel. The **Contractor** shall lay the pipe to line and grade on solid concrete blocks or bricks. In lieu of bedding, haunching, and initial backfill, the **Contractor** shall place flowable fill to the full width and depth of the trench.

B. Flowable fill shall be protected from freezing for a period of thirty-six (36) hours after placement. Minimum temperature of flowable fill at point of delivery shall be fifty (50) degrees F.

C. The **Contractor** shall provide steel plates over flowable fill in road locations.

3.17 COMPACTED GRANULAR MATERIAL

Where compacted granular material is required as initial and final backfill material, it shall be placed after bedding and haunching material specified elsewhere has been placed. Compacted granular material shall be compacted to a minimum ninety-five (95) percent of the maximum dry density.

3.18 TESTING AND INSPECTION

A. The soils testing laboratory is responsible for the following:

1. Compaction tests in accordance with the requirements of this section.

2. Field density tests for each two (2) feet of lift, with at least one test site between each pair of manholes, every one-hundred (100) feet within road

rights-of-way, or more frequently if ordered by the **County**. The **County** will direct where the **Contractor** shall perform density tests along the site of the Work.

3. Inspecting and testing stripped areas, subgrades, and proposed fill materials.

B. The **Contractor**'s duties relative to testing shall include the following:

1. Notifying laboratory of conditions requiring testing.

2. Coordinating with laboratory for field-testing.

3. Paying costs for additional testing performed beyond the scope of that required and for re-testing where initial tests reveal non-conformance with specified requirements.

4. Providing excavation as necessary for laboratory personnel to conduct tests at no cost to the **County**

C. Inspection:

1. Earthwork operations, acceptability of excavated materials for bedding or backfill, and placing and compaction of bedding and backfill are subject to inspection by the **County**.

2. Foundations and shallow spread footing foundations shall be inspected by **County** geotechnical personnel, who shall verify suitable bearing and construction.

D. The **Contractor** shall comply with applicable codes, ordinances, rules, regulations, and laws of local, municipal, state, or federal authorities having jurisdiction.

3.19 DISPOSAL OF EXCESS EXCAVATED MATERIAL

The **Contractor** shall dispose of excess excavated material, in accordance with the requirements of Section 02324 – Trenching and Trench Backfilling. The **Contractor** shall arrange for the disposal of excess materials, and shall bear all costs and expense of disposal.

+++ END OF SECTION 02324 +++

SECTION 02433
REINFORCED CONCRETE PIPE FOR STORM DRAINS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals necessary to install reinforced concrete pipe and fittings as shown on the drawings and required by the Specifications.

1.2 SHOP DRAWINGS

A. Submit shop drawings showing piping and drainage structure layout and details of reinforcement, joint and method of construction and installation of reinforced concrete pipe, specials, and fittings required.

1.3 RELATED WORK

A. Division 3: Concrete

B. Division 4: Mortar

PART 2 - PRODUCTS

2.1 REINFORCED CONCRETE PIPE

A. Except as otherwise specified within, pipe shall conform to ASTM Standard Specifications for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe, Designation C76, Class III, Wall B. The tabulated reinforcement given in the tables in ASTM Standard C76 shall be the minimum required.

B. The pipe shall be capable of withstanding construction equipment loading which may be encountered during the progress of work. Any pipe damage during construction operations shall be promptly and satisfactorily repaired.

C. Non-air-entraining Portland cement conforming to ASTM Specification C150, Type I shall be used, except as otherwise approved in writing. The use of a non-bleeding, water-reducing, dispersing agent may be permitted subject to the specific approval. The use of any other admixture will not be permitted.

D. Fine aggregate shall consist of washed inert natural sand conforming to the requirements of ASTM Specification C33, except for gradation, with a maximum loss of 5% when subjected to 5 cycles of the soundness test using magnesium sulfate.

E. Coarse aggregate shall consist of well-graded crushed stone or washed gravel conforming to the requirements of ASTM Specification C33, with a maximum loss of 5% when subjected to 5 cycles of the soundness test using magnesium sulfate.

F. The 28-day compressive strength of the concrete, as indicated by cores cut from the pipe shall be not less than 4,000 psi. The pipe interior shall comprise a continuous integral cement skin and shall be smooth and even, free from roughness, projections, indentations, offsets or irregularities. The concrete mass shall be dense and uniform. The average absorption shall not exceed 5.3%. Reinforcement shall be circular for all concrete pipe. Reinforcement in the bell and spigot shall be adequate to prevent damage to concrete during shipping, handling and installation. Cores indicating reinforcing steel having less than 85% bond shall be cause for rejection of the lot of pipes.

G. The pipe shall be clearly marked as required by ASTM C76. The markings may be at either end of the pipe for the convenience of the manufacturer, but for any one size shall always be at the same end of each pipe length. Pipe shall not be shipped until compressive strength of the concrete has attained 3,000 psi and not before 5 days after manufacture and/or repaired, whichever is the longer.

H. Pipes shall have a minimum laying length of approximately 8', except for closure and other special pieces. The length of the incoming and outgoing concrete pipe at each structure shall not exceed 4', except where the joint is cast flush with the exterior wall of the structure. Maximum laying length shall not exceed 16', but the installation of 16' lengths will depend upon the ability of the Contractor to handle such lengths of pipe. In deep sheeted trenches comply with trench width requirements, maintain the integrity of the sheeting and avoid disturbance to adjacent ground. If in the opinion of the Owner's Representative the use of 16' lengths is impracticable, shorter lengths shall be used.

I. The quality of all materials and the finished pipe shall be subject to inspection and approval of a representative of the Owner. Such inspection may be made at both places, and the pipe shall be subject to rejection at any time because of failure to meet any of the specification requirements, even though sample pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery

shall be marked for identification and shall be removed from the job at once.

J. At the time of inspection, the pipe will be carefully examined for compliance with the appropriate ASTM and project specification, and inspected for general appearance, dimension, "scratch-strength", blisters, cracks, roughness, soundness, and other features. All pipes will be checked for soundness by being tapped and scratched over a reasonable portion of the area, at least once on every 20 sq. inches of pipe surface. The surface shall be dense and close-textured. Cores shall also serve as a basis for rejection of pipe, particularly if lamination or poor bond of reinforcement is apparent.

K. The manufacturer shall inspect all pipe joints for out-of-roundness and pipe ends for squareness. The manufacturer shall furnish a notarized affidavit stating all pipes meet the requirements of ASTM C76, these specifications, and the joint design with respect to square ends and out-of-round joint surfaces.

L. Unsatisfactory or damaged pipe will be either permanently rejected or returned for minor repairs. Only that pipe actually conforming to the specifications and accepted will be listed for approval, shipment and payment. Approved pipe will be so stamped or stenciled on the inside before it is shipped. All pipe which has been damaged after delivery will be rejected, and if such pipe already has been laid in the trench, it shall be acceptably repaired, if permitted, or removed and replaced.

M. Pits, blisters, rough spots breakage and other imperfections may be repaired, subject to the approval of the Owner's Representative, after demonstration by the manufacturer that strong permanent repairs result. Repairs shall be carefully inspected before final approval. Non-shrink cement mortar used for repairs shall have a minimum compressive strength of 6,000 psi at the end of 7 days and 7,000 psi at the end of 28 days, when tested in 3" cylinders store in the standard manner. Epoxy mortar may be utilized for repairs.

2.2 JOINTS FOR CONCRETE PIPE

A. Joints for concrete pipe shall be the tongue and groove or bell and spigot type of joint with provisions for using a round rubber "0-Ring" gasket in recess in the spigot end of the pipe. The bevel on the bell of the pipe shall be between 1-1/2 degree and 2-1/2 degree and the annular open spaced at the gasket when the joint is made up and pipes are centered in line shall not exceed 1/8". The faces of pipe in contact with the gasket shall be true, and free of irregularities. Joints for drain pipe may be made with mortar.

B. The round rubber "0-Ring" gaskets for either joint shall conform to ASTM C443 Specifications for joints for Circular Concrete Sewer and Culvert Pipe using rubber gaskets.

PART 3 - EXECUTION

3.1 LAYING REINFORCED CONCRETE PIPE FOR DRAINS

A. Bell and spigot pipe joints shall be made by caulking all around with twisted jute of proper size to give proper alignment of the pipe. Inner surfaces of abutting sections shall be flush and on a smooth grade. Brush and wet the jointing surfaces and fill the annular opening with mortar to a minimum depth of 2", sufficient to form a bead around the outside face of the bell.

B. Mortar for jointing shall consist of one part Portland cement and two parts sand, using a minimum amount of water-sufficient to make a workable mortar.

C. Joints shall be immediately protected from freezing or excessive drying by covering with earth, burlap or other approved material.

3.2 CLEANING

A. At the conclusion of the work, thoroughly clean all of the new pipe lines by flushing with water or other means to remove all dirt, stones, pieces of wood or other material which may have entered during the construction period. Debris cleaned from the lines shall be removed from the lowest outlet. If, after this outlet cleaning, obstructions remain, they shall be removed.

END OF SECTION

SECTION 02485
SEEDING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The work covered by this section consists of furnishing all labor, equipment, and material required to place topsoil, seed, commercial fertilizer, agricultural limestone, and mulch material, including seedbed preparation, harrowing, compacting, and other placement operations on graded earthen areas as described herein and/or shown on the Drawings. In general, seeding operations shall be conducted on all newly graded earthen areas not covered by structures, pavement, or sidewalks; all cleared or grubbed areas that are to remain as finish grade surfaces; and on all existing turf areas that are disturbed by construction operations and which are to remain as finish grade surfaces. Areas disturbed by borrow activities shall also be seeded according to these specifications.

B. The work shall include temporary seeding operations to stabilize earthen surfaces during construction or inclement weather and to minimize stream siltation and erosion. Temporary seeding shall be performed on any disturbed area left exposed for a period greater than seven (7) days.

C. Areas disturbed by construction activities, shall be restored to their original conditions with regard to surface grading, drainage, grass type (predominate), or other landscape features.

1.02 RELATED WORK

A. Section 02125 – Temporary and Permanent Erosion and Sediment Control

B. Section 02486 - Sodding

1.03 QUALITY ASSURANCE

A. Prior to seeding operations, the **Contractor** shall furnish to the **County** all labels or certified laboratory reports from an accredited commercial seed laboratory or a state seed laboratory showing the analysis and germination of the seed to be furnished. Acceptance of the seed test reports shall not relieve the **Contractor** of any responsibility or liability for furnishing seed meeting the requirements of this section.

B. Prior to topsoil operations, the **Contractor** shall obtain representative samples and furnish soil test certificates including textural, pH, and organic ignition analysis from the State University Agricultural Extension Services or other certified testing laboratory.

1.04 ALTERNATE METHODS

A. The **Contractor** may propose alternate means and methods to establish a satisfactory coverage of healthy grass of the type required. The **Contractor** shall submit sufficient information to enable the **County** to assess the acceptability of the alternate approach.

PART 2 – PRODUCTS

2.01 TOPSOIL

A**.** The **Contractor** shall place a minimum of 4 inches of topsoil over all graded earthen areas and over any other areas to be seeded. The quality of topsoil shall be acceptable to the **County**.

B**.** Topsoil shall be a friable loam containing a large amount of humus and shall be original surface soil of good, rich, uniform quality, free from any material such as hard clods, stiff clay, hardpan, partially disintegrated stone, pebbles larger than ½ inch in diameter, lime, cement, bricks, ashes, cinders, slag, concrete, bitumen or its residue, boards, sticks, chips, or other undesirable material harmful or unnecessary to plant growth. Topsoil shall be reasonably free from perennial weeds and perennial weed seeds, and shall not contain objectionable plant material, toxic amounts of either acid or alkaline elements or vegetable debris undesirable or harmful to plant life.

C. Topsoil shall be natural topsoil without admixture of subsoil material, and shall be classifiable as loam, silt loam, clay loam, sandy loam, or a combination thereof. The pH shall range from five and five tenths to seven (5.5 to 7.0). Topsoil shall contain not less than five (5) percent or more than twenty (20) percent, by weight, of organic matter as determined by loss on ignition of oven-dried samples to sixty-five (65°C0 degrees centigrade.

2.02 SEED

A. Seed shall be delivered in new bags or bags that are sound and labeled in accordance with the U. S. Department of Agriculture Federal Seed Act.

B**.** All seed shall be from the last crop available at time of purchase and shall not be moldy, wet, or otherwise damaged in transit or storage.

C. Seed shall bear the growers analysis testing to ninety-eight (98) percent for purity and ninety (90) percent for germination. At the discretion of the Owner, samples of seed may be taken for check against the grower’s analysis.

D. Species, rate of seeding, fertilization, and other requirements shall be as necessary to successfully establish the required stand of grass.

2.03 FERTILIZER AND LIMING MATERIALS

A. Fertilizer and liming materials shall comply with applicable state, local, and federal laws concerned with their production and use.

B. Commercial fertilizer shall be a ready mixed material of grade 18-46-0. Container bags shall have the name and address of the manufacturer, the brand name, net weight, and chemical composition.

C. Agricultural limestone shall be a pulverized limestone having a calcium carbonate content of not less than 85 percent by weight. Agricultural limestone shall be crushed so that at least 85 percent of the material will pass a No. 10 mesh screen and 50 percent will pass a No. 40 mesh screen.

2.04 MULCH MATERIAL

A. All mulch materials shall be air dried and reasonably free of noxious weeds and weed seeds or other materials detrimental to plant growth.

B. Mulch shall be composed of wood cellulose fiber, straw, or stalks, as specified herein. Mulch shall be suitable for spreading with standard mulch blowing equipment.

C. Wood-cellulose fiber mulch shall be as manufactured by Weyerhaeuser Company, Conway Corporation, or equal.

D. Straw mulch shall be partially decomposed stalks of wheat, rye, oats, or other approved grain crops.

E. Stalks shall be the partially decomposed, shredded residue of corn, cane, sorghum, or other approved standing field crops.

2.05 MULCH BINDER

A. Mulch on slopes exceeding three to one (3 to 1) ratio shall be held in place by the use of an approved mulch binder. The mulch binder shall be non-toxic to plant life.

B. Emulsified asphalt binder shall be Grade SS-1, ASTM D 977. Cutback asphalt binder shall be Grade RC 70 or RC 250.

2.06 INOCULANTS FOR LEGUMES

A. All leguminous seed shall be inoculated prior to seeding with a standard culture of nitrogen-fixing bacteria that is adapted to the particular seed involved.

2.07 WATER

A**.** Water shall be clean, clear water free from any objectionable or harmful chemical qualities or organisms and shall be furnished by the **Contractor**.

PART 3 - EXECUTION

3.01 PLACING TOPSOIL

A. Before placing or depositing topsoil upon any areas, all improvement within the area shall be completed.

B. The areas in which topsoil is to be placed or incorporated shall be prepared before securing topsoil for use.

3.02 SEEDBED PREPARATION

A. Before fertilizing and seeding, all topsoil surfaces shall be trimmed and worked to true line free from unsightly variation, bumps, ridges and depressions, and all detrimental material, and roots. All stones larger than two (2) inches in any dimension shall be removed from the soil. All non-residential and residential areas shall be hand raked to remove all detrimental material, roots, and stones

B. No earlier than twenty-four (24) hours before the seed is to be sown, the soil surface to be seeded shall be thoroughly cultivated to a depth of not less than two (2) inches with a weighted disc, tiller, pulvimixer, or other equipment, until the surface is smooth.

C. If the prepared surface becomes eroded because of rain or for any other reason, or becomes crusted before the seed is sown, the surface shall again be placed in a condition suitable for seeding.

D. Ground preparation operations shall be performed only when the ground is in a tillable and workable condition.

3.03 FERTILIZATION AND LIMING

A. Following seedbed preparation, fertilizer shall be applied to all areas to be seeded so as to achieve an application rate 80 pounds per acre.

B. Fertilizer shall be spread evenly over the seedbed and shall be lightly harrowed, raked, or otherwise incorporated into the soil for a depth of ½ inch.

C. Fertilizer need not be incorporated in the soil as specified above when mixed with seed in water and applied with power sprayer equipment. The seed shall not

remain in water containing fertilizer for more than thirty (30) minutes when a hydraulic seeder is used.

D. Agricultural limestone shall be thoroughly mixed into the soil at a rate of one to two (1 to 2) tons per acre. The specified rate of application of limestone may be reduced by the Owner if pH tests indicate this to be desirable. It is the responsibility of the **Contractor** to obtain such tests and submit the results to the Owner for adjustment in rates.

E. It is the responsibility of the **Contractor** to make one application of maintenance fertilizer at one-half the original rates applied in early spring following initial establishment of cover.

3.04 SEEDING

A. Seed of the specified group shall be sown as soon as preparation of the seedbed has been completed. No seed shall be sown during high winds, nor until the surface is suitable for working and is in a proper condition. Seeding shall be performed during the periods shown below. Seed mixtures may be sown together provided they are kept in a thoroughly mixed condition during the seeding operation.

B. Seeds shall be uniformly sown by any approved mechanical method to suit the slope and size of the areas to be seeded, preferably with a broadcast type seeder, windmill hand seeder, or approved mechanical power drawn seed drills. Hydroseeding and hydromulching may be used on steep embankments, provided full coverage is obtained. Care shall be taken to adjust the seeder so that the seeding's are at the proper rate before seeding operations are started, and to maintain their adjustment during seeding. Seed in hoppers shall be agitated to present segregation of the various seeds in a seeding mixture.

C. Immediately after sowing, the seeds shall be covered and compacted to a depth of one-eighth to three-eighths (1/8 to 3/8) inch by a cultipacker or suitable roller.

D. Leguminous seeds shall be inoculated prior to seeding with an approved and compatible nitrogen-fixing inoculant in accordance with the manufacturer's mixing instructions.

Seeding Requirements Table

The seed shall be a mixture as shown in the Table below, and shall be applied at the following rates shown:

Seeding Requirements		
Season	Type of Seed	Pounds Per Acre
Jan 1 – May 15	Unhulled Common Bermuda	45
	Kentucky 31 Fescue	300
	Rebel II Supreme	150
May 16 – Sept 1	Hulled Common Bermuda	75
Sept 2 – Dec 31	Unhulled Common Bermuda	45
	Kentucky 31 Fescue	300
	Rebel II Supreme	150

3.05 MULCHING

A**.** All areas to be seeded shall be uniformly mulched in a continuous blanket immediately after seeding when using Wheat straw at a minimum of two and one-half (2 ½) tons per acre or equivalent to two to four (2" to 4") inches thickness. The rate of application will correspond to a depth of at least one inch and not more than one and one half inches, according to the texture and moisture content of the mulch material. It is intended that mulch shall allow some sunlight to penetrate and air to circulate, at the same time shading the ground, reducing erosion and conserving soil moisture. The **Contractor** shall take steps necessary to prevent loss of mulch or bunching of mulch as caused by the wind.

B. Mulch on slopes greater than three to one (3 to 1) ratio shall be held in place by the use of an approved mulch binder. Binder shall be thoroughly mixed and applied with the mulch. Emulsified asphalt or cutback asphalt shall be applied at the approximate rate of five (5) gallons per one thousand (1,000) square feet as required to hold the mulch in place.

C. The **Contractor** shall cover structures, poles, fence, and appurtenances if the mulch binder is applied in such a way that it would come in contact with or discolor the structures.

D. Mulch and binder shall be applied by suitable blowing equipment at closely controlled application rates.

3.06 WATERING

A. **Contractor** shall be responsible for maintaining the proper moisture content of the soil to ensure adequate plant growth until a satisfactory stand is obtained. If necessary, watering shall be performed to maintain adequate water content in the soil. Water shall not be applied when there is danger of freezing. In the event that official watering bans or water restrictions are in effect, the Contract shall comply with applicable guidelines on watering for new grassing.

B. Watering shall be accomplished by hoses, tank truck, or sprinklers in such a way to prevent erosion, excessive runoff, and overwatered spots.

3.07 MAINTENANCE

A. Upon completion of seeding operations, the **Contractor** shall clear the area of all equipment, debris, and excess material and the premises shall be left in a neat and orderly condition.

B. The **Contractor** shall maintain all seeded area without additional payment until final acceptance of the work by the **County**, including all regrading, refertilizing, reliming, reseeding, remulching, and watering required. Seeding work shall be repeated on defective areas until the **County** is satisfied that a satisfactory uniform stand is accomplished Damage resulting from erosion, gulleys, washouts, or other causes shall be repaired at the **Contractor**'s expense by filling with topsoil, compacting, and repeating the seeding work.

3.08 VEGETATIVE STABILIZATION SCHEDULE

A. The **Contractor** shall stabilize disturbed areas as construction progresses. The time duration limitations for stabilization of disturbed areas by either temporary mulching (for 7 days or less), temporary grassing, permanent grassing, or permanent sodding shall be as specified in Section 02270 - Erosion and Sediment Control; however, unstabilized areas of the construction corridor shall not exceed one thousand (1,000) linear feet on sanitary sewer sewers or water mains installed with easements and three hundred (300) linear feet for all other projects. Stabilization with permanent vegetation is preferred unless seasonal limitations exist.

+++ END OF SECTION 02485 +++

SECTION 02486
SODDING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Sodding shall consist of establishing certain critical areas with sod as designated on the drawings.

B. Areas disturbed by construction activities shall be restored to their original conditions with regard to surface grading, drainage, grass type (predominate), or other landscape features.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02000 - Site Work
B. Section 02125 - Temporary and Permanent Erosion and Sediment Control
C. Section 02750 - Bypass Pumping
D. Section 02485 - Seeding
E. Erosion and Sediment Control Plan

1.03 ALTERNATE METHODS

A. The **Contractor** may propose alternate means and methods to establish a satisfactory coverage of healthy grass of the type required. The **Contractor** shall submit sufficient information to enable the **County** to assess the acceptability of the alternate approach.

PART 2 - PRODUCTS

2.01 SOD

A. Sod shall consist of a live, dense, well-rooted growth of turf grass species as noted on the Drawings. The sod shall be free from Johnson grass, nut grass and other obnoxious grasses, of suitable character for the purpose intended and for the soil in which it is to be planted. It shall be uninjured at the time of planting.

B. Sod shall be uniform in thickness, having not over two (2) inches or less than one (1) inch of soil.

C. Sod strips shall have a consistent width of twelve or eighteen (12 or 18) inches.

2.02 FERTILIZER

A. Fertilizer (10-10-10) used in connection with sodding, shall contain ten (10) percent nitrogen, ten (10) percent phosphoric acid and ten (10) percent potash.

The fertilizer shall be furnished in standard containers with the name, weight, and guaranteed analysis of the contents clearly marked. The containers shall ensure proper protection in handling and transporting the fertilizer. All commercial fertilizer shall comply with local, state, and federal fertilizer laws.

B. Ammonium nitrate shall be a standard commercial product, shall conform to the requirements for other commercial fertilizers as specified above, and shall have a minimum of thirty-three and one-half (33½) percent nitrogen.

2.03 LIME

A. Agricultural limestone shall contain not less than eighty-five (85) percent of calcium carbonate and magnesium carbonate combined, and shall be crushed so that at least eighty-five (85) percent will pass the No. 10 mesh sieve and fifty (50) percent will pass a No. 40 mesh screen.

2.04 WEATHER LIMITATIONS

A. Sod shall be placed only when the soil is moist and favorable to growth. No placement shall occur unless weather and soil conditions are considered favorable for the successful establishment of the particular sod type being placed.

PART 3 - EXECUTION

3.01 SODDING

A. The area to be sodded shall be constructed to the lines and grades indicated on the Drawings and the surface loosened to a depth of not less than three (3) inches with a rake or other device. As applicable clean, uniform topsoil shall be placed to provide a rich bed for root growth. If necessary, the area shall be sprinkled until saturated at least one (1) inch in depth and kept moist until the sod is placed thereon. Immediately before placing the sod, the fertilizer shall be uniformly applied at the rate of twenty-five (25) pounds of Grade 10-10-10, or equivalent, per one thousand (1,000) square feet. Agricultural limestone shall be applied at the rate of one hundred (100) pounds per one thousand (1,000) square feet.

B. The entire area shall be thoroughly covered with sod. Sod shall be placed on the prepared surface with edges in close contact and, as far as possible, in a position to break joints.

C. Sod shall be maintained moist from time of removal until reset but shall be placed as soon as practicable after removal from place where growing. Immediately after placing it shall be rolled with a roller or hand tamped to the satisfaction of the **County**.

D. Sod on slopes steeper than three to one (3 to 1) shall be held in place by wooden pins about one (1) inch square and six (6) inches long, driven through the sod into the soil until they are flush with the top of the sod.

3.02 WATERING AND MAINTENANCE

A. Sod shall be watered for a period of two (2) weeks after which ammonium nitrate shall be applied at the rate of three (3) pounds per one thousand (1,000) square feet and the sod given a final watering. Water shall not be applied when there is danger of freezing. In the event that official watering bans or water restrictions are in effect, the **Contractor** shall comply with applicable guidelines on watering for new grassing.

B. The **Contractor** shall not allow any equipment or material to be placed on any planted area and shall erect suitable barricades and guards to prevent his equipment, workers, or the general public from traveling over any area planted with sod.

C. It shall be the obligation of the **Contractor** to secure a satisfactory growth of grass before final acceptance of the project by the **County**

3.02 VEGETATIVE STABLIZATION SCHEDULE

A. The **Contractor** shall stabilize disturbed areas as construction progresses. The time duration limitations for stabilization of disturbed areas by either temporary mulching for seven (7) days or less, temporary grassing, permanent grassing or permanent sodding shall be as specified in Section 02125 – Temporary and Permanent Erosion and Sediment Control; however, unstabilized areas of the construction corridor shall not exceed one thousand (1,000) linear feet on sanitary sewer sewers or water mains installed within easements and three hundred (300) linear feet for all other projects. The permanent vegetative stabilization method is preferred unless seasonal limitations exist.

+++ END OF SECTION 02486 +++

SECTION 02490
TREES, SHRUBS, AND GROUND COVERS

PART I - GENERAL

1.01 SCOPE

A. This Section includes furnishing all equipment, materials, and labor necessary for soil preparation; planting of trees, shrubs, ground cover, or vines as applicable; protection, maintenance, guarantee, and replacement of plants; and all related items necessary to restore the site after the construction work is completed.

B. Products and procedures specified in this section shall apply to the following job-specific conditions:

1. Replacement of trees, shrubs, and ground covers removed or damaged as the result of construction activities. The nature and extent of replacement work will be as indicated on the Drawings and the cost of such work will be included in the Contract Price. Such replacement work shall include: the relocation and re-installation of existing plant materials; the replacement of removed plants with new materials, matching quantities, species and arrangement; or, a combination of these options as determined by the scope of the Work.
2. Installation of new materials in accordance with prior agreements made with property owners, as described in the Easement Stipulations. The cost of this work shall be included in the Contract Price.
3. Additional installation of new materials at the direction of the **County** will be considered extra work and will be paid for in the Contract.

C. Related Work Specified Elsewhere

1. Section 02100 – Site Preparation
2. Section 02270 – Erosion and Sediment Control

1.03 EXISTING CONDITIONS

A. Before commencing any work required by this Section, the **Contractor** shall ascertain the location of all utilities, subsurface drainage, irrigation systems, and underground construction so that proper precautions may be taken not to disturb or damage any subsurface improvements. The **Contractor** will be held responsible for making, at its own expense, all repairs to damaged utilities, structures and all associated damages resulting from the work.

B. It is not contemplated that planting shall occur where the depth of soil over underground construction or obstructions is insufficient to accommodate the roots or where impervious soil will require drainage. Where such conditions are encountered in excavation of planting areas, other locations for the planting may be designated by the **County**.

C**.** Removal of underground obstructions, relocation of construction and provision of drainage for planting areas shall be done only as directed by the **County**.

D. If changes in the location of the work or if removal of obstructions involves additional work, the **Contractor** shall proceed in accordance with the "General Conditions" of the Contract for construction.

E. The **Contractor** shall take all necessary precautions during planting operations to avoid damage to existing sidewalks, fencing, paving, curbs, lighting, and other site improvements. Any damage that does occur shall be corrected to the County's satisfaction at the **Contractor's** expense.

F. The **Contractor** shall make a dimensional sketch of existing landscaped areas before such areas are disturbed, and shall use said sketch for layout during restoration of these areas. The Preconstruction Video and any still photographs taken prior to construction activities will also be used to verify the restoration work.

1.04 QUALITY ASSURANCE

A. All planting shall be performed by a company specializing in landscape development construction, particularly soil preparation, lawns, and live plant materials; with at least five years experience in such work. Evidence of this experience must be provided, citing similar projects, prior to the initiation of the work.

B. Size, quality, root ball preparation, and grading standards shall conform to the American Association of Nurserymen, Inc., as published in the "American Standard for Nursery Stock: ANSI 260.1, latest approved revision.

C. The **Contractor** shall be responsible for all certificates of inspection of plant materials that may be required by federal, state, or other authorities to accompany shipments of plants. All plants must be inspected and approved by the **County** before they are planted. Inspection and approval of plants upon delivery shall be for quality, size, and variety only and shall not in any way impair the right of rejection for failure to meet other requirements during progress of the work.

D. Fertilizer shall conform to the local, state, and federal laws applicable to its manufacture and labeling.

1.05 PLANT GUARANTEE AND REPLACEMENT

A. Guarantee - Plants shall be alive, healthy, and vigorous at the end of the Guarantee period. The guarantee period shall be at least one year and shall terminate at the end of the first full growing season. The first full growing season begins on April 1 after planting and ends on November 1.

B. Replacement - Any plant installed under this contract that is dead or not in satisfactory growth, will be removed from the site; these and any plants missing due to the **Contractor's** negligence shall be replaced as soon as conditions

permit. In case of any question regarding the condition and satisfactory establishment of a rejected plant, the **Contractor** shall notify the **County** immediately in writing, and the **County** shall determine acceptability. All replacement plants shall be guaranteed for the duration of one full growing season as described in Paragraph 1.05A above.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Topsoil shall be natural, fertile, agricultural soil, capable of sustaining vigorous plant growth. It shall be of uniform composition without admixture of subsoil. It shall be free of stones (½ inch in diameter or larger), clods of hard earth, live plants, roots, sticks, or other extraneous matter harmful to plant growth.

1. Topsoil shall have an acidity range of ph. 6.0 to 6.5 and shall contain not less than 6 percent organic matter.
2. Topsoil shall be obtained from naturally well drained areas that have never been stripped before.
3. Topsoil shall not be delivered in a frozen or muddy condition.

B. The commercial fertilizer shall be a complete formula, 6-12-12, and shall conform to the applicable state fertilizer laws. It shall be uniform in composition, dry and free flowing and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer that is caked or otherwise damaged, making it unsuitable for use, will not be accepted.

C. Pine straw mulch shall be freshly baled straw capable of producing desired results and not contain excessive amounts of pine cones, branches, or forest litter.

D. All mulch shall be clean, and free of weeds, moss, sticks, insects, and debris, and shall be satisfactory to the **County**.

E. Pre-emergent used shall be "Ronstar G" or approved equal.

F. Pine bark shall be good quality commercial stock of one-half to one (1/2" - 1") size pieces (mini-nuggets) or "Nature's Helper".

G. Lime shall be ground limestone with analysis showing not less than eight-five (85) percent total carbonates. Lime shall be delivered in original unopened containers. Any caked or hardened lime shall not be used.

H. Water shall be supplied by the **Contractor**, along with all necessary hose or other watering equipment required for installation and maintenance of plant materials.

I. Herbicide used shall be "Round-up" or Approved Equal.

2.02 PLANT MATERIALS

A. Plant materials used will depend on job-specific conditions, as follows:

1. Trees, shrubs and ground covers removed or damaged as the result of construction activities shall be replaced with new materials of the same size and type, except; mature trees and shrubs shall be replaced in **County** with the following minimum size requirements: trees – two- (2-) inch caliper; shrubs – two- (2-) gallon container; or,
2. Plant materials will be of the size, type and quantity listed in the Easement Stipulations; or,
3. Plant materials will be as directed by the **County**.

B. Plant materials shall comply with State and Federal Laws relating to inspection for diseases and insect infestation.

C. Plant materials shall conform to American Standard Nursery Stock (May 2, 1989, ANSI 260.1-1986). Names shall conform to those given in Standardized Plant Names, 1942 Edition prepared by the American Joint Committee on Horticultural Nomenclature.

D. Plants shall have a habit of growth that is normal for the species and shall be sound, healthy, vigorous, and free from insect pests, plant diseases, and injuries. All plants shall equal or exceed the measurements specified in the plant list before pruning.

E. Plants shall be nursery grown unless otherwise specified.

F. Substitutions will be permitted only upon submittal of proof that the specified plant is not obtainable. A substitute of nearest equivalent size or variety will be used with equitable adjustment of Contract Price when approved in writing by the **County**.

G. Plants designated “B & B” in the plant list shall be adequately balled with firm natural balls of soil sized as set forth in the American Standard for Nursery Stock. Balls should be firmly wrapped with burlap or similar bio-degradable material and bound with twine, or wire mesh. No balled plant shall be planted if the ball is cracked or broken during shipment or during the planting process.

H. Insofar as is practicable, all plant material shall be planted on the day of delivery. Plants that **County** be planted immediately upon delivery shall be protected from the sun and wind. B & B plants shall be covered with moist soil, mulch, or other acceptable material. B & B plants and container grown plants shall be shaded and well watered. Plants shall not remain unplanted for longer than three days after delivery.

I. Plants shown as container grown in the plant list shall have sufficient root to hold earth intact after removal from containers but without being root-bound.

J. Caliper of tree trunks shall be measured at the chest level of a six- (6-) tall person for trees up to and including four- (4-) inch caliper size.

PART 3 - EXECUTION

3.01 TIME OF PLANTING

A. Planting operations shall be conducted immediately under favorable weather conditions in conformance to the seasonal restrictions as follows:

1. Deciduous Material: September 15 to June 15. Materials must be in dormant condition if planted after November 1 and prior to April 1. Soil, plant material, and environmental conditions must be suitable for planting.
2. Evergreen Materials: Spring: March 15 to June 15; Fall: September 1 to November 1.
3. Perennials: Spring: March 30 to June 30; Fall: September 1 to November
4. Annuals: In season.
5. Planting periods may be extended or reduced according to weather and soil conditions at the time. Preparations for planting may begin earlier than specified seasons, if approved.

B. At the option and on the full responsibility of the **Contractor**, planting operations may be conducted under unseasonable conditions without additional compensation; however, prior written approval must be obtained from the **County** and the guarantee period shall remain as specified in Paragraph 1.05.A herein.

3.02 PRODUCT HANDLING AND STORAGE

A. Balled and burlapped plants shall be dug and prepared for shipment in a manner that will not damage roots or branches.

B**.** Protection After Delivery - The balls or roots of plants not planted immediately upon delivery shall be covered with moist soil or mulch, or other protection from drying winds and sun. All plants shall be watered as necessary, until planted. Balled plants shall not be lifted by the trunk of the plant.

3.03 TREES AND SHRUBS

A. Locations for all plants and outlines for planting areas shall be staked on the ground and must be approved by the **County** before plants are set. Orientation of plants, foliage, and branching shall be approved before installation. Any adjustments in locations and/or outline must be approved in writing by the **County**.

B. Care shall be exercised to have pits dug and soil prepared prior to moving plants to pits for planting. Circular pits with vertical sides shall be excavated for all plants. Diameter of planting pits shall be twice the diameter of the ball or root spread. The depth of the pits shall be sufficient to accommodate the ball or roots when the plant is set to finished grade allowing for six inches of topsoil in the bottom of the pit. The soil at the bottom of the planting pit shall be loosened to a depth of three inches and mixed with topsoil. Any rock, rubble, hard pan, or other underground obstruction shall be removed to permit proper installation and drainage. The

Contractor shall ensure positive drainage away from all planting beds.

C. Soil used in planting shall be a topsoil mixture. One cubic yard of pine bark "Nature's Helper" and twenty pounds of commercial six percent nitrogen-twelve percent phosphorus – twelve percent potassium (6-12-12) fertilizer or bone meal shall be mixed with every six (6) cubic yards of topsoil.

D. Unless otherwise specified, all plants shall be planted in pits, centered, and set at a depth so that the finished grade level will be the same as that at which the plant was grown.

E. For balled and burlap material, all wire and string binding shall be removed from around the root ball. After placing the plant in the planting pit, the burlap shall be cut away or folded back from the top third of the root ball. If balled plants are wrapped with material that is not biodegradable, then this wrapping material must be removed once the plant is set in the planting pit. Care must be taken so not to damage the root system.

F. The pit shall be backfilled with topsoil placed in layers around the roots or ball. Each layer shall be carefully tamped to avoid air pockets. When the hole is approximately two-thirds full, water should be added. After the water has been absorbed, the hole shall be filled with topsoil and tamped lightly to grade.

G**.** A four- (4-) inch mound of soil shall be formed around each plant to produce a saucer. On slopes, an adequate shoulder shall be formed on the downhill side to hold water and avoid erosion.

H. Guying and Staking

1. Hose shall be two-ply reinforced hose not less than three-eighths (3/8) inch inside diameter.
2. Wire shall be galvanized pliable, zinc-coated iron not less than No. 16 gage.
3. Turnbuckles shall be galvanized and have a three- (3-) inch minimum lengthwise opening fitted with screw eyes. Three turnbuckles are required per tree planting.
4. Trees shall be supported immediately after planting. All trees shall be guyed or staked.
5. Guy wires shall consist of two twisted strands of wire encased in hose to prevent direct contact with bark of the tree. Guying shall be spaced equally about each tree. Guy wires shall be placed around the tree trunk or lower branches in a single loop at an angle or about sixty (60) degrees or about two-fifths (2/5s) of the height of the tree. Guy wires shall be fastened to two by two by thirty (2" x 2" x 30") inch wooden stakes driven to approximately six (6) inches above the ground. Guy wires shall be tightened and kept taut by turn-buckles, or other approved methods.
6. Wood stakes to be used shall be uniform two-by-two (2" x 2") inch pressure treated wood with one end sharpened. Stakes shall be not less than six (6') feet in length.

7. Tree species less than three (3) feet tall will require slash staking. Wood stakes used shall be uniform two by two (2" x 2") inch pressure treated wood with one end sharpened. Stakes shall not be less than four (4) feet in length.

I. All trees shall be wrapped with standard manufactured tree wrapping paper, brown in color. Tree trunks shall be wrapped spirally overlapping two (2) inches and shall be wound from the ground line to above the lowest main branches. The wrapping shall be securely tied in at least five places, including the top, middle, and bottom, with a jute twine not less than two-ply or other approved bio-degradable material.

J. A four- (4-) inch layer of pine straw mulch and a pre-emergent such as “Ronstar” or equal shall be applied to all planting bed areas.

K. Plant beds containing ericaceous plants shall be top dressed with ordinary powdered sulfur at the rate of three (3) pints per one hundred (100) square feet of area.

3.04 GROUND COVERS

A. Except as otherwise specified, the **Contractor**'s work shall conform to accepted horticultural practices as used in the trade.

B. Planting areas shall be dug and soil for planting ready before plants are delivered.

C. Ground cover beds shall be prepared by thorough loosening of existing subgrade and by placement of a minimum of four (4) inches of approved topsoil to conform to the final grade. Soil used in planting shall be topsoil mixed with one cubic yard of pine bark “Nature's Helper” and twenty pounds of commercial six (6) percent nitrogen-twelve percent phosphorus – twelve percent potassium (6-12-12) fertilizer or bone meal with every six cubic yards of topsoil.

D. Pre-emergence weed control shall be applied in accordance with manufacturer's instructions.

E. All planting beds shall be mulched with a two- (2-) inch layer of bark mulch prior to planting. Planting holes shall be dug through the mulch. Ensure that roots are surrounded by soil below the mulch.

F. Biodegradable pots shall be crushed and non-biodegradable pots shall be removed prior to planting. The root systems of all potted plants shall be split or crumbled.

3.05 PRUNING AND REPAIR

A. Upon completion of the work under the Contract, all new trees and shrubs shall have been pruned and any injuries repaired. The amount of pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of transplanting operations.

Pruning shall be done in such a manner as not to change the natural habit or shape of the plant. All cuts shall be made flush, leaving no stubs. On all bruises or scars on the bark and cuts over three-quarter (3/4) inch in diameter, the injured cambium shall be traced back to living tissue and removed; wounds shall be smoothed and shaped so as not to retain water; and the treated area shall be coated with shellac or a commercial tree wound dressing.

3.06 REUSE OF EXISTING PLANT MATERIALS

A. Where shown on the Drawings, or as allowed herein, in-situ plant materials may be removed and re-installed in lieu of replacement with new materials. Such reuse shall conform to the following conditions:

1. In those areas indicated on the Drawings, existing trees and shrubs shall be removed and re-installed. The arrangement or location of the re-installed materials may vary from existing conditions. The **Contractor** shall be responsible for removal, proper handling, temporary storage, re-installation, and maintenance for the existing materials; however, no guarantee of survival is required. The cost of this work shall be included in the Contract Price.
2. If conditions permit, the **Contractor** may, at its own risk, remove and re-install existing trees and shrubs as an alternate to replacement with new materials. The Guarantee and Maintenance requirements shall apply for re-installed existing materials in the same manner as for new materials. The **Contractor** shall obtain written concurrence from the **County** of its intention to reuse existing plant materials prior to the execution of the work.
3. In those areas indicated in the Easement Stipulations or shown on the Drawings, certain existing trees and shrubs may be removed and re-installed by the property owner. The **Contractor** shall provide prior written notification to the property owner (with copy to the **County**) advising of the schedule of construction and the required time frame for removal. If the **Contractor** proceeds with construction without providing the required prior notice, any materials that are damaged or destroyed shall be replaced in **County** and quantity at the expense of the **Contractor**.

B. Trees and shrubs shall be dug with firm natural balls of earth of sufficient size and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant.

C. All plants shall be protected from drying action of the sun and wind during digging and after being dug, while in storage awaiting planting, and while being transplanted. Heel plants or properly protect them with soil, wet peat moss or in a manner acceptable to the **County**.

D. All existing trees and shrubs must be replanted promptly, preferably within twenty-four (24) hours after removal, but in no case longer than forty-eight (48) hours.

3.07 INSPECTION FOR ACCEPTANCE

A. Upon completion of all planting, and after receipt of written notification, inspection of the landscape work will be made by the **County**. Inspection of the work will be conducted again by the **County** during and at the end of the maintenance period.

3.08 MAINTENANCE

A. Maintenance shall begin immediately after each plant is planted and shall continue until all plants are accepted. Planting shall be protected and maintained by watering, fertilizing, and replanting as necessary, at the **Contractor's** expense, for at least one full growing season following installation beginning April 1 and ending November 1 as specified in Paragraph 1.05.A herein.

+++ END OF SECTION 02490 +++

SECTION 02510
PAVEMENT REPAIRS

PART 1 - GENERAL

1.01 SCOPE

A. Work described in this Section includes furnishing all labor, materials, equipment, tools and incidentals for installation of all pavement repairs; pavement replacement; surface preparation; asphaltic concrete placement; pavement milling; cleaning and protection and any other similar, incidental, or appurtenant pavement repair operation which may be necessary to properly complete the Work as shown on the drawings and as specified herein.

B. Related Work specified Elsewhere:

1. Section 01200 - Measurement and Payment
2. Section 02920 - Site Restoration
3. Section 03300 - Cast-In-Place Concrete

1.02 SUBMITTALS

A. Submittals shall be made in accordance with the requirements within Section 01300 - Submittals of the Contract Documents. In addition, the following specific information shall be provided:

1. The **Contractor** shall submit asphalt mix design to the **County** for approval.

2. Certificates: The **Contractor** shall submit certification of quality control and compliance with the requirements of this section to the **County**. Certificates shall be signed by asphalt and concrete producers and the **Contractor**.

1.03 QUALITY ASSURANCE

A. Reference Standards: The **Contractor** shall comply with the applicable provisions and recommendations of the latest editions of the following standards, except as otherwise shown on the Plans or specified in these Specifications.

1. ASTM C94 - Standard Specification for Ready Mix Concrete.

2. ASTM C33 - Standard Specification for Concrete Aggregates.

3. ASTM C150 - Standard Specification for Portland Cement.

4. ACI 301 - Specifications for Structural Concrete.

5. ACI 304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

6. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.

7. ASTM A497 - Welded Deformed Steel Wire Fabric for Concrete Reinforcement.

8. ASTM C494 - Chemical Admixtures for Concrete.

9. ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.

10. ASTM D3371 - Standard Specification for Viscosity-Graded Asphalt Cement for use in Pavement Construction.

11. ASTM D946 - Standard Specification for Penetration Graded Asphalt Cement for use in Pavement Construction.

12. AI (Asphalt Institute) - MS-2- Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.

13. AI (Asphalt Institute) - MS-3- Asphalt Plant Manual.

14. AI (Asphalt Institute) - MS-8- Asphalt Paving Manual.

15. AI (Asphalt Institute) - MS-19 - Basic Asphalt Emulsion Manual.

16. AASHTO M147-65 - Materials for Aggregate and Soil Aggregates.

17. ASTM C-136 - Sieve Analysis of Fine and Coarse Aggregates.

18. Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.

B. The **Contractor** shall perform Work in accordance with the requirements of the Georgia Department of Transportation (GDOT) Standard Specifications Construction of Transportation Systems, latest edition.

C. The **Contractor** shall obtain materials from the same source throughout the duration of the paving Work.

D. The **Contractor** shall use only materials which are furnished by a bulk asphalt concrete producer regularly engaged in production of hot-mix, hot-laid asphalt concrete and shall be a GDOT-approved facility.

1.04 PERFORMANCE REQUIREMENTS

A. The **Contractor** shall comply with the performance standards and requirements established by GDOT.

B. Paving: Pavement shall be designed for movement of trucks up to sixty-thousand (60,000) pounds.

C. General: In addition to other specified conditions, the **Contractor** shall comply with the following minimum requirements:

1. Finished asphaltic concrete courses shall be compacted to the following densities:

   a. Asphaltic Concrete Hot Mix Surface Course; Not less than ninety-two (92) percent of theoretical density.

   b. Asphaltic Concrete Hot Mix Binder Course: Not less than ninety (90) percent of theoretical density.

2. On the day following placement of asphaltic materials, samples for the determination of in-place density shall be taken from the finished pavement. The **Contractor** shall core the samples at locations and in the manner directed by the County. The cuts made in taking such samples shall be repaired by the **Contractor** at no expense to the **County**.

3. The finished surface, when checked with a ten-foot straightedge placed parallel to the centerline, shall show no variation more than one-quarter (¼) inch for base and intermediate courses, and not more than one-eighth ($^1/_8$) inch for surface courses. All testing will be made in a longitudinal direction at intervals as directed by the County. Surface deviations for intermediate courses may be corrected by skin patching, feather edging, or other methods that would provide the required smoothness and maintain quality material. However, surface deviations for surface courses shall be corrected in such a manner as to maintain a quality pavement having the same uniform texture and appearance as the adjoining surface. All corrective work shall be performed at the expense of the **Contractor**.

1.05 REGULATORY REQUIREMENTS

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

1.06 JOB CONDITIONS

A. Weather Limitations:

1. The **Contractor** shall apply bituminous prime and tack coats only when the ambient temperature in the shade has been at least forty (40) degrees F.

2. The **Contractor** shall not conduct paving operations when the surface is wet, frozen, or contains excess moisture that would prevent uniform distribution and required penetration.

3. The **Contractor** shall construct asphaltic courses only when atmospheric temperature in the shade is above thirty-five (35) degrees F, when the underlying base is dry and when weather is not rainy.

4. The **Contractor** shall place base course when air temperature is above thirty-five (35) degrees F and rising. The **Contractor** shall not place base course on a frozen or muddy subgrade.

B. The **Contractor** shall establish and maintain the required lines and grades, including crown and cross-slope, for each course during construction operations.

C. Traffic Control:

1. The **Contractor** shall maintain vehicular and pedestrian traffic during paving operations, as required for other construction activities.

2. In addition, the **Contractor** shall provide flagmen, barricades, and warning signs for the safe and expeditious movement of traffic through construction zones within public rights-of-way in accordance with the requirements of Section 01550 - Traffic Regulation.

1.07 TEMPORARY ROADWAY PAVING REPAIRS

A. Temporary cold or permanent hot asphalt patching will be required for both transverse and longitudinal roadway cuts upon completing backfilling requirements at the end of each day's work if the road is to be opened for local traffic while work has stopped.

B. It shall be the **Contractor's** responsibility to maintain the temporary paving in such condition as to prevent hindrance or hazard to traffic. When final paving is undertaken the temporary surfacing materials shall be removed to accommodate final paving of types and thicknesses as specified in this section, the edges of the existing paving shall be neatly and uniformly trimmed, and the permanent pavement shall be placed.

C. Steel Plate Bridging:

1. At the **County's** discretion, steel plate bridging may be used. The **Contractor** must adhere to the following chart with respect to minimum plate size and thickness.

Trench Width	Minimum Plate Thickness
10" (0.25 m)	½" (13 mm)
1'-11" (0.58 m)	¾" (19 mm)
2'-7" (0.80 m)	7/8" (22 mm)
3'-5" (1.04 m)	1" (25 mm)
5'-3" (1.60 m)	1 ¼" (32 mm)
*For trench widths greater than 5' 3", the **County** will determine the plate thickness.	

2. Steel plates used for bridging must extend a minimum of twelve (12) inches beyond all edges of the trench.

3. For traffic speeds less than forty-five (45) mph, the surrounding pavement shall be cold planed to a depth equal to that of the steel plate selected.

4. For traffic speeds greater than forty-five (45) mph, approach plate(s) and ending plate (if longitudinal placement) shall be attached to the roadway by a minimum of two (2) dowels pre-drilled into the corners of the plate and drilled two (2) inches into the pavement. Subsequent plates shall be butted to each other. Fine graded asphalt concrete shall be compacted to form ramps, maximum slope eight and one-half (8½) percent with a minimum twelve (12) inches taper to cover all edges of the steel plates. When steel plates are removed, the dowel holes in the pavement shall be backfilled with either graded fines of either asphalt concrete mix, concrete slurry, or an equivalent slurry that is satisfactory to the **County**.

5. Steel plates shall not be left on the road in any one location for more than fourteen (14) days.

D. Graded Aggregate Base:

1. Temporary patch paving using graded aggregate base shall be placed only as approved and directed by the **County**. All compacted material shall conform closely enough to the existing road surface so as to permit safe travel.

2. Graded aggregate may consist of gravel, air cooled blast furnace slag, crushed stone, or synthetic aggregate having hard, strong, durable pieces free of adherent coatings and shall be approved for use by the **County**.

1.08 SOURCE QUALITY CONTROL

A. The **Contractor** shall submit proposed mix design of each class of mix to the **County** for review prior to commencement of the Work.

B. The **County's** independent testing laboratory shall test samples in accordance with TAI MS.

1.09 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed in accordance with the requirements of the General Conditions.

B. The **County's** independent testing laboratory shall take samples and perform tests in accordance with the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.

1.10 PROTECTION

A. Immediately after placement, the **Contractor** shall protect pavement from mechanical injury for seven (7) days.

PART 2 - PRODUCTS

2.01 FLEXIBLE PAVEMENT

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

B. Asphaltic cement for asphaltic concrete shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.

C. Bituminous prime coat shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.

D. Bituminous tack coat shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.

E. Hot Mix asphaltic concrete construction shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.

2.02 RIGID PAVEMENT

A. Concrete and reinforcing bars (where required) for rigid pavement shall conform to the requirements set by Owner and or Engineer

B. Concrete Reinforcement and Section 03300 - Cast-In-Place Concrete. Concrete for pavement shall be Class A.

2.03 CURB AND GUTTER

A. Concrete for curb, curb and gutter, or valley gutter shall be Class A. Concrete shall conform to the requirements of Section 03300 - Cast-In-Place Concrete.

2.04 SIDEWALKS

A. Concrete for sidewalks shall be Class A conforming to the requirements of Section 03300 - Cast-In-Place Concrete.

2.05 DRIVEWAYS

A. Concrete for driveways shall be Class A conforming to the requirements of Section 03300 - Cast-In-Place Concrete.

2.06 STANDARD GRANITE CURB, GRADE B

C. Curbs shall be furnished in standard lengths of eight (8) feet in so far as possible employing shorter lengths where required such that the minimum length employed shall not be less than four (4) feet long. Curb sections shall have a split face and split top. Each joint shall have an unreinforced concrete footing as specified in the Detail Drawings. On wheel chair ramps and driveways, the granite curb shall continue through depressed sections of these elements as shown in the Detail Drawings. On curve section of roadway, the granite curb shall

be split or cut on the curve.

2.07 SPECIALTY BRICK PAVER REPLACEMENT

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

2.08 SPECIAL BRICK SIDEWALK REPLACEMENT

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

2.09 STAMPED HEXAGONAL CONCRETE PAVERS

A. Where existing hexagonal concrete pavers must be removed to allow pipe installation, the **Contractor** may replace them with poured-in-place concrete sidewalk with stamped paver pattern as shown in the Standard Details.

2.10 PAVEMENT MARKINGS

A. This work shall consist of furnishing and applying thermoplastic reflectorized pavement marking compound that is extruded or sprayed on the pavement by mechanical means and which, upon cooling to pavement temperature, produces a reflectorized pavement marking.

B. Pavement markings shall be placed to reconstitute the markings that were existing before the pavement was milled for resurfacing. All final markings shall meet the requirements of the Manual of Uniform Traffic Control Devices (MUTCD). If any existing markings did not meet the MUTCD requirements or were absent, the **Contractor** shall nevertheless upgrade the markings at these locations to meet the MUTCD requirements. Thermoplastic traffic stripe shall consist of solid or broken (skip) lines, words and/or symbols of the type and color as shown in the MUTCD Manual. Short lines such as crosswalks, stop bars, arrows, symbols, and crosshatching shall be extruded. All other lines shall be sprayed.

C. Materials shall meet the requirements of GDOT Standard Specifications Construction of Transportation Systems, latest edition, Section 653.02.

D. Pavement markings shall include, but not be limited to, the following:

1. Double solid yellow center line.
2. Solid white pavement edge line where street does not have curb and to mark bike lanes.

3. Skip yellow lines to designate lanes in multi-lane streets.

4. Traffic stripe shall be six- (6-) inch-wide on GDOT streets and County streets designated as arterial. Traffic stripe shall be four- (4-) inch-wide on all other streets.

5. White crosshatched lines for crosswalks at schools and at intersections.

6. White stop bars at stop streets.

7. Symbols such as turn arrows, one-way arrows, etc.

8. Wording such as “STOP,” “SCHOOL,” etc.

9. All other striping, symbols, and wording required by MUTCD.

PART 3 - EXECUTION

3.01 PAVEMENT REPLACEMENT

A. The **Contractor** shall obtain prior approval from the **County** for any paving subcontracts.

B. The **Contractor** shall replace all pavements following the guidelines established by the Georgia Department of Transportation and other authorities having jurisdiction.

C. Where paved streets, sidewalks, driveways, and gutters are removed within the construction limits as specified, such replacement shall be paid for at the respective unit prices in the Bid Form. Such pavements removed or damaged by the **Contractor** beyond the specified construction limits shall be replaced in accordance with these specifications at the **Contractor**'s expense.

D. Where chert, gravel, slag, or other unpaved street or driveway surfaces are removed or damaged, they shall be replaced with the same type of materials that were removed as an incidental part of the Work and no specific payment therefore shall be allowed. Unpaved drives shall be topped with gravel at no additional cost to the **County**.

E. In replacing pavements and unpaved surfaces, the materials used and the construction methods shall comply with the applicable requirements of the Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, latest edition.

F. Where shown on the Plans, service lines and small diameter pipes, eight (8) inches in diameter or less located across paved surfaces shall be installed by boring or other approved methods that will not require cutting or removing the pavement where feasible. This is to be approved by the **County**.

G. All concrete pavement replaced shall not be less than four (4) inches thick or equal to the original if greater than four (4) inches.

H. Pavements replaced shall be of the same type of construction as was removed, except that no asphalt surface replaced shall be less than three (3) inches thick consisting of a binder and seal coat. Wearing surfaces shall be slag sealed in accordance with the requirements established by GDOT.

3.02 SURFACE PREPARATION

A. Graded Aggregate Base Course:

1. The **Contractor** shall check subgrade for conformity with elevations and section immediately before placing aggregate base material.

2. The **Contractor** shall place aggregate base material in compacted layers not more than six (6) inches thick, unless continuing tests indicate that the required results are being obtained with thicker layers.

3. In no case shall more than eight (8) inches of compacted base be placed in one lift.

4. The **Contractor** shall spread, shape, and compact all aggregate base material deposited on the subgrade during the same day.

5. The compacted base shall have sufficient stability to support construction traffic without pumping and meet minimum contract compaction specifications.

6. If compacted base becomes unstable as a result of too much moisture, the base material and underlying subgrade, if necessary, shall be dried or removed and reworked to a moisture content that can be recompacted to meet minimum contract compaction specifications at the expense of the **Contractor**.

B. Loose and Foreign Material:

1. The **Contractor** shall remove loose and foreign material from the surface immediately before application of paving.

2. The **Contractor** shall use power brooms or blowers, and hand brooming as required.

3. The **Contractor** shall not displace surface material.

C. Prime Coat:

1. The **Contractor** shall uniformly apply at a rate of 0.20 to 0.50 gallon per square yard over compacted and cleaned subbase surface.

2. The **Contractor** shall apply enough material to penetrate and seal, but not flood the surface.

3. The **Contractor** shall allow material to cure and dry as long as required to attain penetration and evaporation of volatile, and in no case less than twenty-four (24) hours unless otherwise acceptable to the County.

4. The **Contractor** shall blot excess asphalt with just enough sand to prevent pick-up under traffic.

5. The **Contractor** shall remove loose sand before paving.

D. Tack Coat:

1. The **Contractor** shall dilute material with equal parts of water and apply to contact surfaces of previously constructed asphalt concrete or Portland cement concrete and similar surfaces.

2. The **Contractor** shall apply at a rate of 0.05 to 0.15 gallons per square yard of surface.

3. The **Contractor** shall apply tack coat by brush to contact surfaces of curbs, gutters, manholes, and other structures projecting into or abutting asphalt concrete pavement.

4. The **Contractor** shall allow surfaces to dry until material is at a condition of tackiness to receive pavement.

3.03 EQUIPMENT

A. The **Contractor** shall provide size and quantity of equipment to complete the work specified in this section within the Project Schedule.

B. Bituminous pavers shall be self-propelled that spread hot asphalt concrete mixtures without tearing, shoving, or gouging surfaces, and control pavement edges to true lines without use of stationary forms.

C. Rolling equipment shall be self-propelled, steel-wheeled, and pneumatic-tired rollers that can reverse direction without backlash.

D. The **Contractor** shall provide rakes, lutes, shovels, tampers, smoothing irons, pavement cutters, portable heaters, and other miscellaneous small tools to complete the work specified in this section.

3.04 ASPHALTIC CONCRETE PLACEMENT

A. The **Contractor** shall place asphalt concrete mix on prepared surfaces, spread, and strike-off using paving machine.

B. The **Contractor** shall spread the asphaltic concrete mixture at a minimum temperature of two-hundred and twenty-five (225) degrees F.

C. Inaccessible and small areas may be placed by hand.

D. The **Contractor** shall place each course at a thickness such that when compacted it will conform to the indicated grade, cross-section, finish thickness, and density indicated in the Plans.

E. Pavement Placing:

1. Unless otherwise directed by the **County**, the **Contractor** shall begin placing asphaltic concrete along the centerline of areas to be paved on crowned section, and at high side of sections on one-way slope, and in direction of traffic flow.

2. After first strip has been placed and rolled, the **Contractor** shall place succeeding strips and extend rolling to overlap previous strips.

3. The **Contractor** shall complete base courses for a section before placing surface courses.

4. The **Contractor** shall place the asphaltic concrete mixture in as continuous an operation as practical.

F. Hand Placing:

1. The **Contractor** shall spread, tamp, and finish the asphaltic concrete mixture using hand tools in areas where machine spreading is not possible, as acceptable to the **County**.

2. The **Contractor** shall place the asphaltic concrete mixture at a rate that will ensure handling and compaction before mixture becomes cooler than acceptable working temperature.

G. Joints:

1. The **Contractor** shall carefully make joints between old and new pavements, or between successive days work, to ensure a continuous bond between adjoining work.

2. The **Contractor** shall construct joints to have the same texture, density, and smoothness as adjacent sections of asphalt concrete course.

3. The **Contractor** shall clean contact surfaces free of sand, dirt, or other objectionable material and apply tack coat.

4. The **Contractor** shall offset transverse joints in succeeding courses not less than twenty-four (24) inches.

5. The **Contractor** shall cut back edge of previously placed course to expose an even, vertical surface for full course thickness.

6. The **Contractor** shall offset longitudinal joints in succeeding courses not less than six (6) inches.

7. When the edges of longitudinal joints are irregular, honeycombed, or inadequately compacted, the **Contractor** shall cut back unsatisfactory sections to expose an even, vertical surface for full course thickness.

3.05 ASPHALTIC CONCRETE COMPACTION

A. The **Contractor** shall provide sufficient rollers to obtain the required pavement density.

B. The **Contractor** shall begin rolling operations as soon after placing, as the mixture will bear weight of roller without excessive displacement.

C. The **Contractor** shall not permit heavy equipment, including rollers to stand on finished surface before it has thoroughly cooled or set.

D. The **Contractor** shall compact the asphaltic concrete mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

E. The **Contractor** shall start rolling longitudinally at extreme lower side of sections and proceed toward center of pavement. The **Contractor** shall roll to slightly different lengths on alternate roller runs.

F. The **Contractor** shall not roll centers of sections first under any circumstances.

G. Breakdown Rolling:

1. The **Contractor** shall accomplish breakdown or initial rolling immediately following rolling of transverse and longitudinal joints and the outside edge.

2. The **Contractor** shall operate rollers as close as possible to paver without causing pavement displacement.

3. The **Contractor** shall check crown, grade, and smoothness after breakdown rolling.

4. The **Contractor** shall repair displaced areas by loosening at once with lutes or rakes and filling, if required, with hot loose material before continuing rolling.

H. Second Rolling:

1. The **Contractor** shall follow breakdown rolling as soon as possible, while the asphaltic concrete mixture is hot and in condition for compaction.

2. The **Contractor** shall continue second rolling until the asphaltic concrete mixture has been thoroughly compacted.

I. Finish Rolling:

1. The **Contractor** shall perform finish rolling while the asphaltic concrete mixture is still warm enough for removal of roller marks.

2. The **Contractor** shall continue rolling until roller marks are eliminated and the course has attained specified density.

J. Patching:

1. The **Contractor** shall remove and replace defective areas.

2. The **Contractor** shall cut-out and fill with fresh, hot asphalt concrete.

3. The **Contractor** shall compact by rolling to specified surface density and smoothness.

4. The **Contractor** shall remove deficient areas for full depth of course.

5. The **Contractor** shall cut sides perpendicular and parallel to direction of traffic with edges vertical.

6. The **Contractor** shall apply tack coat to exposed surfaces before placing new asphaltic concrete mixture.

3.06 PAVEMENT MILLING

A. In street areas where pavement replacement occurs, pavement milling will be performed by the **Contractor** to eliminate excessive buildup of pavement. The depth of milling will be 1-1/2" from curb to curb measured at each edge of pavement or as directed by the **County**.

3.07 CLEANING AND PROTECTION

A. Cleaning: After completion of paving operations, the **Contractor** shall clean surfaces of excess or spilled asphalt materials to the satisfaction of the **County**.

B. Protection:

1. After final rolling, the **Contractor** shall not permit vehicular traffic on asphaltic concrete pavements until it has cooled and hardened, and in no case no sooner than six (6) hours.

2. The **Contractor** shall provide barricades and warning devices as required to protect pavement and the general public.

C. Maintenance: The **Contractor** shall maintain the surfaces of pavements until the acceptance of the Work. Maintenance shall include replacement, overlaying, milling, and reshaping as necessary to prevent raveling of the road material, the preservation of smooth surfaces, and the repair of damaged or unsatisfactory surfaces, to the satisfaction of the **County**.

3.08 STANDARD GRANITE CURB, GRADE B

A. This work shall consist of furnishing and installing the standard granite curb where indicated in the Plans or directed by the **County**. In general, granite curb required to be installed shall match existing granite curb that has been removed or damaged in the progress of the Work.

B. When existing granite curb will conflict with pipe installation, the **Contractor** shall carefully remove, clean, and store the granite curb. The **Contractor** shall remove damaged granite curb from the job site. Granite curb that is acceptable to the **County** may be re-installed.

C. Installation of standard granite curb, Grade B, shall include saw cutting existing asphalt concrete pavement a minimum of one (1) inch and removing remaining pavement to subgrade, excavation of base and subgrade as necessary to install the granite curbing and backfilling and compacting of the installation.

3.09 SPECIALTY BRICK PAVER REPLACEMENT

A. This work shall consist of replacing existing brick pavement required to be removed for installation of sanitary sewers or connection of services.

B. Existing brick pavers removed to accommodate sanitary sewers or services or damaged by the Work shall be removed in neat, rectangular sections the full width of the pavement as shown on the Plans. Existing concrete base slabs shall be cut with a concrete saw and removed prior to replacement. Replacement construction shall match existing pavement section including concrete base slab.

3.10 SPECIAL BRICK SIDEWALK REPLACEMENT

A. This work shall consist of replacing existing brick sidewalks required to be removed for connection of services or for installation of sanitary sewers.

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

3.11 STAMPED HEXAGONAL CONCRETE PAVERS

A. This work shall consist of replacing existing hexagonal concrete pavers required to be removed for connections of services or for installation of sanitary sewers.

B. Existing hexagonal pavers removed to accommodate the sanitary sewers or services or damaged by the Work shall be removed the full width of the sidewalk or driveway on a line perpendicular to the street. The stamped hexagonal concrete pavers shall be constructed according to the Standard Detail. Prior to beginning construction of the first section of stamped pavers, the **Contractor** shall construct a four- (4-) foot by a four- (4-) foot test panel for approval by the **County**. A standard concrete sidewalk four (4) inches thick shall be poured. When the concrete has achieved sufficient set, the paver pattern imprint shall be created by pushing the form into the concrete to the specified depth and then carefully removing the form. If the constructed stamped pavers do not conform to the test panel, the unsatisfactory sections shall be removed and reconstructed by the **Contractor** to the satisfaction of the **County** without additional cost to the **County**.

3.12 PAVEMENT MARKINGS

A. Construction of pavement markings shall be performed according to the requirements of GDOT Standard Specifications Construction of Transportation Systems, latest edition, Section 653.03.

+++ END OF SECTION 02510 +++

SECTION 02521
CONCRETE SIDEWALKS, CURBS AND GUTTERS

PART 1 - GENERAL

1.01 SCOPE

A. Work described in this Section includes furnishing all labor, materials, equipment, tools and incidentals required for construction of concrete sidewalks, concrete curb, concrete gutter and concrete combined curb and gutter, which shall consist of monolithic curb and gutter respectively, all constructed of Portland cement concrete, at the locations, and to the lines, grades, cross section, form and dimensions indicated on the Drawings.

B. Cement concrete sidewalks, concrete curb, gutter and combined curb and gutter shall include all necessary excavation, unless otherwise indicated, and subgrade preparation; backfilling, and final clearing up; and completion of all incidentals thereto, as indicated on the Drawings or as directed by the **County**.

C. Related Work Specified Elsewhere:

1. Section 02000 - Earthwork
3. Section 02510 - Pavement Repair
5. Section 03300 - Cast-In-Place Concrete

1.02 PRODUCT HANDLING

A. Protection: Use all means necessary to protect concrete materials before, during and after installation and to protect the installed work and materials of all other trades.

B. Replacement: In the event of damage, immediately make all repairs and replacements necessary to the approval of the **County** at no additional cost to the **County**.

1.03 SUBMITTALS

A. Submittals shall be made in accordance with the requirements of the General Requirements of the Contract Documents and Section 01300.

PART 2 - PRODUCTS

2.01 CONCRETE REINFORCEMENT

A. Concrete reinforcement shall conform to Section 03200 - Concrete Reinforcement and Dowelling.

2.02 CONCRETE AND RELATED MATERIALS

A. General: Concrete and related materials including, but not necessarily limited to, joint materials, membranes and curing compounds shall conform to Section 03300 - Cast-In-Place Concrete.

B. Class: All concrete shall be Class B three thousand (3,000) psi and conform to requirements of Section 03300.

C. Water used in mixing concrete shall be fresh, clean, potable water free from injurious amounts of oil, acid, alkali, vegetable, wastewater and/or organic matter.

D. Admixtures shall meet the following requirements:

1. Except as herein specified, no curative or hardening admixtures shall be used.
2. An air entrainment agent capable of providing three to six (3 to 6) percent air shall be used. Air entraining admixtures that are added to concrete mixtures shall conform to ASTM C 260 for Air Entraining Admixtures for Concrete.

F. Sub-base shall be constructed of durable material such as bank-run gravel. Minimum depth of sub-base shall be three (3) inches.

G. Joint filler shall be a non-extruding joint material conforming to AASHTO M21 3 for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (non-extruding and resilient bituminous types). The filler for each joint shall be furnished in a single piece for the full depth and width required for the joint unless otherwise specified by the **County**.

PART 3 - EXECUTION

3.01 EARTHWORK

A. General: All earthwork shall be performed in accordance with Section 02200, Earthwork, and as specified in this Section.

B. Backfilling

1. After the subgrade for sidewalks is compacted and at the proper grade, spread three (3) inches or more of sub-base material. Sprinkle with water and compact by rolling or other approved method. Top of the compacted gravel shall be at the proper level to receive the concrete.
2. After the concrete has set sufficiently, the spaces on both sides of the curb, gutter, and combined curb and gutter shall be backfilled, and the materials compacted and left in a neat and workmanlike condition.
3. Curbs to be used in the construction of asphalt pavements shall be backfilled prior to placement of base material for asphalt pavement.

3.02 SUBGRADE PREPARATION

A. The subgrade shall be formed by excavating to the required depth below the finished surface of the respective types, in accordance with the dimensions and designs indicated on the Drawings or as directed by the **County**, and shall be of such width as to permit the proper installation and bracing of forms. The

subgrade shall be compacted by hand tamping and all soft, yielding or unsuitable material shall be removed and backfilled with satisfactory material and again compacted thoroughly to ninety-eight (98) percent of dry density per ASTM 698 and finished to a smooth and unyielding surface. The finished grade shall be to the dimensions and design indicated on the Drawings or as directed by the **County** for the bottom of the proposed construction.

3.03 CONCRETE CURB AND GUTTER CONSTRUCTION

A. Construct curbs to lines and grade shown or established by the **County**. Curbs shall conform to the details shown on the Drawings.

B. Forming:

1. Forms shall be metal and of an approved section. They shall be straight, free from distortions, and shall show no vertical variation greater than one-eighth (1/8) inch in ten (10) feet, and shall show no lateral variation greater than one-quarter (1/4) inch in ten (10) feet from the true plane surface on the vertical face of the form.
2. Forms shall be of the full depth of the structure and be so constructed as to permit the inside forms to be securely fastened to the outside forms.
3. Securely hold forms in place true to the lines and grades indicated on the Drawings.
4. Wood forms may be used on sharp turns and for special sections as approved by the **County**.
5. Where wooden forms are used, they shall be free from warp and the nominal depth of the structure.
6. All mortar and dirt shall be removed from forms and all forms shall be thoroughly oiled or wetted before any concrete is deposited.
7. The supply of forms shall be sufficient to permit their remaining in place at least twelve (12) hours after the concrete has been placed.

C. Joints:

1. Joints shall be constructed as indicated on the Drawings and as specified.
2. Construct joints true to line with their faces perpendicular to the surface of the structure and within one-quarter (1/4) inch of their designated position.
3. Thoroughly spade and compact the concrete at the faces of all joints to fill all voids.
4. Install expansion joint materials at the point of curve at all street returns.
5. Install expansion joint material behind the curb at abutment to sidewalks and adjacent structures.
6. Place contraction joints every ten (10) feet along the length of the curbs and gutters.
7. Form contraction joints using steel templates or division plates that conform to the cross section of the structure. Leave the templates in place until the concrete has set sufficiently to hold its shape, but remove them while the forms are still in place.
8. Contraction joint templates or plates shall not extend below the top of the steel reinforcement or shall be notched to permit the reinforcement to be continuous through the joint.
9. Contraction joints shall be a minimum of one and one-half (1-1/2) inches deep.

D. Finishing:

1. Strike off the surface with a template, and finish the surface with a wood float using heavy pressure, after which, contraction joints shall be made and the surface finished with a wood float or steel trowel.
2. Finish the face of the curbs at the top and bottom with an approved finishing tool of the radius indicated on the Drawings.
3. Finish edges with an approved finishing tool having a one-quarter- (1/4-) inch radius.
4. Provide a final broom finish by lightly combing with a stiff broom after troweling is complete.
5. The finished surface shall not vary more than one-eighth (1/8) inch in ten (10) feet from the established grade.

E. Concrete Curing:

1. After finishing operations have been completed and immediately after the free water has left the surface, the surface of the structure shall be completely coated and sealed with a uniform layer of curing compound specified in Section 03300 - Cast-In-Place Concrete.
2. The compound shall be applied in one or two applications as directed by the **County**. When the compound is applied in two (2) increments, the second application shall follow the first application within thirty (30) minutes.
3. The compound shall be applied continuously by means of an automatic self-propelled, pressure sprayer as approved by the **County** at the rate directed by the **County**, but not less than one (1) gallon per two hundred (200) square feet of surface.
4. The equipment shall provide adequate stirring of the compound during application.
5. Should the method of applying the compound not produce uniform coverage, its use shall be discontinued, and the curing shall be by another method approved by the **County**.

F. Protection:

1. Provide and use sufficient coverings for the protection of the concrete in case of rain or breakdown of curing equipment.
2. Provide necessary barricades and lights to protect the work and rebuild or repair to the approval of the **County**. All damage caused by people, vehicles, animals, rain, the **Contractor**'s operations and the like shall be repaired by the **Contractor** at no additional expense to the **County**.

3.04 SIDEWALK CONSTRUCTION

A. Sidewalks shall be four (4) inches thick.

B. At locations where the new sidewalk is to abut existing concrete, saw cut concrete for a depth of two (2) inches and chip the old concrete back to sound material on a straight line, clean the surface, and apply a neat cement paste just prior to pouring the new sidewalk.

C. Joint:

1. Place preformed asphalt expansion joints as in the adjacent curb, where the sidewalk ends at the curb, and around posts, poles, or other objects protruding through the sidewalk.

2. Provide contraction joints transversely to the walks at locations opposite the construction joints in the curb. These joints shall be straight and at right angles to the surface of the walk.

D. Finishing:

1. Broom the surface with a fine-hair broom at right angles to the length of the walk and tool all edges, joints, and markings. Mark the walks transversely with a jointing tool.

E. Concrete Curing

1. After the finishing operations have been completed and immediately after the free water has left the surface, the surface of the structure shall be completely coated and sealed with a uniform layer of curing compound specified in Section 03300 - Cast-In-Place-Concrete.
2. The compound shall be applied in one or two applications as directed by the **County**. When the compound is applied in two (2) increments, the second application shall follow the first application within thirty (30) minutes.
3. The compound shall be applied continuously by means of an automatic self-propelled, pressure sprayer as approved by the **County** at the rate directed by the **County**, but not less than one (1) gallon per two hundred (200) square feet of surface.
4. The equipment shall provide adequate stirring of the compound during application.
5. Should the method of applying the compound not produce uniform coverage, its use shall be discontinued, and the curing shall be by another method approved by the **County**.

F. Protection:

1. Protect the sidewalks from damage for a period of seven days.
2. All damage caused by people, vehicles, rain, animals, and the **Contractor** shall be repaired by the **Contractor** at no additional expense to the **County**.

3.05 REPLACEMENT CONCRETE CURB AND SIDEWALK

A. When a section is removed, the existing sidewalk or curb shall be cut to a neat line, perpendicular to both the centerline and the surface of the concrete slab. Existing concrete shall be cut along the nearest existing construction joints; if such joints do not exist, the cut shall be made at minimum distances shown on the Drawings.

B. Existing concrete sidewalks and curbs that have been cut and removed for construction purposes shall be replaced with the same width and surface as the portion removed. Sidewalks shall have a minimum uniform thickness of four (4) inches. The new work shall be neatly jointed to the existing concrete so that the

surfaces of the new work shall form an even, unbroken plane with the existing surfaces.

C. All work shall conform to the requirements for new sidewalks and curbs as detailed in this Section.

3.06 CLEANING

A. All excess or unsuitable material shall be disposed of as specified in Section 02050, Demolition.

B. All surfaces of the Work and adjacent surfaces shall be broom clean. The **Contractor** shall use pressure washing and other means approved by the **County** to remove splashed and spilled concrete from the Work and adjacent surfaces.

C. Disturbed seeded areas shall be reseeded per requirements of Section 02933 - Seeding.

+++ END OF SECTION 02521 +++

SECTION 02607
MANHOLES, JUNCTION BOXES, CATCH BASINS AND INLETS

PART 1 - GENERAL

1.01 SCOPE

A. Work described in this Section includes furnishing all labor, materials, equipment, tools, and incidentals required to install cast-in-place and precast concrete manholes, junction boxes, catch basins, and inlets. The term manholes, as used herein and shown on the Drawings, includes manholes, junction boxes, catch basins, and inlets. All Work shall be installed, adjusted, tested, and placed in operation in accordance with these Specifications, the manufacturer's recommendations, and as shown on the Drawings.

1.02 SUBMITTALS

A. Submittals shall be made in accordance with the requirements of the General Conditions of the Contract Documents and Section 01300. In addition, the following specific information shall be provided:

1. Complete shop drawings and engineering data on frames, covers, steps, and precast manhole sections and flotation calculations shall be submitted to the **County** in accordance with the requirements of the General Conditions of the Contract Documents.

1.03 QUALITY ASSURANCE

A. Prior to delivery, all basic materials specified herein shall be tested and inspected by an approved independent commercial testing laboratory or, if approved by the **County**, certified copies of test reports prepared by the manufacturer's testing laboratory will be acceptable. All materials that fail to conform to these Specifications will be rejected.

B. After delivery to the site, any materials that have been damaged in transit or are otherwise unsuitable for use in the Work will be rejected and removed from the site.

1.04 QUALITY STANDARDS

A. Manufacturers offering products that comply with these specifications include:
1. Standard manhole frame and cover
    a. Vulcan Foundry, VM-26
    b. Neenah Foundry, Series R-1700
    c. Or Approved Equal

2. Manhole adjusting rings
    a. Neenah Foundry, R1979-H
    b. Higgins Foundry
    c. Or approved equal

3. Manhole rungs
    a. M.A. Industries
    b. Or Approved Equal

1.05 WARRANTY

A. Provide a manufacturer's warranty against defective materials and workmanship in accordance with the requirements of the General Conditions of the Contract Documents.

PART 2 - PRODUCTS

2.01 GENERAL

A. Manholes shall be constructed of specified materials to the sizes, shapes, and dimensions and at the locations shown on the Drawings or as otherwise directed by the **County**. The height or depth of the manhole will vary with the location, but unless shown otherwise on the Drawings, shall be such that the top of the manhole frame will be at the finished grade of the pavement or ground surface and the invert will be at the designated elevations.

2.02 MATERIALS AND CONSTRUCTION

A. Concrete and Reinforcement:

1. Concrete used in manhole and junction chamber construction shall be Class "A" concrete conforming to the requirements set by Owner and or Engineer.

2. Steel reinforcement shall conform to the requirements set by Owner and or Engineer.

3. Brick: The brick shall conform to the requirements of AASHTO M 91.

4. Mortar: The mortar for brick masonry and similar Work shall be composed of one (1) part of Portland cement and two (2) parts of mortar sand, by volume. The Portland cement shall conform to the requirements of AASHTO M 45. Hydrated lime may be added to the mixture of sand and cement in an amount not to exceed fifteen (15) percent of the weight of cement used. The hydrated lime shall meet the requirements of ASTM C 6. The water shall be clean and free of deleterious amounts of acids, alkalis, or organic material. If the water is of questionable quality, it shall be tested in accordance with AASHTO T 26.

B. Precast Concrete Manholes:

1. Precast concrete manholes shall consist of precast reinforced concrete sections, a conical or flat slab top section, and a base section conforming to the typical manhole details as shown on the Drawings.

2. Precast manhole section shall be manufactured, tested, and marked in accordance with the latest provisions of ASTM C 478.

3. The minimum compressive strength of the concrete for all sections shall be four

thousand (4,000) psi.

4. The maximum allowable absorption of the concrete shall not exceed eighty (8) percent of the dry weight.

5. The circumferential reinforcement in the riser sections, conical top sections and base wall sections shall consist of one (1) line of steel and shall be not less than seventeen hundredths (0.17) square inches per lineal foot.

6. The ends of each reinforced concrete manhole riser section and the bottom of the manhole top section shall be so formed that when the manhole risers and the top are assembled, they will make a continuous and uniform manhole.

7. Joints of the manhole sections shall be of the tongue and groove type. Sections shall be joined using 0-ring rubber gaskets conforming to the applicable provisions of ASTM C443, latest revision, or filled with an approved preformed plastic gasket meeting the requirements of Federal Specifications 55-5-00210, "Sealing Compound, Preformed Plastic for Pipe Joints", Type 1, Rope Form.

8. Each section of the precast manhole shall have not more than two (2) holes for the purpose of handling and laying. These holes shall be tapered and shall be plugged with rubber stoppers or mortar after installation.

9. Polypropolene plastic manhole steps shall be installed in each section of the manhole in accordance with the **County** standard details.

C. Brick Structures:

1. Foundations: A prepared foundation shall be placed for all brick structures after the foundation excavation is completed and accepted. Unless otherwise specified, the base shall consist of reinforced concrete mixed, prepared, and placed in accordance with the requirements by Owner and or Engineer. The foundation shall be built to the correct elevation and shall be finished to cause the least possible resistance to flowing water.

2. Laying Brick: All brick shall be clean and thoroughly wet before laying so that they will not absorb any appreciable amount of additional water at the time they are laid. All brick shall be laid in freshly made mortar. Mortar that is not used within forty-five (45) minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted. An ample layer of mortar shall be spread on the beds and a shallow furrow shall be made in it, which can be readily closed by the laying of the brick. All bed and head joints shall be filled solid with mortar. End joints of stretchers and side or cross joints of headers shall be fully buttered with mortar and a shoved joint made to squeeze out mortar at the top of the joint. Any bricks that may be loosened after the mortar has taken its set shall be removed, cleaned, and relaid with fresh mortar. No broken or chipped brick shall be used in the face, and no spalls or bats shall be used except where necessary to shape around irregular openings or edges; in which case, full bricks shall be placed at ends or corners where possible and the bats shall be used in the interior of the course. In making closures, no piece of brick shorter than the width of a whole brick shall be used; and wherever practicable, whole brick shall be used and laid as headers.

3. Joints: All joints shall be slushed with mortar at every course, but slushing alone will not be considered adequate for making an acceptable joint. Exterior faces shall be laid up in advance of backing. Exterior faces shall be back plastered or pargeted with a coat of mortar not less than one-half (1/2) inch thick before the backing is laid up. Prior to pargeting, all joints on the back of face courses shall be cut flush. Unless otherwise noted, joints shall be not less than one-quarter (1/4) inch or more than one-half (1/2) inch wide and whatever width is adopted shall be maintained uniform throughout the work.

4. Pointing: Face joints shall be neatly struck, using the weather joint. All joints shall be finished properly as the laying of the brick progresses. When nails or line pins are used, the holes shall be immediately plugged with mortar and pointed when the nail or pin is removed.

5. Cleaning: Upon completion of the work, all exterior surfaces shall be thoroughly cleaned by scrubbing and washing down with water and, if necessary to produce satisfactory results, cleaning shall be done with a five (5) percent solution of muriatic acid that shall then be rinsed off with liberal quantities of clean, fresh water.

6. Curing and cold weather protection: In hot or dry weather, the brick masonry shall be protected and kept moist for at least forty-eight (48) hours after laying the brick. Brick masonry Work or pointing shall not be done when there is frost in the brick or when the air temperature is below fifty (50) degrees F unless the **Contractor** has on the project, ready to use, suitable covering and artificial heating devices necessary to keep the atmosphere surrounding the masonry at a temperature of not less than sixty (60) degrees F for the duration of the curing period.

D. Frames and Covers:

1. Frames and covers shall be cast iron conforming to the minimum requirements of Federal Specifications WWOI-652 or to ASTM A 48 for Class 30 Gray Iron Castings. All castings shall be made accurately to the required dimensions, interchangeable, sound, smooth, clean, and free from blisters and/or other defects. Defective castings that have been plugged or otherwise treated shall not be used. All castings shall be thoroughly cleaned and painted or coated with a bituminous paint. Each casting shall have its actual weight in pounds stenciled or painted on it in white paint.

2. Standard manhole frames and covers shall have a minimum of twenty-two (22) inches clear inside diameter and shall be a minimum of five (5) inches high, with guide ring, and shall weigh not less than four hundred, forty-six (446) pounds, total. Manhole covers shall be as detailed on the Drawings.

3. The contact surfaces of all manhole covers and the corresponding supporting rings in the frames shall be machined to provide full perimeter contact.

4. All sanitary sewer manhole covers shall have the word "PROPERTY OF DEKALB COUNTY” cast on the top in letters two (2) inches high.

5. An adjusting ring shall be provided for each manhole in a street.

6. Provide solid manhole and handhole covers and frames for electrical underground systems. Covers shall have letters "HIGH VOLTAGE," "LOW VOLTAGE," "SIGNAL," as applicable, embossed on top.

PART 3 - EXECUTION

3.01 CONSTRUCTION OF CAST-IN-PLACE CONCRETE MANHOLES

A. Cast-in-place manholes, excluding curved manhole bases, shall be constructed in place with the base, barrel, and conical section all monolithically cast using removable forms of material and design approved by the **County**.

B. The vertical forms, vertical and horizontal wall spacers, steps, and placing cone must be carefully positioned and firmly clamped in place before any placement is made. The wall spacers must be located ninety (90) degrees from each other. The forms shall be firmly supported with bottom of forms at the proper elevation to permit the base to be deposited through the vertical forms.

C. No pipe penetration shall be formed within twelve (12) inches of a corner, on square bases, or within twelve (12) inches of another penetration, in any direction, for circular bases.

D. The manhole base shall be deposited down through the wall forms onto undisturbed earth or shall be rock bearing. It shall be evenly distributed around the walls and vibrated both inside and outside the forms until there is a minimum slope of sixty (60) degrees from the bottom of the forms to the bearing surface both inside and outside of the manhole. When this is complete and before additional concrete is added, the concrete must be carefully vibrated on each side of each sewer pipe.

E. The base shall be concentric with the manhole, except where eccentric alignment with ladder is required, and have a minimum diameter of four (4) feet or sixteen (16) inches greater than the outside diameter of the manhole whichever is greater, and ten (10) inch minimum thickness under the lowest pipe. Minimum wall thickness shall be six (6) inches.

F. Additional concrete must be deposited in evenly distributed layers of approximately eighteen (18) inches with each layer vibrated to bond it to the preceding layer. The wall spacers must be raised as the placements are made. The concrete in the area from which the spacer is withdrawn shall be carefully vibrated. Excessive vibration shall be avoided.

G. Adjustment rings shall be provided between the conical section and the manhole frame. The rings shall be cast-in-place using building felt between pours to create a weakened joint or as directed by the **County**. If adjustment of the lid elevation is called for, concrete adjusting rings shall be used.

H. All manhole bases, including curved manhole bases and inverts shall be constructed of Class "A" concrete in accordance with details on the Drawings. Inverts shall be smooth and accurately shaped and have the same cross section as the invert of the sewers that they connect. The manhole base and invert shall be carefully formed to the required size and grade by gradual and even changes in sections, care being exercised to form the

incoming and outgoing sewer pipes into the wall of the manhole at the required elevations. Changing directions of flow through the sewer shall be made to a true curve with as large a radius as the size of the manhole will permit. The invert and flow channel shall be formed during or immediately after the placing of the concrete and brush-finished as soon as the concrete has sufficiently set.

I. Form marks and offsets shall not exceed one (1) inch on the outside surface of the manhole. Form marks and offsets shall not exceed one-half (1/2) inch inside of the manhole. All offsets on the inside surface of the manhole shall be smoothed and rubbed so there is no projection or irregularity capable of scratching a worker or catching and holding water or other materials. Honeycombed areas shall be completely removed immediately upon removal of the forms and replaced with a Class "A" concrete as directed by the **County**, or patched with epoxy grout.

J. Should circumstances make a joint necessary, a formed groove or reinforcing dowels shall be required in the top of the first placement for shear protection. Immediately before the second placement is made, the surface of the cold joint shall be thoroughly cleaned and wetted with a layer of mortar being deposited on the surface.

K. Concrete setting time and backfilling shall be in accordance with the applicable requirements set by Owner and or Engineer shall be allowed to set for a period of not less than twenty-four (24) hours. Outside forms, if any, then shall be removed and the manhole backfilled and compacted. All loose or waste material shall be removed from the interior of the manhole. The manhole cover then shall be placed and the surface in the vicinity of the Work cleaned off and left in a neat and orderly condition.

3.02 CONSTRUCTION OF PRECAST CONCRETE MANHOLES

A. After placing a manhole base, inverts shall be constructed using Class "A" concrete and three to five (3 to 5) inches slump range in accordance with details on the Drawings and inverts shall have the same cross section as the invert of the sewers that they connect. The manhole invert shall be carefully formed to the required size and grade by gradual and even changes in sections. Changes in directions of flow through the sewer shall be made to a true curve with as large a radius as the size of the manhole will permit.

B. After the base section has been set, and inverts formed, the precast manhole sections shall be placed thereon, care being exercised to form the incoming and outgoing sewer pipes into the wall of the manhole at the required elevations.

C. The cast iron frame for the manhole cover shall be set at the required elevation and properly anchored to the riser section. Where manholes are constructed in paved areas, the top surface of the frame and cover shall be tilted to conform to the exact slope, crown, and grade of the existing adjacent pavement.

D. After backfilling has been completed, the excavated area, if located in a street, alley, or sidewalk, shall be provided with a temporary surface.

3.03 MANHOLES OVER EXISTING SEWERS

A. Construct manholes over existing operating sewer lines at locations shown. Perform necessary excavation as specified hereinbefore, support precast concrete MH base over

existing pipe on brick or solid concrete block then pour concrete slab base, break into existing line, construct riser sections, and complete Manhole construction.

B. Maintain flow through existing sewer lines at all times, and protect new concrete and mortar Work for a period of seven (7) days after concrete has been placed. Advise **County** of plans for diverting sewage flow and obtain **County**'s approval before starting. **County**'s approval will not relieve **Contractor** of responsibility for maintaining adequate capacity for flow at all times and adequately protecting new and existing work.

C. Construct the new base under the existing sewer and the precast sections as specified herein.

D. Break out the existing pipe within the new manhole, cover the edges with mortar, and trowel smooth. Gain approval from the **County** prior to breaking out the existing pipe.

3.04 INSPECTION AND TESTING

A. After completion, all manholes will be inspected. The **Contractor** shall make, at **Contractor's** expense, all necessary changes, modifications, and/or adjustments required to assure satisfactory operation.

END OF SECTION 02607

SECTION 02711
FENCING AND GATES

PART 1 - GENERAL

1.01 SCOPE

A. Work described in this Section includes furnishing all labor, materials, equipment, tools, and incidentals required for a complete installation of chain link fence and gates. All materials shall be installed and adjusted, in accordance with these Specifications, the manufacturer's recommendations and as shown on the Drawings.

B. Contract drawings show only functional features and some of the required external connections. They do not show all components required for a complete installation nor exact dimensions particular to any manufacturer's products. **Contractor** shall supply all parts, devices, and equipment necessary to meet the requirements of the Contract Documents and shall make all dimensional adjustments particular to the materials being furnished. All costs associated with such changes and adjustments shall be considered as being included in the price bid for the Work shown and specified.

C. Related Work specified elsewhere:

Section 03300 – Cast-in-Place Concrete

1.02 SUBMITTALS

A. Submittals shall be made in accordance with the requirements of the General Requirements of the Contract Documents and Section 01300.

1.03 QUALITY ASSURANCE

A. Reference Standards: Comply with all Federal and State laws or ordinances, as well as all applicable codes, standards, regulations and/or regulatory agency requirements including the partial listing below:

1. Department of Transportation Standard Specifications for Construction of Roads and Bridges, Sections 643 and 894.

B. Experience: Products furnished under this Section shall be of a design and manufacture that has been successfully used in similar applications. The manufacturer shall have furnished product for a minimum of five similar applications. Provide a list of such installations complete with installation description contact names, addresses, telephone numbers. This reference list shall be submitted with the shop drawings.

1.04 QUALITY STANDARDS

A. The chain link fence and gates shall be furnished by a single manufacturer who shall assume sole responsibility for providing a complete system designed for

long life with a minimum of required maintenance meeting the requirements specified herein and as shown on the Drawings.

B. Manufacturer shall provide written certification that the material provided under this Specification has been amply designed and is a suitable application for these service conditions.

C. Manufacturer's offering products that comply with these specifications include:

Anchor Fence, Inc. or Approved equal.

1.05 WARRANTY

A. Provide a warranty against defective materials and workmanship in accordance with the requirements of the General Requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 GENERAL

A. Zinc and aluminum coated steel and aluminum alloy fabric, posts, fittings and accessories, shall conform to AASHTO M 181.

2.02 FENCE FABRIC

A. All chain link fence shall consist of woven wire in the form of reasonably uniform two- (2-) inch-square mesh, having parallel sides and horizontal and vertical diagonals of approximately uniform dimensions. The wire size shall be as specified on the Drawings.

B. TYPES

1. Zinc-Coated Steel Fabric: The base metal of the fabric shall be a good commercial quality of steel wire coated with prime western spelter or better (AASHTO: M120) applied at the rate of not less than 1.2 oz. of zinc per square foot of uncoated wire surface after weaving.

- OR -

2. Aluminum-Coated Steel Fabric: The base metal of the fabric shall be a good commercial quality steel wire, coated with aluminum alloy applied at the rate of not less than 0.40 oz. per square foot of uncoated wire surface.

C. Workmanship: Chain Link fence fabric shall be produced by methods recognized as good commercial practices. The zinc or aluminum coating shall be applied to the fabric in a continuous process and shall not be applied to the fabric in roll form. Both coated before weaving and coated after weaving fabric shall be given careful visual inspection to determine the quality of the coating. Excessive roughness, blisters, sal ammoniac spots, bruises, flaking bare spots, or other obvious defects, to any considerable extent, shall be cause for rejection.

1. Tolerances: All dimensions, weights, and test methods shall conform to the applicable portions of AASHTO: M 181 or Federal Specification RR-F-191.

2.03 POSTS

A. Line Posts shall be:
   1. One and seven-eighths (1 7/8) inch nominal galvanized steel "H" column minimum weight of two and seven-tenths (2.70) pounds per linear foot, or
   2. Nominal two and three-eighths (2 3/8) inches outside diameter galvanized steel pipe minimum weight three and sixty-five hundredths (3.65) pounds per linear foot, or
   3. "C" section channels measuring two and twenty-five hundredths by one and seventy hundredths (2.25" x 1.70") inches, minimum weight of two and seventy-three hundredths (2.73) pounds per linear foot.

B. End, Corner, and Pull Posts:

   1. Zinc and aluminum-coated posts shall be:
      a. Nominal two and seven eighths (2-7/8) inches outside diameter galvanized steel pipe weighing a minimum of five and seventy-nine hundredths (5.79) pounds per linear foot, or
      b. Two and one-hal- (2-1/2-) inch-square posts with a minimum weight of five and seventy hundredths (5.70) pounds per linear foot, or
      c. Three and one-half by three and one-half (3-1/2 x 3-1/2) inches rolled form sections with integral fabric loops, weighing a minimum of five and fourteen hundredths (5.14) pounds per linear foot.

2.04 TOP RAILS AND HORIZONTAL BRACES FOR END, CORNER AND PULL POSTS

A. Truss Bracing shall be three-eighths (3/8) inch round rod with suitable turnbuckle or takeup arrangement. Rods shall be of the approximate metal and coating according to the type of fence installation. All braces shall be furnished with suitable metal connections so that they can be securely fastened to the posts.

B. Top rail shall be furnished in lengths of not less than fifteen (15) feet. Each section shall be provided with a suitable expansion sleeve or coupling not less than seven (7) inches long. Every fifth coupling as installed shall have a heavy spring to take up expansion and contraction of the top rail.

C. Zinc and aluminum coated rails and braces shall be nominal:
   1. One and five-eighths (1-5/8) inch outside diameter steel pipe, minimum weight of two and twenty-seven hundredths (2.27) pounds per linear foot, or
   2. One and five-eighths by one and one-quarter (1-5/8 x 1-1/4) inches roll formed sections weighing a minimum of one and thirty-five hundredths (1.35) pounds per linear foot.

2.05 POST TOPS AND FITTINGS

A. All posts shall be fitted with tops designed to fit securely over the posts and carry the top rail. The tops and fittings shall be of dimensions shown on the Drawings.

2.06 FABRIC FASTENERS

A. Wire for fabric fasteners may be zinc coated or aluminum coated of the gauges specified.

2.07 GATES

A. Frames, Posts, hinges, and fitting shall be in accordance with dimensions shown in Federal Specification RR-F-191, unless otherwise specified.

1. Gates: Shall be provided with combination spring latch and plunger rod of approved design for padlocking.

2. Hinges: Heavy-duty malleable iron or steel, industrial service type, two hundred and seventy- (270-) degree swing. Provide at least three (3) hinges on each gate leaf at vehicular gate openings.

3. Hold-Open Device: Equip designated gate openings with galvanized steel or malleable iron stop/hold open devices with catch or plunger rod of standard manufacture and approved design.

2.08 BARBED WIRE

A. Galvanized steel barb wire shall be composed of two strands of No. 12 1/2 gauge wire with round barbs, four-point pattern, spaced five plus and minus one-half (5±1/2) inch apart conforming to ASTM: A 121, Class 2, or at the **Contractor**'s option may be high tensile strength barbed wire. If the **Contractor** elects to furnish high tensile strength bared wire, it shall meet the requirements of ASTM: A 121 with the following exceptions:

1. The coated line wires shall have a nominal diameter of 0.067 inch. The coated barbwires shall have a nominal diameter of 0.057 inch.

2. The minimum weight of zinc coating shall be seventy-five hundredths (0.75) ounces per square foot for the line wire and seventy hundredths (0.70) ounces per square foot for the barbed wire.

3. The line wire shall have a minimum tensile strength of four hundred seventy-five (475) pounds per individual strand.

2.09 GROUND RODS

A. Ground Rods shall be five-eighths (5/8) inch in diameter but no less than nine-sixteenths (9/16) inch and shall be minimum eight (8) feet in length unless otherwise shown on the Plans. Ground rods shall be galvanized steel. Galvanizing shall have a minimum coating of two (2) ounces per square foot in accordance with the requirements of ASTM: A 153.

PART 3 - EXECUTION:

3.01 GENERAL

A. Fence shall normally be constructed within the right-of-way line with no portion of the permanent installation encroaching on adjacent property. When it is necessary for the **Contractor** to trespass on private property outside of the right-of-way or easements provided on the Drawings, the **Contractor** shall obtain permission from the property owner for such intrusion.

B. Fence shall generally follow the contour of the ground, with the bottom of fence fabric no less than one inch or more than six inches from the ground surface. The fence line shall be cleared a maximum of eight (8) feet wide and minor grading shall be performed where necessary to provide a neat appearance. Where abrupt changes in the ground profile in low areas make it impractical to maintain the specified ground clearance, longer posts may be used and multiple strands of barbed wire stretched thereon with vertical clearances between strands of barbed wire six (6) inches or less.

C. Any of the various types of fencing materials shown in Part 2, may be used, except that posts, fabric, barbed wire, and appurtenances, including gates when required, shall be of the same or matching type for each Project, unless otherwise directed.

3.02 INSTALLATION

A. Posts shall be located and installed as called for on the Drawings. "C" and two and three-eighths (2 3/8) inch tube-type line posts for all types of fences shall be installed using concrete encasement. Posts installed in rock shall be in accordance with Article 643.03.B.3 of the DOT Standard Specifications.

1. All corner, end, and pull posts shall have concrete encasement as shown in the Drawings. Posts damaged by driving shall be replaced by the **Contractor** at its expense. When posts are set in concrete, the entire hole around the post shall be filled with Class A or B concrete. Concrete may be hand mixed for batches of one-half (1/2) cubic yard or less. The posts shall be firmly braced and held in place until the concrete has set. Distance between end, pull, and corner or angle post assemblies, shall not exceed the following:

   For Chain Link Fence, Straight Line: five hundred (500) feet
   For Chain Link fence, Curved Line: two hundred-fifty (250) feet

2. Posts placed on concrete walls, slabs or solid rock shall be set in round holes twelve (12) inches deep or as indicated on the Drawings. The space around the post shall be filled with a cement filler approved by the **County**.

3. Posts shall be repaired after cutting or drilling. Galvanized steel posts shall be repaired in accordance with the manufacturer's

recommendations.

B. Fence Erection; Fence fabric or barbed wire, except when posts are set in concrete footings, may be installed when posts are set and braced. When posts are set in concrete footings, the installation of fabric or wire shall be delayed to allow the concrete to cure at least five (5) days. When barbed wire fence is required, three strands shall be installed unless otherwise indicated on the Drawings.

C. Gates: Gate assemblies shall be of the length, height and type designated on the Drawings, and installed so as to provide for two hundred seventy- (270-) degree swing. Gate frames shall be welded units and shall be properly coated after welding. Fabric matching the fence fabric shall be stretched taut over the gate frame. Gate assemblies shall be provided with a positive type locking device, padlock, and keys.

D. Electrical Ground: Whenever a power line carrying more than six hundred (600) volts passes over the fence, a ground rod shall be installed. The ground rod shall be installed at the nearest point directly below the point of crossing. Where possible the ground rod shall be driven into the ground for a full eight (8) feet of penetration. In rocky soil, the rod may be driven slanted, so as to provide eighteen (18) inches of cover at the tip. If solid rock is encountered, two (2) ground rods may be installed at the nearest post on each side of the power line crossing where soil conditions will permit. A length of No. 6 bare copper seven (7) stranded wire shall be attached between the fence and the ground rod with suitable clamps.

3.03 STORAGE OF MATERIALS

A. Barbed wire, wire fence fabric, steel posts, hardware, and other materials, shall not be stored in contact with the ground but shall be placed in floored buildings, on platforms, or on wooden timbers or poles. Floors, platforms, or props shall be high enough to prevent the wire and steel posts from having any contact with the groundwater or surface water. Wire or steel posts that are damaged due to improper storage at any time between fabrication and final erection will be rejected. Except when rusting occurs as a result of ponding water after erection of the fence, all wire or posts that show signs of rusting before final acceptance shall be repaired, as directed by the **County**, or removed and replaced with new material at the **Contractor**'s expense.

+++ END OF SECTION 02711 +++

SECTION 02920
SITE RESTORATION

PART 1 - GENERAL

1.01 SCOPE

A. This section includes disposition of materials and structures encountered in the Work; ground preparation; mulching; seeding; fence reset; cleanup; and any other similar, incidental, or appurtenant operation that may be necessary to properly complete the Work.

B. The **Contractor** shall provide all services, labor, materials, and equipment required for all site restoration and related operations necessary or convenient to the **Contractor** for furnishing a complete Work as shown on the Plans or specified in these Specifications.

C. Related Work Specified Elsewhere:

1. Section 01210 - Measurement and Payment
2. Section 02231 - Tree Protection and Trimming
3. Section 02510 - Pavement Repair

1.02 SUBMITTALS

A. Submittals shall be made in accordance with the requirements of the General Requirements of the Contract Documents and Section 01300. In addition, the following specific information shall be provided:

1. Certificates of inspection as required by government authorities. The **Contractor** shall submit manufacturers' or vendors' certified analysis for soil amendments and fertilizer materials. The **Contractor** shall submit other data substantiating that materials comply with specified requirements.

2. Typewritten instructions recommending procedures to be established by the **County** for maintenance of site restoration work for one (1) full year.

3. Seed vendors certified statements for each grass seed mixture required, stating botanical and common name, percentage by weight, and percentages of purity, germination, and weed for each grass seed species.

4. Proposed planting schedules, indicating dates for each type of planting work during normal seasons for such work in the site of the Work. The **Contractor** shall correlate with specified maintenance periods to provide maintenance from the Date of Substantial Completion. Once accepted, the **Contractor** shall revise dates only as approved in writing, after documentation of reasons for delays.

1.03 QUALITY ASSURANCE

A. Reference Standards: The **Contractor** shall comply with the applicable provisions and recommendations of the latest editions of the following standards, except as otherwise shown on the Plans or specified in these Specifications.

1. ASTM C602 - Standard Specification for Agricultural Liming Materials.
2. Turfgrass Producers International.

B. The **Contractor** shall ship site restoration materials with certificates of inspection required by authorities having jurisdiction. The **Contractor** shall comply with regulations applicable to site restoration materials.

C. If specified site restoration materials are not obtainable, the **Contractor** shall submit proof of non-availability to the **County** together with proposal for use of equivalent material.

D. The **Contractor** shall package standard products with manufacturers' certified analysis. For other material, the **Contractor** shall provide analysis by recognized laboratory, in accordance with methods established by the Association of Official Agricultural Chemists, as applicable.

1.04 SAFETY REQUIREMENTS

A. Hazards Control:

1. The **Contractor** shall store volatile wastes in covered metal containers, and remove from the site of the Work daily.

2. The **Contractor** shall prevent accumulation of wastes that create hazardous conditions.

3. The **Contractor** shall provide adequate ventilation during use of volatile or noxious substances.

B. The **Contractor** shall conduct cleaning and disposal operations in compliance with local ordinances and environmental laws and regulations.

1. The **Contractor** shall not burn or bury rubbish and waste materials on the site of the Work without prior written permission from the **County**.

2. The **Contractor** shall not dispose of volatile wastes such as mineral spirits, oil, or fuel in open drainage ditches or storm or sanitary drains.

1.05 DELIVERY

A. The **Contractor** shall deliver packaged materials in containers showing weight, analysis, and name of manufacturer. The **Contractor** shall protect materials from deterioration during delivery, and while stored at the site of the Work.

1.06 JOB CONDITIONS

A. All bare earth areas within the limit of work shall be grassed, mulched, or covered with other plant material as shown on the Plans. Final restoration of existing lawn areas (i.e. private residences, schools, and parks) shall be sod.

B. On a continuous basis, the **Contractor** shall maintain the site of the Work free from accumulations of waste, debris, and rubbish caused by its operations.

C. At completion of the Work, the **Contractor** shall remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all sight-exposed surfaces. The **Contractor** shall leave the site of the Work clean and ready for occupancy.

D. The **Contractor** shall proceed with the complete site restoration work as rapidly as portions of the site of the Work become available, working within seasonal limitations for each kind of site restoration work required. The **Contractor** will not be allowed to postpone cleanup and seeding until the end of the Work.

E. The **Contractor** shall determine the locations of underground utilities and perform Work in a manner that will avoid possible damage. The **Contractor** shall hand excavate, as required. The **Contractor** shall maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.

F. When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, the **Contractor** shall notify the **County** before planting.

G. The **Contractor** shall install materials during normal planting seasons for each type of site restoration work.

H. The **Contractor** shall plant trees and shrubs after final grades are established and prior to planting of lawns, unless otherwise acceptable to the **County**. If planting of trees and shrubs occurs after lawn work, the **Contractor** shall protect lawn areas and promptly repair damage to lawns resulting from planting operations.

I. The **Contractor** may, at its option, employ additional measures (other than those specified) to prevent loss of, or damage to the Work resulting from the effects of wind and/or water. No additional compensation will be made for the employment of such additional measures.

PART 2 - PRODUCTS

2.01 TOPSOIL

A. Topsoil for site restoration may not be available at the site of the Work in sufficient quantities and shall be furnished as specified.

B. New topsoil shall be fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay, lumps, brush, weeds, and other litter, and free of roots, stumps, stones, and other extraneous or toxic matter harmful to plant growth.

C. The **Contractor** shall obtain topsoil from local sources or from areas having similar soil characteristics to that found at the site of the Work. The **Contractor** shall obtain topsoil only from naturally, well-drained sites where topsoil occurs in depths of not less than four (4) inches. The **Contractor** shall not obtain topsoil from bogs or marshes.

2.02 MATERIALS

A. Grass seed shall meet the requirements of the State of Georgia Seed Laws and Rules and Regulations except that the requirements as to purity, germination, and noxious weeds shall be specified in this section.

1. Quality: Grass seed quality shall be as shown in the Table below:

Grass Seed Quality			
Seed	Purity Min. %	Germination Min %	Noxious Weed Max. Per Lb.
Sahara Bermuda Grass	98	90	None
Annual Rye Grass	98	90	None
Rebel II Turf Type Fescue	85	85	None

2. Seed shall be approved by the **County** before sowing. Seed shall have been tested by the Georgia Department of Agriculture, and no seed will be acceptable with a date of test more than six (6) months prior to the date of sowing. Such testing, however, shall not relieve the **Contractor** from responsibility for furnishing and sowing seed that meet the requirements of these Specifications at the time of sowing seed. When required by the **County**, samples of seed shall be furnished by the **Contractor** early enough before seeding to permit further testing before the seed is used. When a low percentage of germination causes the quality of the seed to fall below the minimum pure live seed specified, the **Contractor** may choose to increase the rate of seeding to obtain the minimum pure live seed content specified, provided that such an increase in seeding rates does not cause the quantity of noxious weed seed per square yard to exceed the quantity that would be allowable at the regular rate of seeding.

3. Seed that has become wet, moldy, or otherwise damaged will not be acceptable.

B. All fertilizer shall be of the grades specified and shall meet the requirements of the State Plant Food Act in effect thirty (30) days prior to the taking of bids. It shall be uniform in composition, dry and free flowing and shall be delivered to the site of the Work in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer that is caked or otherwise damaged, making it unsuitable for use, will not be accepted.

C. Mulch shall meet the following requirements:

1. Be acceptable to the **County**.
2. Be of such consistency that, when properly loosened, it can be distributed in a uniform application.
3. Be capable of producing the desired results.
4. Meet State and Federal Quarantine Restrictions pertaining to fire ants, Japanese beetles, and white fringed beetles.
5. Shall have a moisture content of twelve (12) percent or less.
6. Contain no excessive amounts of noxious weed seeds.
7. All materials must carry the following certification: "This material is certified as free for movement under the State and Federal Imported Fire Ant, Japanese Beetle, and White Fringed Beetle Quarantines."
8. Mulch shall be threshed rye, oat straw, wheat straw, or Bermuda grass hay.

D. Agricultural lime shall be a pulverized limestone having the following properties:

1. Total carbonate, not less than eighty-five (85) percent.
2. Passing ten (10) mesh screen at least one hundred (100) percent.
3. Passing one hundred (100) mesh screen at least twenty-five (25) percent.

E. Hydro mulch: Wood cellulose fiber containing no germination, inhibiting, or growth inhibiting agent. Characteristics shall be as follows:

1. Percent moisture content: Nine (9.0%) percent ± 3.0 percent.
2. Percent organic matter: Nine and two-tenths (9.2%) percent ± 0.8 percent.
3. Percent ash content: One and eight-hundredths (1.08%) percent ± 0.2 percnet.
4. pH: four and eight-tenths (4.8) (± 0.5).
5. Water holding capacity: one thousand one hundred fifty (1150) grams water/ one hundred (100) grams fiber minimum.

F. Sod. Sod shall meet the requirements of Georgia Department of Transportation Standard Specifications Construction of Transportation Systems, Section 700 and 890, latest edition.

2.03 GRASSING

A. Grass seed shall be as specified on the table below depending on the season or as instructed by the **County**. See the table below for seasonal application rates:

Seasonal Seed Application Rates		
Season	**Type of Seed**	**Application: lbs. per Acre**
Jan. 1 – May 15	Rebel II Turf Type Fescue	250
May 16 – Sept. 15	Sahara Hybrid Bermuda Grass	75
Sept. 16 – Dec. 31	Rebel II Turf Type Fescue	250

B. Disturbed Area Stabilization (Temporary Seeding) shall be planted with seeds listed in Table 2.

PART 3 - EXECUTION

3.01 DISPOSITION OF MATERIALS AND STRUCTURES ENCOUNTERED IN THE WORK

A. Existing materials or structures that may be encountered (within the lines, grades, or trenching sections established for completion of the Work), if unsuitable or unacceptable to the **County** for use in the Work, and for which the disposition is not otherwise specified, shall either be disposed of by the **Contractor** or shall remain the property of the **County** as further provided in this section.

B. At the option of the **County**, any existing materials or structures of "value" encountered in the Work shall remain the property of the **County**. The term "value" will be defined by the **County**.

C. Any existing materials or structures encountered in the Work, and determined not to be of "value" by the **County**, shall be disposed of by the **Contractor**, in an approved manner, except as otherwise specified by Owner and or Engineer.

3.02 GROUND PREPARATION

A. All ground to be sodded, sprigged, overseeded, or grassed shall be prepared by plowing, disking, and harrowing to a depth or not less than six (6) inches. After plowing, topsoil shall be spread on the prepared area to a depth of four (4) inches, and smoothed to a uniform depth. The finished surfaces shall present a smooth, uniform, loose, well broken soil. All large clods, boulders, stumps, large roots, roots, debris, and other particles two (2) inches in diameter or greater and which will interfere with the Work shall be removed from the site of the Work.

B. Lime shall be uniformly spread over the area to be planted or sowed at the rate of two thousand (2,000) pounds per acre. Commercial grade five (5) percent nitrogen-ten percent phosphorus – ten percent potassium (5-10-10) fertilizer or approved equal shall also be uniformly spread over the area at the rate of one thousand five hundred (1,500) pounds per acre or as recommended by the manufacturer. The fertilizer and the lime shall then be thoroughly mixed into the

top six (6) inches of the soil. All surface areas distorted by mixing of line and fertilizer into the soil shall be restored to the proper line and grade before any more work is done on the area.

3.03 MULCHING

A. The quantity of mulch to be applied shall be that required to evenly cover the ground to a depth of at least three (3) quarters of an inch and not more than one and one-half (1½) inches, according to the texture and moisture content of the mulch material. It is intended that mulch allow some sunlight to penetrate and air to circulate while at the same time shading the ground and conserving soil moisture.

B. Mulch: Mulch shall be uniformly applied manually or with special blower equipment. When a blower is used, baled material shall be thoroughly loosened before it is fed into the machine so as to obtain a uniform coating of mulch and to prevent placement of unbroken clumps. After initial distribution, thick clumps that are dense enough to prevent new grass from emerging shall be loosened and redistributed. Mulch shall not be applied on windy days when the velocity of the wind is sufficient to prevent uniform distribution of mulch.

C. Hydro mulch: If Hydro mulch is used, it shall be mixed to provide equivalent quantities of fertilizer and seed as specified in this section.

3.04 SEEDING

A. Seed shall be uniformly sown at the rates specified, by the use of approved mechanical seed drills, rotary hand seeders, or other type of equipment that will produce a uniform application of the seed. The **Contractor** shall not distribute seed by hand.

B. In order to obtain an even distribution, seeds shall be sown separately except that seeds of approximately the same size may be mixed and sown together. No sowing shall be done during windy weather that prevents even distribution of the seeds, when the prepared surface is crusted, frozen, wet, or otherwise in non-tillable condition.

C. Immediately after seeding, all areas shall be rolled.

D. Watering: After seeding of areas are complete, watering shall be continued daily as long as necessary to promote a rapid growth except that no water shall be applied between the hours of 10 A.M. and 4 P.M. to prevent “crushing over” from the sun.

E. First Application of Nitrogen (All areas): The first application of nitrogen shall be made on all areas when there is evidence that a satisfactory stand of grass will be obtained. For seeded areas, the young grass must have reached a height of at least one (1) inch. At this time, nitrate of soda, or other approved commercial fertilizer high in nitrogen content shall be applied at a rate sufficient to furnish seventy (70) pounds of nitrogen per acre. No fertilizer shall be applied to unsatisfactory areas that will have to be replanted.

F. Second Application of Nitrogen (all areas): A second application of nitrogen shall be made thirty (30) days after sufficient moisture has been applied to make the first application available for plant growth. Second application shall also furnish seventy (70) pounds nitrogen per acre.

G. Maintenance: The **Contractor** shall provide all maintenance necessary to keep all seeded and turf areas in a healthy, satisfactory, and weed-free condition until the Work is finally accepted. This includes repairing washed-out areas, and correctly applying additional seed, fertilizer, and water if they are needed.

H. Satisfactory Stand Defined:

1. A stand of grass will be considered satisfactory by the **County** only if there is full cover over the seeded area with perennial grass that is alive and growing, leaving no bare spots larger than one (1) square foot or the total of all bare spots within a given area shall constitute no more than one one-hundredth (1/100) of the total area.

2. If it is necessary to repeat any or all of the work necessary to produce a viable stand of perennial grass, including repairing washed-out areas, soil preparation, re-fertilizing, liming, re-seeding, sprigging, watering, or mulching, the **Contractor** shall repeat these operations until satisfactory stand is obtained and approved by the **County**.

I. The **Contractor** shall remove all stumps, fallen trees, uprooted trees, dead trees, and debris from the edge of the right-of-way.

3.05 SOD

A. Furnish and install sod in all lawn areas or as designated by the **County**.

1. Use only Common Bermudagrass (Cynodon dactylon) or one of the following Bermudagrass varieties:
   a. Tifway 419
   b. Tifway II Hybrid
   c. Tift 94
   d. Tifton 10
   e. Midlawn
   f. Midiron
   g. GN-1 Hybrid
   h. Vermont

2. No dwarf Bermuda types shall be used. Sod shall be nursery-grown and accompanied with a Georgia Department of Agriculture Live Plant License Certificate or Stamp. Sod shall consist of live, dense, well-rooted material free of weeds and insects as described by the Georgia Live Plant Act.

3. Place sod by hand or by mechanical means so that joints are tightly abutted with no overlaps or gaps. Use soil to fill cracks between sod pieces, but do not smother the grass.

4. Once sod is placed and staked as necessary, tamp, or roll it using adequate equipment to provide good contact with soil.

5. Use caution to prevent tearing or displacement of sod during this process. Leave the finished surface of sodded areas smooth and uniform.

B. After the sod has been placed and rolled or tamped, water it to promote satisfactory growth. Additional watering will be needed in the absence of rainfall and during the hot, dry summer months. Water may be applied by Hydro Seeder, Water Truck or by other means approved by the **County**.

C. Sod will be inspected by the **County** at the end of the first spring after installation and at the time of Final Inspection. Replace any sod that is not live and growing. Any cost for replacing any unacceptable sod will be at the **Contractor**'s expense.

D. Apply nitrogen at approximately fifty (50) pounds/acre when specified by the **County** after plants have grown to two (2) inches high. One application is mandatory and must be applied before Final Acceptance. Apply nitrogen with mechanical hand spreaders or other approved spreaders capable of uniformly covering the grassed areas. Do not apply nitrogen on windy days or when foliage is damp. Do not apply nitrogen between October 15 and March 15.

3.06 FENCE RESET

A. Should the construction of the sewer require or result in removal or damage to an existing fence, the **Contractor** shall replace the fence in kind to the satisfaction of the fence owner.

3.07 CLEANUP

A. During site restoration work, the **Contractor** shall keep pavements clean and the site of the Work in an orderly condition.

B. The **Contractor** shall protect site restoration work and materials from damage due to site restoration operations, operations by other contractors, and trades and trespassers. The **Contractor** shall maintain protection during installation and maintenance periods. The **Contractor** shall treat, repair, or replace damaged site restoration work as directed by the **County**.

C. Throughout the progress of the Work, the **Contractor** shall keep the construction area, including storage areas used by the **Contractor**, free from accumulations of waste material or rubbish, and shall keep its materials and equipment in a neat and orderly manner. Immediately upon completion of any section of the Work and before payment therefore has been made, the **Contractor** shall remove from the site of the Work all construction equipment, temporary structures, and debris, and shall restore the site of the Work to a neat, workmanlike condition; the **Contractor** shall not remove barricades and warning and direction signs until

directed by the **County**. The **Contractor** shall not postpone cleanup and seeding until the end of the Work. Waste materials shall be disposed of at locations satisfactory to the **County** or affected regulatory agencies.

D. After completion of all Work contemplated under the Contract and before final payment has been made, the **Contractor** shall make a final cleanup of each separate part of the Work; shall restore all surfaces to a neat and orderly condition; and shall remove all construction equipment, tools, and supplies.

3.08 INSPECTION AND ACCEPTANCE

A. When site restoration work is completed, including maintenance, the **County** will, upon request, make an inspection to determine acceptability.

B. Where inspected site restoration work does not comply with the requirements of the **County**, the **Contractor** shall replace rejected work and continue specified maintenance until reinspected by the **County** and found to be acceptable. The **Contractor** shall remove rejected plants and materials promptly from the site of the Work.

+++ END OF SECTION 02920 +++

SECTION 03200
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SECTION INLCUDES

A. This section includes requirements for furnishing all labor, equipment and materials required to furnish and install all concrete reinforcement and bar supports as specified herein and shown on the Drawings.

1.2 RELATED SECTIONS

A. Section 01300: Submittal Procedures

B. Section 01600: General material and Equipment Requirements

1.3 REFERENCES

A. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

B. ASTM A1064 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

C. ACI 315 – Manual of Standard Practice for Detailing Reinforced Concrete Structures

D. ACI 318 – Building Code Requirements for Reinforced Concrete

E. Concrete Reinforcing Steel Institute (CRSI) – Manual of Standard Practice

1.4 SUBMITTALS

A. Submit shop drawings and product data in accordance with Section 013300-Submittal Procedures.

B. Placing drawings and bar lists shall be in accordance with the latest revision of ACI 315. Shop drawings shall include bar supports.

C. Submit a certified copy of mill test certificates showing physical and chemical analysis of the steel. The mill tests shall not have been made over 90 days prior to submittal.

1.5 STORAGE

A. Store reinforcement above ground on skids or other supports and in a manner to prevent distortion or surface deterioration of the reinforcing bars.

B. Comply with the requirements of Section 016000 – Product Requirements.

PART 2 - PRODUCTS

2.1 REINFORCING STEEL

A. Reinforcing bars shall be new ASTM A615 Grade 60.

2.2 WELDED WIRE FABRIC

A. Welded wire fabric shall be new, conform to ASTM A1064, and shall not have more rust than a light, tightly adhered coating.

2.3 TIE WIRE

A. Tie wire shall be black annealed wire, 16 gauge or heavier.

2.4 BAR SUPPORTS

A. All bar supports shall conform to the CRSI," Manual of Standard Practice." All supports shall be 'Class C - Plastic Protected', except that 'Class A - Bright Basic' may be used where bar supports are not within one inch from the face of concrete, or for unexposed surfaces of concrete inside conditioned-air portions of buildings.

PART 3 - EXECUTION

3.1 FABRICATION

A. All reinforcing shall be fabricated in accordance with the CRSI "Manual of Standard Practice", shall conform accurately to the dimensions shown on the drawings and within the fabricating tolerances shown in the CRSI "Manual of Standard Practice". Reinforcing shall not be fabricated until the shop drawings have been reviewed. Reinforcing bars shall not be fabricated in the field unless shop quality equipment is used and samples of field fabricated bends and hooks are reviewed before the steel is fabricated.

B. Reinforcing bars shall not be bent or straightened in a manner that will injure the material.

C. All hooks shall conform to bend dimensions defined as "ACI Standard Hooks" in the CRSI "Manual of Standard Practice."

D. Splices in reinforcing bars are not permitted except in bars noted as continuous (cont.) on the plans. Minimum splice lengths are noted on the plans.

3.2 PLACEMENT

A. The placement of reinforcement and placement tolerances shall conform to the drawings, the CRSI "Manual of Standard Practice," and the reviewed placing drawings.

B. All bars shall be securely tied to prevent displacement during the concreting operation and all dowels shall be wired in place before depositing concrete. Tall dowels at walls and columns shall be tied and suitably braced at the top as well as at the bottom.

C. At the time concrete is placed, metal reinforcement shall be free of hardened concrete, loose rust, mud, oil, or other nonmetallic coatings that adversely affect bonding capacity.

D. Bars partially embedded in concrete shall not be field bent or straightened except where noted on the drawings.

E. Except where noted on the drawings, reinforcing steel shall not be welded.

F. Welded wire fabric splices and sidelaps shall be wire tied and shall be not less than one mesh space. For slabs on earth, support welded wire fabric on concrete supports or chairs with sand plates. Use methods as necessary to maintain fabric in the specified position.

G. Splices in reinforcing steel shall be as shown on the drawings. Where splice lengths are not shown, use ACI 318 "Class C" tension splice lengths (use splice length for "Top Bars" for horizontal bars in concrete sections having a height greater than 12 inches, and use splice length for "Regular Bars" for vertical bars and horizontal bars in concrete sections less than 12 inches in height).

H. The dimensions of concrete protection over reinforcing steel shall be as shown on the drawings.

3.3 INSPECTION

A. Allow sufficient time for completion of the placing of all of the reinforcing for the proposed concrete placement, for allowing inspection, for correcting possible placement errors, and for closing of inspection openings in the forms. The reinforcing steel placement schedule shall allow for the above to be completed by the day before casting the concrete.

B. Request inspection of the reinforcing steel, at least 24 hours prior to scheduled closing of wall forms and inspection holes. No concrete shall be placed until the placement of the reinforcing has been inspected. Such inspection shall not relieve the **Contractor** of his responsibility for compliance with the Contract Documents.

END OF SECTION 032000

SECTION 033000
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Requirements for mixing and placing concrete.

B. Requirements for the protection of new work.

C. Requirements for the curing of concrete.

D. Procedures and standards for testing and inspections of concrete.

E. Definitions of defective concrete and procedures for correction.

1.2 RELATED SECTIONS

A. Section 02510: Pavement Repairs

B. Section 02521: Concrete Sidewalks, Curbs and Gutters

C. Section 03200: Concrete Reinforcement

1.3 REFERENCES

A. ASTM C33 – "Standard Specification for Concrete Aggregates"

B. ASTM C150 – "Standard Specification for Portland Cement"

C. ASTM C494 – "Standard Specification for Chemical Admixtures for Concrete"

1.4 SUBMITTALS

A. **Mix Designs:** to contain portions of materials and admixtures to be used on Project, signed by mix designer, documentation of average strength for each proposed mix design and Manufacturer's Certificate of Compliance.

B. Test Reports for aggregates used in the mix design

C. Admixtures: manufacturer's catalog cut sheets and product data sheets for each admixture used in proposed mix design

D. **Product Data:** Specified ancillary materials.

E. Detailed plan for curing and protection of concrete placed and cured in cold weather. Details shall include, but not be limited to, the following:

1. Procedures for protecting subgrade from frost and accumulation of ice or snow on reinforcement, other metallic embeds, and forms prior to placement.
2. Procedures for measuring and recording temperatures of reinforcement and other embedded items prior to concrete placement.
3. Methods for temperature protection during placement.
4. Types of covering, insulation, housing, or heating to be provided.
5. Curing methods to be used during and following protection period.
6. Use of strength accelerating admixtures.
7. Methods for verification of in-place strength.
8. Procedures for measuring and recording concrete temperatures.
9. Procedures for preventing drying during dry, windy conditions.

F. Detailed plan for hot weather placements including curing and protection for concrete placed in ambient temperatures over 80 degrees F. Plan shall include, but not be limited to, the following:
1. Procedures for measuring, and recording temperatures of reinforcement and other embedded items prior to concrete placement.
2. Use of retarding admixture.
3. Methods for controlling temperature of reinforcement and other embedded items and concrete materials before and during placement
4. Types of shading and wind protection to be provided.
5. Curing methods, including use of evaporation retardant.
6. Procedures for measuring and recording concrete temperatures.
7. Procedures for preventing drying during dry, windy conditions

G. Manufacturer's Certificate of Compliance to specified standards.

H. Statement of Qualification:
1. Batch Plant: Certification as specified herein.
2. Mix designer.
3. Installer.
4. Testing agency.

I. Field test reports

PART 2 - PRODUCTS

2.1 MATERIAL

A. **Portland Cement:** Conform to ASTM C150 "Standard Specifications for Portland Cement", Type I/II. Use one brand of cement. Mix shall contain at least 520 lb. of Portland Cement per cubic yard of concrete.

B. **Aggregates:** Conform to ASTM C33 "Standard Specifications for Portland Cement". Provide aggregate of natural sand and gravel or prepared from stone or gravel, free from adherent coatings, maximum size of pieces 1". Use pea gravel aggregate for concrete mix used in filling voids in concrete block walls where required.

C. **Water:** Clean and free from injurious amounts of oils, acids, alkalis, organic materials, and deleterious substances. Non-potable water will not be used in concrete mixing.

D. **Admixtures:** Conform to ASTM C494 “Standard Specification for Chemical Admixtures for Concrete”

2.2 CONCRETE STRENGTHS

A. Cast-in-place Concrete: Designed to develop 3,000 psi minimum compressive strength at twenty-eight (28) days and 3,500 IF EXPOSED TO WEATHER unless noted otherwise.

B. Cast-in-place pavement uses will need to develop 4000 psi minimum compressive strength at twenty-eight (28) days.

PART 3 - EXECUTION

3.1 PREPARATION AND INSTALLATION

A. Notify Owner at least 1 full working day in advance before starting to place concrete.

B. Clean equipment for transporting concrete. Remove debris, water, and ice from places to be occupied by concrete. Remove laitance and unsound material from hardened concrete before additional concrete is added.

B. No concrete shall be placed when mixed longer than ninety (90) minutes, has exceeded three hundred (300) truck drum revolutions, or evidence of curing prior to placement.

C. Concrete, when deposited, shall have a temperature ranging between a minimum of 50º F and a maximum of 90º F.

D. Falling concrete shall be closely confined in a drop chute of the proper size when drop is over four (4) feet, and the final drop must be vertical to avoid segregation of aggregates. In no case shall concrete be deposited from a height causing separation of the aggregates.

E. Concrete shall be mixed in such quantities as required for immediate use and shall be placed while fresh before loss of slump occurs. Retempering by adding water to restore slump lost during excessive mixing or due to too long a lapse of time since initial mixing will not be permitted.

F. Pumping of Concrete
   1. Provide standby pump, conveyor system, crane and concrete bucket, or other system onsite during pumping, for adequate redundancy to ensure completion of concrete placement without cold joints in case of primary placing equipment breakdown.
   2. Minimum pump hose diameter: 4 inches
   3. Replace pumping equipment and hoses that are not functioning properly.

G. Concrete shall be rodded or vibrated to remove excess voids and air pockets when applicable

3.2 POST INSTALLATION

A. All freshly placed concrete shall be adequately protected from mechanical injury or by action of the elements until such time as the concrete is thoroughly set.

B. Curing

1. Curing shall be performed on all concrete surfaces not immediately back-filled when hard.

2. Curing shall be started immediately upon completion of the finishing operation. Curing shall continue uninterrupted for a minimum period of seven (7) days unless a longer period is hereinafter specified. Rapid drying upon completion of the curing period shall be prevented. At no time during the curing period shall the temperature of the concrete be permitted to drop below 40º F.

3. Curing may be by water curing, sheet or liquid membrane. Do not use liquid membrane where a later concrete or masonry joint may occur unless the material has been certified as a non-bond breaker.

3.3 TESTING

A. Four (4) test cylinders shall be molded each day for each fifty (50) cubic yards or fraction thereof. A slump and air test shall be made for each set of cylinders and whenever the concrete appears to vary in consistency.

B. Mold and cure test cylinders in accordance with ASTM C-31 or PTM 611.

1. Test one (1) cylinder at seven (7) days. If break does not meet specification, break two (2) cylinders at twenty-eight (28) days for acceptance.

2. The remaining cylinder shall be kept for reference or additional testing if required.

C. **Slump:** Prior to submitting mix design, consult with concrete producer and select a target slump value at point of delivery, for each application of each design mix. Unless otherwise permitted, target slump value will then be enforced for duration of project.

D. **Source Quality Control Inspection:** Owner shall have access to and have the right to inspect batch plants, cement mills, and supply facilities of suppliers, manufacturers, and Subcontractors, providing products included in this section.

3.4 ACCEPTANCE

A. Defective concrete is defined as concrete in place, which does not conform to strength, shapes, alignments and/or elevations as specified or shown on the

Drawings.

B. All defective concrete shall be removed and replaced in a manner meeting specifications at no additional cost to the Owner.

END OF SECTION 03300

SECTION 09900
PAINTING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The work covered by this Section includes furnishing all materials, equipment and labor to accomplish all surface preparation, painting and related work for satisfactory completion of the project.

B. The terms "paint" or "painting" as used in this Section, includes the use of emulsions, enamels, paints, sealers and other coatings organic or inorganic whether used as prime, intermediate, or finish coats.

C. Unless otherwise specified in the detailed equipment specifications, shop painting shall conform to the requirements of this Section.

D. It is the intent of these Specification to field paint the following:

1. All miscellaneous metals except as noted, structural steel, equipment, piping, fitting, valves and specials.

2. Work under this Section shall also include touch-up or repair of any damaged or defective painted surface.

3. Building surfaces in accordance with the schedule in the Drawings.

E. Aluminum and stainless steel shall not be painted unless specifically indicated.

F. Mechanical equipment and electrical equipment on which a baked-on enamel finish is specified will not require field painting. Any damage or injury to such finishes shall be repaired to the satisfaction of the Engineer by the **Contractor** at no additional cost to the Owner prior to final acceptance.

G. The omission of minor items in the schedule of work shall not relieve the **Contractor** of his obligation to include such items where they come within the general intent of the Specifications.

H. Surfaces to be painted that presently have a coating of paint that is not deteriorated or damaged as determined by the Engineer will not be required to have a prime coat.

1.02 RELATED WORK

Division 1: General Requirements

1.03 REFERENCE STANDARDS

Steel Structures Painting Council (SSPC)

1.04 SUBMITTALS

A. Product data and samples shall be submitted in accordance with Section 01300. The submission shall include but not be limited to the following:

1. A painting schedule listing the manufacturer, type of paint, and the manufacturer's recommendations for surface preparation, application and dry film thickness.

2. A complete specification for each component used.

3. Color chart.

B. Operation and maintenance data shall be submitted. The data shall include, but not be limited to, the following:

1. Product name and number.

2. Name, address and telephone number of the manufacturer and the local distributor.

3. Detailed procedures for routine maintenance and cleaning.

4. Detailed procedures for light repairs such as dent, scratches and staining.

1.05 WORKMANSHIP

A. It is intended that all painting work shall be of good quality. Materials shall be evenly spread without runs or sags. There shall be an easily perceptible difference in shades of successive coats of paint.

B. The painter shall examine the Specifications for the various other trades whose work is to be finished under this Section. Any materials requiring painting, which are left unfinished by the requirements for such other trades, shall be painted to completion under this Section unless specifically excluded. Any defects in such work which would have an adverse effect on the finish shall be corrected before any painting is started.

1.06 DELIVERY, STORAGE AND HANDLING

A. All materials shall be brought to the job site in the original sealed and unbroken, labeled containers of the paint manufacturer and shall be subject to inspection by the resident engineer on the job.

B. All materials used in the work shall be stored in an approved location. Such storage space shall be kept neat and clean and all damage thereto or to its surroundings shall be repaired prior to completion of the work.

Oily rags, waste and similar articles shall be removed every night. The storage space shall be heated to the extent necessary to prevent damage to the materials by freezing. Every precaution shall be taken to avoid danger of fire. An approved fire extinguisher shall be provided in this storage area. Proper outside containers shall be provided by the **Contractor** to be used for disposing of painting wastes. No plumbing fixtures shall be used for this purpose.

1.07 JOB CONDITIONS

A. The manufacturer's recommendations concerning environmental conditions under which a material can be applied shall be strictly followed. No finishes shall be applied in areas where dust is being generated.

B. The **Contractor** shall cover or otherwise protect the finished work of other trades, surfaces not being painted concurrently, and/or surfaces which are not to be painted. Any injury or damage to such surfaces shall be remedied to the satisfaction of the Engineer at the expense of the **Contractor** before final acceptance, and no separate payment therefor will be made.

C. Adequate ventilation shall be provided in all areas where painting is being conducted to protect workers against injurious or explosive concentrations of fumes, gases, dusts, or mists.

1.08 TESTING EQUIPMENT

A. The **Contractor** shall furnish and make available to the Engineer the following items of testing equipment for use in determining if the requirements of this Section are being satisfied. The following specified equipment shall be available for use at all times when field painting or surface preparation is in progress.

1. Wet film gauge.

2. Surface thermometer.

3. Keane-Tator surface profile comparator.

4. Set of National Association of Corrosion Engineers (NACE) visual standards.

5. Holiday (pin hole) detector.

6. Sling-Psychrometer.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. The paints and paint products shall be as manufactured by Tnemec

Company, Inc. or approved equal.

B. Products of manufacturers other than those named, which are comparable in quality to that specified, will be considered if said paints are offered by the **Contractor** with satisfactory data on past performance of similar applications, composition, direction for use and other information required.

C. The painting schedule lists finishes acceptable for use in the work. The schedule is for identification as to type and quality of materials, and shall be strictly followed unless the **Contractor** submits an alternate schedule to the Engineer for review. A painting schedule shall be submitted for review. Paint applied contrary to the specified schedule shall be corrected as directed by the Engineer. All rejected paint shall be removed from the job, and surfaces shall be repainted in strict accordance with the schedule and such other directions, as deemed necessary by the Engineer. Unless noted otherwise, each coat of paint shall be applied by appropriate methods to obtain the minimum dry film thickness recommended by the manufacturer for the intended use. The submitted schedule shall contain the manufacturers' recommendations for wet and dry film thickness.

2.02 PAINTING SCHEDULE

A. The following paint systems are intended to include surfaces to be painted. Any surface or item not specifically named herein but obviously required to be painted, shall be included under the system selected by the Engineer or otherwise painted as directed by the Engineer. The dry film thicknesses shall be within the limits indicated in the manufacturer's specifications. Surface preparation shall be as specified herein and in accordance with the manufacturer's recommendations.

B. Metal Submerged, Subject to Splash or Buried in Ground: These items require surface preparation SSPC-SP10, “Near White Blast Cleaning” as recommended by the paint manufacturer. Non-submerged metal brackets used to hold grating require SSPC-SP5, “White Blast Cleaning”.

1. Primer: Tnemec – Series 161-1211 @ 4-6 mils

2. 1st Coat:

   a. Tnemec Series 69-Color @ 4-6 mils**
   b. Tnemec Series 120 @ 12-18 mils (for metal brackets)

   ** For potable water contact, use Series 20 Pota-Pox in lieu of Series 69.

3. Field Finish:

   a. Tnemec Series 69-Color @ 4-6 mils**
   b. Tnemec Series 120 @ 12-18 mils (for metal brackets)

** For potable water contact, use Series 20 Pota-Pox in lieu of Series 69.

C. All Non-Submerged Metal: Machinery, above ground piping, fittings and valves.

1. Primer: Tnemec – Series 161-1211 @ 3-4 mils

2. 1st Coat: Tnemec Series 69 @ 2-3 mils

3. Finish: Tnemec Series 73 @ 2-3 mils

D. Submerged Concrete Surfaces:

1. Finish: 2 coats of Tnemec Series 104 @ 6-8 mils per coat

E. Exposed Galvanized, Aluminum and other Non-Ferrous Metals: Interior piping, fittings, valves, stands. These items require surface preparation SSPC-SP1, “Solvent Cleaning” as recommended by the paint manufacturer. Surfaces must be clean, dry and free of all contaminants.

1. 1st Coat: Tnemec Series 69 @ 3 mils minimum

2. Finish: Tnemec Series 73 @ 2-3 mils dry

F. Interior Concrete and Concrete Block Surfaces: Surfaces must be clean and dry.

1. Block Fill: Tnemec Series 130 @ 90-120 sf per gallon

2. Finish: 2 coats of Tnemec Series 73 @ 2-3 mils per coat

G. Exterior Above-Grade Concrete Block: Surfaces must be clean and dry.

1. Block Fill: Tnemec Series 54-562 Masonry Filler @ 90- sf per gallon

2. Finish: Tnemec Series 52 Tneme-Crete @ 90- sf per gallon

H. Exterior Below-Grade Concrete: Surface must be clean and dry.

1. Finish: 2 coats of 46-465 Tnemecol @ 80-90 sf per gallon

I. Concrete Floors: Acid Etch or Brush-Off Blast Cleaning.

1. Finish: 2 coats of Tnemec Series 161 @ 2-3.5 mils

J. Insulated Pipe: Surface must be clean and dry.

1. Finish: 2 coats of Series 6-Color Tneme-Cryl @ 250-330 sf per gallon

K. Doors and Frames – Where Miscellaneous Shop Primer Exists: SSPC-SP3, “Power Tool Cleaning” surface preparation required.

1. 1st Coat: Standard Manufacturer Primer

2. 2nd Coat: Series 135 – Color Chembuild @ 4-6 mils

3. Finish: Series 73 – Color Endura-Shield III @ 2-4 mils

2.03 MAINTENANCE MATERIAL

The **Contractor** shall provide the Owner at final inspection one gallon of each type and final color of paint used on the project.

PART 3 - EXECUTION

3.01 PREPARATION OF SURFACE

A. All surfaces to be painted shall be prepared with the objective of obtaining a smooth, clean and dry surface. Surfaces which are not shop painted or which were improperly shop painted, and all abraded or rusted shop painted surfaces, which are to be painted shall be prepared as specified herein and shall be dry and clean before painting. Blast cleaning, where required, shall be done in a manner that will not contaminate other work. Blast cleaning is not required of any surfaces which have been properly shop painted previously. No painting shall be done in the field before the prepared surfaces are approved by the Engineer.

B. Non-submerged ferrous metal surfaces to be painted shall be thoroughly cleaned using SSPC SP-6 Commercial Blast Cleaning in accordance with the Specifications of the Steel Structures Painting Council. Motors and like items that may be damaged by blast cleaning shall be prepared by other approved means.

C. Equipment and Metal Submerged, Subject to Splash or Buried in the Ground:

1. Surface preparation and special coatings shall be done only by crews experienced in this work and who have been approved by the Engineer. A representative of the paint company shall be present when work begins to instruct personnel in sandblasting and application techniques; that instruction shall be made in the presence of the Engineer.

2. Surfaces to be coated shall be sandblasted to the equivalent of "SSPC-SP-10, Near-White Metal Blast Cleaning" of the Steel Structures Painting Council. The **Contractor** shall furnish the Engineer a Sample No. 10 blast cleaning plate, suitably sealed in plastic and purchased from the Steel Structures Painting Council,

to be used as a field guide. Under no circumstances shall sandblasted surfaces be permitted to rust or have condensation to form thereon prior to coating. Surfaces sandblasted shall be coated the same day; if surfaces are allowed to remain uncoated overnight or longer, they shall be re-sandblasted before coating. All cleaning and coating application shall be performed only during daylight hours. No coating shall be applied when the temperature is below 50 degrees F, nor when the relative humidity is greater than 75 percent, nor when condensation is present on base and coated surfaces, nor when ambient air temperature is falling.

3. The following items subjected to the environments herein described shall receive the surface preparation specified in this subparagraph.

   a. All submerged pumping equipment.
   b. All flow and level control equipment.
   c. All exposed pipe, valves and fittings.
   d. All ferrous metal gates and/or appurtenances.
   e. All buried valves.

4. This does not include ductile iron piping in sewage or buried in the ground.

D. Metals coated with tar or bituminous products to be painted shall be clean and dry and free of oil and grease and shall be given two coats of Koppers Tar Stop or Tnemec No. 707 Tar Bar before application of the specified finish coat.

E. Concrete and grout surfaces to be painted shall have all uneven work, sharp corners and projections smoothed down. All defective surfaces showing aggregate or visible holes shall be cut out and coated with a special bonding coat and filled with grout. Surfaces shall be dry and cleaned from all dust, form oil, curing compounds and other objectionable matter.

F. Galvanized metal surfaces to be painted shall be thoroughly cleaned using SSPC-SP-1 Solvent Cleaning in accordance with Specifications of Steel Structures Painting Council.

G. Metal windows, doors, and frames shall have all rust and loose scale removed with a wire brush and surfaces shall be wiped clean. Caulk around frames and trim, allow to set, then smooth up for primer coat.

H. Use special care to leave all nameplates and non-ferrous finished trim unpainted. Complete instructions as to equipment requiring painting shall be obtained from the Engineer before starting the work. Control centers, meter panels, and pump control panels shall not be painted in the field. The painter shall apply clear plastic by spray can or brush to all metallic nameplates.

I. Equipment, such as motors, pumps and other such items, which when installed, become an integral part of a system and which may be delivered fully factory-finished, that is, having finish coats in addition to the prime coating, shall be patch painted where damaged, sanded to a dull gloss and then painted with two coats of the specified finish material or as directed.

J. All copper piping shall be cleaned and polished to a bright uniform sheen and then painted with two coats of clear vinyl. Polishing shall be performed using an approved type of copper polish compound which will not abrade or scratch the surface of the pipe. The use of sandpaper or emery cloth will not be permitted for polishing.

3.02 PRIMING

Each coat of paint, as well as the required surface preparation, shall be considered as an essential part of a complete system of surface treatment. The painting work specified herein shall include spot-priming, shop-priming and other initial treatments necessary as recommended by the manufacturer of the finishing paint. In all cases, the priming material shall be compatible with the finishing material as recommended by the paint manufacturer. Prime coats specified herein will not be required on items which are delivered with prime or shop coats already applied; however, the **Contractor** shall determine that such primers are compatible with the specified finish coats. Where the priming material is not specifically indicated, and where a finishing material different from the specified material is approved for use in the work, then the primer shall be of the type recommended by the manufacturer for such material as applied to the particular surface. If any item, which is to be painted under this Contract, is delivered to the site bearing a prime coat which is incompatible with the specified finishing material or is improper for the purpose, then such prime coat shall be removed and the surface prepared for painting as recommended by the manufacturer and reviewed by the Engineer.

3.03 APPLICATION OF PAINT

A. On metal surfaces the painter shall apply each coat of paint at the rate specified by the manufacturer to the minimum dry film thickness required by the manufacturer. If material has thickened or must be diluted for application by spray gun, the coating shall be built up to the same film thickness achieved with undiluted material. In other words, one gallon of paint as originally furnished by the manufacturer must not cover a greater square foot area when applied by spray gun than when applied unthinned by brush. Deficiencies in film thickness shall be corrected by the application of additional coats of paint. On porous surfaces, it shall be the painter's responsibility to achieve a protective and decorative finish either by increasing the coverage rate or by applying additional coats of paint.

B. Paint shall not be applied when the temperature of the air or of the surface is below 50 degrees F. or above 95 degrees F. nor when the relative humidity is greater than 75 percent, nor when condensation is present on base and coated surfaces, nor when ambient temperature is falling.

C. Drying time shall be construed to mean "Under normal conditions." Where conditions are other than normal because of the weather or because painting must be done in confined spaces, longer drying time will be necessary. Additional coats of paint shall not be applied, nor shall units be put in service until paints are thoroughly dry.

D. Where thinning is necessary, only the products of the manufacturer furnishing the paint, and for the particular purpose, shall be allowed and all such thinning shall be done strictly in accordance with the manufacturer's instructions as well as with the full knowledge of the Engineer.

3.04 CONTRACTOR'S INSPECTION

A. The **Contractor** shall use a wet film gauge to check each application, about every 15 minutes in order to correct low or heavy film build immediately.

B. A dry film gauge shall be used to check each coat when dry, and the total system when completed.

C. The **Contractor** shall use a holiday or pin hole detector on metal systems to detect and correct voids.

D. A sling-psychrometer shall be used for periodic checks on relative humidity and temperature.

E. The temperature of the substrate shall be checked at regular intervals to be certain the surface is 5 degrees F above the dew point.

3.05 CLEAN-UP

At the completion of the work, the **Contractor** shall remove all paint spots and oil or grease stains caused by this work from floors, walls, fixtures, hardware and equipment, leaving their finishes in a satisfactory condition. All materials and debris shall be removed and the site of the work left in a clean condition so far as this work is concerned.

3.06 FINAL INSPECTION

The **Contractor** shall protect all painted surfaces against damage until the date of final acceptance of the work. The Engineer will conduct a final inspection of all work and the **Contractor** will be required to repaint or retouch any areas found which do not comply with the requirements of this Section.

END OF SECTION 09900

EXHIBIT 3
DRAWINGS

DEKALB COUNTY RECREATION, PARKS & CULTURAL AFFAIRS
HENDERSON PARK
RESTROOM ADDITIONS

4000 HENDERSON PARK ROAD
TUCKER, GEORGIA 30084

LAND LOT 252
18TH DISTRICT
TAX PARCEL ID: 18 252 01 022
△2 **ZONING: R-100**

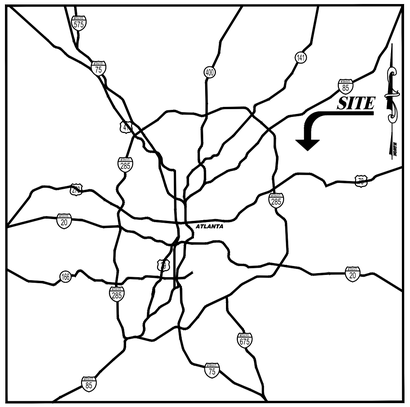
PO NO. 1114785
CONSTRUCTION DOCUMENTS
SEPTEMBER 12, 2018

PROPERTY OWNER:
DEKALB COUNTY
DEPARTMENT OF RECREATION, PARKS & CULTURAL AFFAIRS
CONTACT: VINEET NAGARKAR
1950 W. EXCHANGE PLACE
TUCKER, GEORGIA 30084
PHONE: (404) 371-2711

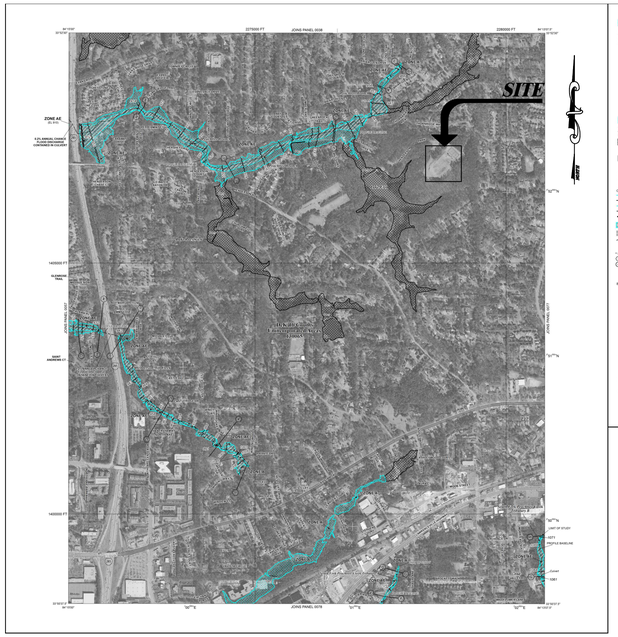
SCOPE OF WORK:
THE PROPOSED CONSTRUCTION CONSISTS OF ADDING A RESTROOM FACILITY

TOTAL SITE AREA = 107.07 ACRES
DISTURBED AREA = 0.35 ACRES

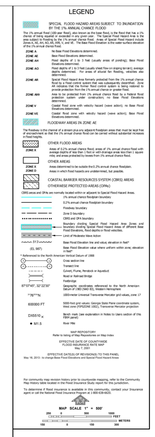
EXISTING IMPERVIOUS SURFACE AREA= 0 S.F.
PROPOSED IMPERVIOUS SURFACE AREA= 1,757 S.F.
NET DIFFERENCE OF IMPERVIOUS SURFACE = 1,757 S.F.



VICINITY MAP
SCALE: 1"=2000'



FIRM PANEL



DRAWING INDEX

Sheet Number	Sheet Title	
2	04/25/2019	C-000 COVER SHEET
2	03/06/2019	C-001 LEGEND, ABBREVIATIONS, & GENERAL NOTES
2	04/11/2019	C-002 E,S,&PC NARRATIVE AND NOTES
2	04/11/2019	C-003 E,S,&PC PLAN CHECKLIST
0	04/11/2019	C-100 EXISTING CONDITIONS SURVEY
2	04/25/2019	C-101 OVERALL SITE PLAN
3	04/25/2019	C-200 STAKING, SITE & UTILITY PLAN
2	02/19/2019	C-201 GRADING PLAN
2	02/19/2019	C-202 EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN
1	10/25/2018	C-401 EROSION CONTROL DETAILS
1	10/25/2018	C-402 CONSTRUCTION DETAILS

LEGEND

INDICATES SHEET INCLUDED IN THIS ISSUE
REVISION NUMBER
LATEST ISSUE

ENGINEER'S CERTIFICATION STATEMENT:

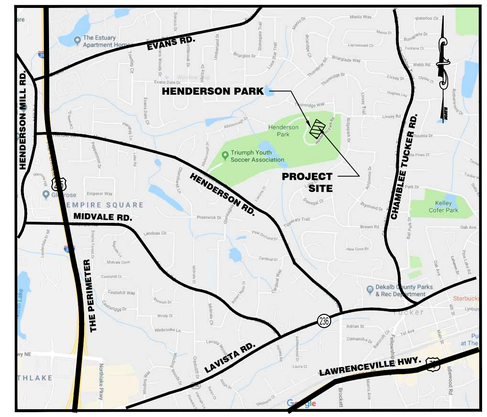
WITH MY INITIALS AT THE LINE ABOVE AND MY SEAL AND SIGNATURE BELOW, I A PROFESSIONAL ENGINEER, ARCHITECT OR LANDSCAPE ARCHITECT IN THE STATE OF GEORGIA, HEREBY CERTIFY THAT I HAVE PERSONALLY REVIEWED THE ATTACHED SUBMITTAL PLANS FOR A LAND DISTURBANCE PERMIT. IN MY OPINION THESE SUBMITTAL PLANS MEET ALL APPLICABLE REGULATIONS AND ORDINANCES OF DEKALB COUNTY. DEKALB COUNTY AND OTHER AFFECTED PARTIES MAY RELY ON THIS CERTIFICATION.

SIGNED: Paul A Borys GEORGIA REGISTRATION# 018702

GEORGIA REGISTERED NO. 18702 PROFESSIONAL ENGINEER PAUL A BORYS U.S.A.

GSWCC #41291

04/25/2019



LOCATION MAP
SCALE: 1"=1000'

PRIME ENGINEERING INCORPORATED®

PROJECT NUMBER: 2013-0054

R:\2013-0054 dekalb-henderson park restroom addition\3 engineering\Drawings\C-000-2013-0054.dwg Thu, 04/25/19 1:30 PM

GENERAL NOTES

1. PROJECT: HENDERSON PARK RESTROOM ADDITION
   LAND LOT 252, 18th DISTRICT
   DEKALB COUNTY, GA
   ZONED: R-100 (2)
2. OWNER: DEKALB COUNTY
   CONTACT: VINEET NAGARKAR
   3681 CHESTNUT ST.
   SCOTTDALE, GA 30079
   PHONE: (404) 687-3709
3. CIVIL ENGINEER: PRIME ENGINEERING, INCORPORATED
   CONTACT: PAUL BOYER, P.E.
   3715 NORTHSIDE PARKWAY
   300 NORTHCREEK, SUITE 200
   ATLANTA, GA 30327
   PHONE: 404-425-7100
4. SURVEY: SURVEYED BASED ON DEKALB GIS & SITE WALK BY PRIME ENGINEERING, INC.
5. PROJECT IS LOCATED IN LAND LOT 252, OF THE 18th DISTRICT, DEKALB COUNTY, GA
6. TOTAL ACREAGE OF THE SITE IS 107.07 ACRES. DISTURBED AREA ASSOCIATED WITH CONSTRUCTION IS 0.20 ACRES.
7. ALL CONSTRUCTION MUST CONFORM TO ANY FEDERAL, STATE, OR LOCAL CODES.
8. ALL MATERIALS AND CONSTRUCTION METHODS TO BE IN ACCORDANCE WITH CITY OF TUCKER AND DEKALB COUNTY'S STANDARDS AS APPLICABLE.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND LICENSES AND SHALL BE RESPONSIBLE FOR ALL FEES INVOLVED WITH OBTAINING PERMITS.
10. DIMENSIONS AND ELEVATIONS SHOULD BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
11. SILT BARRIERS SHALL BE PLACED PRIOR TO GRADING. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTION.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A MARKED-UP SET OF DESIGN DRAWINGS SHOWING ALL "AS-BUILT" CONDITIONS. THESE "RECORD DRAWINGS" SHALL BE MADE AVAILABLE TO THE OWNER AND/OR THE COUNTY INSPECTOR UPON REQUEST. THE MARKUPS SHALL BE AT THE SITE AT ALL TIMES AND SHALL BE UTILIZED BY THE CONTRACTOR TO DEVELOP FINAL RECORD DRAWINGS.
13. CONTRACTOR IS RESPONSIBLE FOR PROVIDING RECORD DRAWINGS AND AS-BUILT CERTIFICATIONS TO THE ENGINEER FOR PROCESSING WHEN THE PROJECT IS COMPLETED.
14. THIS SITE CAN BE USED SAFELY AND FOR BUILDING PURPOSES WITHOUT UNDUE DANGER FROM FLOOD OR ADVERSE SOIL OR FOUNDATION CONDITIONS.
15. NO IMPACTS ON FLOOD PLAINS OR RIVERINE AREAS ARE ANTICIPATED.
16. NO IMPACTS TO GROUNDWATER AND SURFACE WATER ARE ANTICIPATED.
17. THE CONTRACTOR SHALL TELEPHONE TOLL FREE 1-800-282-7411 A MINIMUM OF 48 HOURS PRIOR TO THE START OF ANY EXCAVATION AS SHOWN AND NOTED ON THE PLANS FOR A UTILITY LOCATION SERVICE.
18. CONTRACTOR SHALL NOTIFY DEKALB COUNTY DEPARTMENT OF WATERSHED MANAGEMENT INSPECTOR AT 770-621-7212 48 HOURS PRIOR TO START OF CONSTRUCTION.
19. THE OWNER SHALL ENTER ALL NECESSARY CONTRACTS WITH THE DEPARTMENT OF WATERSHED MANAGEMENT FOR CONNECTIONS TO PUBLIC WATER AND SEWER.
20. THE DIRECTOR OF THE DEPARTMENT OF WATERSHED MANAGEMENT SHALL APPROVE THE PLAN OF DEVELOPMENT FOR CONSTRUCTION OF PUBLIC WATER AND SEWER, PRIOR TO BEGINNING ANY CONSTRUCTION OF THESE UTILITIES.
21. THE DEPARTMENT OF WATERSHED MANAGEMENT SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO ANY COUNTY WATER AND SEWER CONSTRUCTION. A SET OF PLANS SHALL BE AVAILABLE FOR PUBLIC WORKS, WATERSHED MANAGEMENT, AND RECREATION PARKS AND CULTURAL AFFAIRS AT ALL TIMES WHEN WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY CITY AND COUNTY INSPECTORS.
22. STUMPS AND CONSTRUCTION DEBRIS SHALL BE DEPOSITED IN A PROPERLY PERMITTED LANDFILL LOCATED OFF-SITE. NO BURY PITS ARE ALLOWED ON THIS SITE.
23. NO ASBESTOS, HAZARDOUS WASTE OR OTHER HAZARDOUS MATERIALS ARE KNOWN TO EXIST ON THIS SITE. SHOULD ASBESTOS, HAZARDOUS WASTE OR OTHER HAZARDOUS MATERIAL BE ENCOUNTERED DURING THE COURSE OF THIS WORK, IMMEDIATELY NOTIFY THE OWNER WHERE APPROPRIATE ACTIONS AND SAFEGUARDS MAY BE IMPLEMENTED.
24. **CONSTRUCTION SPECIFICATIONS SHALL BE PER CITY OF TUCKER AND/OR DEKALB COUNTY.**

LEGEND

	EXISTING	PROPOSED
ADDRESS NUMBER	1234	1234
ASPHALT		
BENCHMARK	BM	N/A
BOLLARD	BO	●
BUILDING		
CABLE TV PEDESTAL	CA	CA
CATCH BASIN (DOUBLE WING)		N/A
CATCH BASIN (SINGLE WING)		N/A
CENTERLINE		N/A
CONCRETE		
CONTOURS (MAJOR)	1000	1000
CONTOURS (MINOR)	1002	1002
CONTROL POINT	1	N/A
CURB INLET		N/A
DROP INLET		N/A
ELECTRIC BOX	EB	N/A
FENCE		N/A
FIBER OPTIC LINE	FO	N/A
FIRE HYDRANT		N/A
FLARED END SECTION		N/A

LEGEND (CONTINUED)

	EXISTING	PROPOSED
GAS LINE	G	N/A
GAS METER		N/A
GRAVEL		N/A
GUARDRAIL		N/A
GUY WIRE		N/A
HANDICAP SYMBOL		N/A
HEADWALL		N/A
IRON PIN FOUND		N/A
JUNCTION BOX / MANHOLE		N/A
LIGHT POLE		N/A
LIMITS	N/A	
MAILBOX	MB	N/A
OUTLET CONTROL STRUCTURE		N/A
OVERHEAD ELECTRIC	OE	N/A
OVERHEAD TELEPHONE	T	N/A
PEDESTAL DROP INLET		N/A
PLUGGED (OR CAPPED) LINE		N/A
PROPERTY LINE		
RETAINING WALL		
SANITARY SEWER	S	S
SANITARY SEWER MANHOLE	S	N/A
SATELLITE DISH	SAT	N/A
SEWER CLEAN OUT	CO	CO
SIGN (ONE POST)		N/A
SIGN (TWO POST)		N/A
SILT FENCE	N/A	
SLOPE ARROW		
SPOT ELEVATION	1000.0	1000.0
STAIRS & LANDING		
STORM SEWER		N/A
TRANSFORMER	T	N/A
TRAVERSE POINT		N/A
TREE	PINE HARDWOOD	N/A
TREE LINE		N/A
TREE PROTECTION FENCE	N/A	
UNDERGROUND CABLE TV	UC	N/A
UNDERGROUND ELECTRIC	UE	
UNDERGROUND TELEPHONE	UT	N/A
UTILITY POLE		N/A
WATER LINE	W	W
WATER METER	WM	WM 2
VALVE (GENERAL)		N/A
VALVE (POST INDICATOR)	PIV	N/A

STRUCTURAL LAYOUT POINTS

HW HEADWALL
DI DROP INLET
JB JUNCTION BOX
SSMH SAN. SEWER MANHOLE
FH FIRE HYDRANT
OCS OUTLET CONTROL STRUCTURE
PDI PEDESTAL DROP INLET
CI CURB INLET
DWCB CATCH BASIN (DOUBLE WING)
SWCB CATCH BASIN (SINGLE WING)

DETAIL IDENTIFICATION

X SECTION OR DETAIL NUMBER
X TITLE
SCALE: X"=X'
SHEET NUMBER

ABBREVIATIONS

AC	ACRES
AGGR	AGGREGATE
ASPH	ASPHALT
AVE	AVERAGE
B & S	BELL & SPIGOT
BSL	BUILDING SETBACK LINE
CB	CATCH BASIN
℄	CENTERLINE
CF	CUBIC FEET
CI	CURB INLET
CO	CLEAN OUT
CONC	CONCRETE
CMP	CORRUGATED METAL PIPE
DBH	DIAMETER AT BREAST HEIGHT
DE	DRAINAGE EASEMENT
DIA	DIAMETER
DI	DROP INLET
DIP	DUCTILE IRON PIPE
DWCB	DOUBLE WING CATCH BASIN
E	ELECTRICAL
EMER	EMERGENCY
EOP	EDGE OF PAVEMENT
ELEV	ELEVATION
EQUIP	EQUIPMENT
EXIST	EXISTING
FF	FINISH FLOOR
FIN	FINISHED
FH	FIRE HYDRANT
FT	FEET
FW	FIRE WATER
G	NATURAL GAS
G.C.	GROUND COVER
GV	GATE VALVE
GM	GAS METER
HW	HEADWALL
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCHES
INV	INVERT
IPF	IRON PIN FOUND
IPS	IRON PIN SET
IRRIG	IRRIGATION
JB	JUNCTION BOX
LF	LINEAR FEET
LP	LIGHT POLE
MIN	MINIMUM
MH	MANHOLE
N/A	NOT APPLICABLE
N/F	NOW OR FORMERLY
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
O.D.	OUTSIDE DIAMETER
O.F.	OVER FLOW
PDI	PEDESTAL DROP INLET
PIV	POST INDICATOR VALVE
PVC	POLY VINYL CHLORIDE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
R/W	RIGHT OF WAY
REQ'D	REQUIRED
SSE	SANITARY SEWER EASEMENT
SSMH	SANITARY SEWER MANHOLE
S/W	SIDEWALK
SWCB	SINGLE WING CATCH BASIN
T	TELEPHONE
TE	TOP ELEVATION
TW	TOP OF WALL ELEVATION
TYP	TYPICAL
UND	UNDER DRAIN
UNO	UNLESS NOTED OTHERWISE
VC	VERTICAL CURVE
W	DOMESTIC WATER
W/	WITH

PRIME ENGINEERING® INCORPORATED
3715 NORTHSIDE PARKWAY NW
300 NORTHCREEK, SUITE 200
ATLANTA, GEORGIA 30327
404-425-7100

PROJECT: HENDERSON PARK RESTROOM ADDITION
TUCKER, GA
PREPARED FOR: DEKALB COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	
1	10/25/2018	SUBMITTAL FOR LDP	
2	3/6/2019	REV. ZONING PER TUCKER	

SEAL: GEORGIA REGISTERED PROFESSIONAL ENGINEER PAUL S BOYER GSWCC #41291
DATE: 9-12-2018

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DRAWING TITLE: LEGEND, ABBREVIATIONS, & GENERAL NOTES

DRAWN BY: JAM	DESIGNED BY: PSB	CHECKED BY: RRM	
DRAWING DATE: 9/12/18	DRAWING SCALE: NTS	PROJECT NUMBER: 2013-0054	DRAWING NUMBER: C-001

ISSUED FOR CONSTRUCTION

R:\2013-0054 dekalb-henderson park restroom addition\3 engineering\Drawings\C-001-2013-0054.dwg Thu, 04/25/19 1:30 PM

A. PROJECT SITE INFORMATION

DESIGN PROFESSIONAL LEVEL II CERTIFICATION
NAME: PAUL BOYER, P.E.
LEVEL II CERT. #: 41291 (#2)
EXPIRATION: 4/05/2022
PHONE NUMBER: (404) 425-7100

24 HOUR CONTACT (#4)
NAME: PAUL BOYER, P.E.
PHONE NUMBER: 404-425-7100

PRIMARY PERMITEE CONTACT INFORMATION (#5)
NAME: VINEET NAGARKAR
ADDRESS: 3681 CHESTNUT ST.
SCOTTDALE, GA 30079
PHONE NUMBER: (404)687-3709

PROJECT AREA: (#6)
TOTAL PROJECT AREA = ±107.07 ACRES
TOTAL DISTURBED AREA = ±0.35 ACRES

PROJECT LOCATION:
ADDRESS OR INTERSECTION: 4000 HENDERSON PARK ROAD
TUCKER, DEKALB COUNTY, GA
LAND LOT: 252
DISTRICT: 18 (#7)

GPS LOCATION OF CONSTRUCTION ENTRANCE:

LATTITUDE: 33.8683° N
LONGITUDE: -84.2249° W

PROJECT DESCRIPTION:
THE PROPOSED CONSTRUCTION CONSISTS OF SOME MINOR GRADING FOR THE INSTALLATION OF A NEW 350 SQUARE FOOT MODULAR RESTROOM BUILDING WITH SIDEWALK ACCESS TO THE ADJACENT SIDEWALK ALONG THE WESTERLY END OF THE EXISTING TENNIS COURTS, ON HENDERSON PARK RD. THE SITE IS LOCATED IN HENDERSON PARK, IN THE CITY OF TUCKER, IN LAND LOT 252 OF THE 18TH DISTRICT, DEKALB COUNTY, GEORGIA.

EXISTING SITE CONDITIONS:
THE PROJECT AREA CONSISTS OF PARK LAND OWNED BY DEKALB COUNTY RECREATION, PARKS & CULTURAL AFFAIRS.

ADJACENT PROPERTIES:
THE ADJACENT PROPERTIES CONSIST OF HENDERSON PARK WITHIN WHICH THE PROJECT IS LOCATED TO THE NORTH, EAST, WEST, AND SOUTH.

NATURE OF CONSTRUCTION ACTIVITIES/PROPOSED SITE CONDITIONS: (#9)
THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT A NEW 350 SQUARE FOOT MODULAR RESTROOM FACILITY AT HENDERSON PARK.

WATERS OF THE STATE ARE NOT LOCATED WITHIN 200 FEET OF THE PROJECTED SITE. (#41)

HYDROLOGIC CONDITIONS:
FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE SOIL SURVEY FOR THE AREA, THE SOIL SERIES PRESENT AT THE SITE VARY. EACH OF THESE SOIL TYPES IS CLASSIFIED FOR DRAINAGE AS SHOWN IN THE SOILS CHART ON DRAWING SHEET NUMBER C-003. SINCE THERE IS NO INCREASE IN STORM WATER RUNOFF, A HYDRAULIC ANALYSIS IS NOT PROVIDED. STORM WATER RUNOFF IS COLLECTED STORM DRAINAGE INLETS AND PIPES LOCATED IN PALMETTO CASCADE ROAD.

PROJECT RUNOFF COEFFICIENTS:
PRE-CONSTRUCTION CN: 70
POST-CONSTRUCTION CN: 70

EROSION, SEDIMENTATION, & POLLUTION CONTROL NARRATIVE

PRE-CONSTRUCTION PLANNING:

I. GENERAL:

THE INTENT OF THE EROSION, SEDIMENTATION AND POLLUTION CONTROL NARRATIVE AND PLAN IS TO MEET AND/OR EXCEED THE REQUIREMENTS FOR PREVENTING, OR CONTROLLING EROSION, SILTATION, AND POLLUTION OFF SITE. THE MEASURES INDICATED ARE THE ENGINEERS' BEST ESTIMATE OF THE REQUIREMENTS NEEDED TO MEET THE STATE REQUIREMENTS. MORE DEVICES MAY BE NEEDED DEPENDING ON THE SITE CONDITIONS, SEASONS, ETC. THE CONTRACTOR SHALL INSTALL ADDITIONAL MEASURES AS NECESSARY TO COMPLY WITH THIS INTENT AND MEET THE STATE REQUIREMENTS.

A. THIS EROSION, SEDIMENTATION, & POLLUTION CONTROL NARRATIVE WITH ALL EROSION CONTROL PLANS AND DETAILS SHALL BE KEPT AND MAINTAINED ON-SITE. ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH EXISTING LAWS AND ORDINANCES WITHIN THE CONSTRUCTION DOCUMENTS.
THE LOCATION OF EROSION AND SEDIMENT CONTROL DEVICES ARE SHOWN ON THE PROPOSED PLANS.

B. EXISTING TOPOGRAPHY IS SHOWN ON THE PLANS.

C. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES.

D. POTENTIAL POLLUTION SOURCES IN STORMWATER WILL BE OILS, GRITS, AUTOMOTIVE CHEMICALS AND OTHER SUSPENDED SOLIDS GENERATED DURING THE FIRST FLUSH RAINFALL ON THE PAVED AND NON-PAVED SURFACES.

E. PLANNED PHASES OF CONSTRUCTION:
1. UTILITY INSTALATION
2. RESTROOM BUILDING INSTALLATION
3. SIDEWALK GRADING.
4. FINISH GRADING, AND PAVEMENT INSTALLATION

F. EROSION CONTROL MEASURES INCLUDE BUT NOT LIMITED TO: (#27)
1. MULCHING - DS1
2. TEMPORARY SEEDING - DS2
3. PERMANENT SEEDING - DS3
4. PERMANENT VEGETATIVE COVER - DS4
5. DUST CONTROL - Du
6. SILT FENCE TYPE 'C' - Sd1-C
7. TREE PROTECTION - TR
8. TEMPORARY GRAVEL CONSTRUCTION ENTRANCE - CO
9. INLET SEDIMENT TRAP (CURB INLET PROTECTION) - Sd2-P

G. SOIL SERIES AND DELINEATION FOR THIS SITE ARE SHOWN ON SHEET C-003.

NOTE: A NOTICE OF INTENT AND A NOTICE OF TERMINATION SHALL BE FILED WITH THE GEORGIA E.P.D.

INSPECTIONS BY A QUALIFIED PERSONNEL PROVIDED BY THE PRIMARY PERMITTEE AND THE ASSOCIATED RECORDS SHALL BE KEPT ON SITE IN COMPLIANCE WITH NPDES PERMIT NO. GAR 100001.

H. LANDSCAPING/SEEDING:

GRASSING OPERATIONS SHALL BE DONE THROUGHOUT CONSTRUCTION PROCESS AT THOSE TIMES WHEN PORTIONS OF THE SITE ARE FINISHED AND READY FOR PERMANENT GROUND COVER. THIS WILL REQUIRE MULTIPLE EFFORTS BY THE CONTRACTOR TO STABILIZE ALL IMPACTED AREAS OF THE SITE IN AN ORDERLY FASHION. TEMPORARY STABILIZATION MEASURES SUCH AS MULCH OR TEMPORARY SEEDING SHALL BE REQUIRED FOR ALL AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR 14 DAYS OR MORE. CONTRACTOR SHALL MATCH EXISTING AND/OR ADJACENT GROUND COVER.

SEEDING SCHEDULE:
REFER TO THE SEEDING SCHEDULE FOR THE INSTALLATION OF LIME, FERTILIZER, SEED AND MULCH.

4. ALL DISTURBED AREAS SHALL RECEIVE GRASSING. REPLACE EXISTING GRASS/SOD IN KIND OR AS INDICATED ON THE PLANS USING PROPER APPLICATION. ALL OTHER AREAS SHALL RECEIVE GRASSING IN ACCORDANCE WITH THE SEEDING SCHEDULE SHOWN ON EROSION CONTROL DETAILS WITHIN THIS PLAN SET.
5. AFTER SEEDING, FIRM THE SEEDS INTO THE TOP 1/4" OF SOIL. MULCH IMMEDIATELY AFTER SEEDING WITH EITHER STRAW, HAY OR WOOD CELLULOSE FIBER. STRAW OR HAY SHALL BE APPLIED AT A RATE OF 100 LBS/1000 S.F.. HAY OR STRAW SHALL BE ANCHORED WITH AN ADHESIVE. WATER AS NEEDED TO ESTABLISH SEEDLINGS.

STABILIZATION MEASURES. A DESCRIPTION OF INTERIM AND PERMANENT STABILIZATION MEASURES, INCLUDING SITE-SPECIFIC SCHEDULING OF THE IMPLEMENTATION OF THE MEASURES. THE EROSION CONTROL PLANS WITHIN THIS PLANS SET GIVE DIRECTION TO ENSURE THAT EXISTING VEGETATION IS PRESERVED AND THAT DISTURBED PORTIONS OF THE SITE ARE STABILIZED. STABILIZATION MEASURES INCLUDED BUT NOT LIMITED TO ARE: TEMPORARY SEEDING, PERMANENT SEEDING, MULCHING, GEOTEXTILES, SOD STABILIZATION, VEGETATIVE BUFFER STRIPS, PROTECTION OF TREES, PRESERVATION OF MATURE VEGETATION, AND OTHER APPROPRIATE MEASURES. A RECORD OF THE DATES WHEN MAJOR GRADING ACTIVITIES

OCCUR, WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE, AND WHEN STABILIZATION MEASURES ARE INITIATED ARE INCLUDED WITHIN THIS PLAN SET, EXCEPT AS PROVIDED IN PARAGRAPHS IV.D.3.(A).(1).(A). AND (B). BELOW, **STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.** (#21)

ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

A.A. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASE IS PRECLUDED BY SNOW COVER OR OTHER ADVERSE WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

A.B. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY CEASED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF SITE BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY CEASED

B. MAINTENANCE INSTRUCTIONS:

ALL EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE INSPECTED AT THE END OF EACH WORKING DAY, AT A MINIMUM ONCE EVERY 7 DAYS IF CONSTRUCTION ACTIVITIES HAVE CEASED, AND WITHIN 24 HOURS AFTER EACH RAINFALL EVENT. ANY DAMAGED OR NON-FUNCTIONAL FACILITY SHALL BE REPAIRED IMMEDIATELY. ALL INSPECTION AND MAINTENANCE RECORDS SHALL BE KEPT ON-SITE. INSPECTION AND MAINTENANCE ACTIVITIES INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING.

1. SEDIMENT TRAPS WILL BE CHECKED FOR SEDIMENT CLEANOUT. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-HALF (1/2) THE DESIGN VOLUME OF THE WET STORAGE. SEDIMENT REMOVED FROM THE TRAP SHALL BE DEPOSITED IN SUITABLE AREAS AND IN SUCH A MANNER THAT IT WILL NOT ERODE AND CAUSE SEDIMENTATION PROBLEMS.
2. RIPRAP OUTLETS, ROCK FILTER DAMS, AND CHECK DAMS WILL BE CHECKED FOR SEDIMENT BUILDUP WHICH WILL PREVENT DRAINAGE. IF THE RIPRAP IS CLOGGED BY SEDIMENT, IT SHALL BE REMOVED AND CLEANED OR REPLACED. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 OF THE ORIGINAL HEIGHT OF THE CHECK DAM OR ROCK FILTER DAM.
3. SILT FENCE BARRIERS WILL BE CHECKED FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER.
4. TEMPORARY DIVERSIONS AND DOWNDRAIN STRUCTURES SHALL BE INSPECTED FOR DAMAGES DUE TO RAINFALL AND REPAIRED AS NECESSARY.
5. SEEDED AREAS WILL BE CHECKED TO ENSURE THAT A COMPLETE AND ADEQUATE COVER IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED.
6. IF ANY FACILITY IS DAMAGED DURING MAINTENANCE, OR OTHERWISE, THE DAMAGED PORTION SHALL BE REMOVED AND REPLACED ACCORDING TO THE INDICATED DETAIL.
7. IF SILT HAS CLOGGED SEDIMENT CONTROL FACILITY AND IT IS NO LONGER EFFECTIVE IN FILTERING SILT, THE STRUCTURE SHALL BE REMOVED AND REPLACED WITH A NEW STRUCTURE IN ACCORDANCE WITH APPLICABLE DETAIL.
8. CONSTRUCTION ENTRANCE SHALL HAVE ADDITIONAL STONE ADDED AS MUD COVERS STONE. DURING MUDDY TIMES, TIRES SHALL BE WASHED PRIOR TO GOING INTO THE STREET.
9. WHEN SEDIMENT IS TRANSPORTED ONTO A PAVED ROAD SURFACE, THE ROAD WILL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT WILL BE
10. REMOVED FROM THE ROAD BY SHOVEL AND SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA.
11. **EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.** (#19) (#20)

C. MAINTAINING EFFECTIVENESS:

CONTRACTOR SHALL INSPECT OVERALL PERFORMANCE OF EROSION AND SEDIMENT CONTROL FACILITIES AND AREAS DOWNSTREAM. IF SILT IS APPARENT DOWNSTREAM FROM STRUCTURES, IMMEDIATELY INSPECT ALL STRUCTURAL MEASURES. IF SEDIMENT IS OBSERVED DOWNSTREAM, NOTIFY THE ENGINEER, AND THE ENGINEER WILL INSPECT THE CONDITION AND DIRECT THE REMOVAL OF ACCUMULATED SEDIMENT DOWNSTREAM AND ADD ADDITIONAL STRUCTURAL MEASURES AS NECESSARY. CONTRACTOR SHALL IMPLEMENT RECOMMENDED SOLUTIONS TO PROBLEM AREAS AS RECOMMENDED.

II. COMPLETION:

A. PROJECT CLOSE OUT: THE FOLLOWING SHALL BE DONE AT THE END OF THE PROJECT.

1. INSPECT SITE TO BE SURE THAT GROUND COVER IS COMPLETE AND ADEQUATE. IN OTHER WORDS, ALL AREAS ARE EITHER PAVED OR HAVE COMPLETE AND ADEQUATE GROUND COVER WITH NO EROSION APPARENT. COMPLETE AND ADEQUATE GROUND COVERAGE OF VEGETATION IS DEFINED AS 70% VEGETATIVE COVER WITH NO AREAS OF EROSION APPARENT.
2. IF ABOVE INSPECTION IS MADE AND APPROVED, ALL STRUCTURAL FACILITIES SHALL BE REMOVED ALONG WITH ANY ACCUMULATED SILT. THE AREAS DISTURBED BY REMOVAL OF STRUCTURES SHALL BE FINE GRADED, GRASSED AND MULCHED.
3. IF INSPECTION IS MADE AND PROBLEMS EXIST, RESOLVE THE PROBLEM, MAKE THE REPAIR, AND MAKE SUBSEQUENT INSPECTION PRIOR TO REMOVAL.

(#25)

III. MISCELLANEOUS ISSUES:

A. PETROLEUM BASED PRODUCTS - CONTAINERS FOR PRODUCTS SUCH AS FUELS, LUBRICANTS AND TARS WILL BE INSPECTED DAILY FOR LEAKS AND SPILLS. THIS INCLUDES ON-SITE VEHICLE AND MACHINERY DAILY INSPECTIONS AND REGULAR PREVENTATIVE MAINTENANCE OF SUCH EQUIPMENT. EQUIPMENT MAINTENANCE AREAS WILL BE LOCATED AWAY FROM STATE WATER, NATURAL DRAINS AND STORM WATER DRAINAGE INLETS. IN ADDITION, TEMPORARY FUELING TANKS SHALL HAVE A SECONDARY CONTAINMENT LINER TO PREVENT/MINIMIZE SITE CONTAMINATION. DISCHARGE OF OILS, FUELS AND LUBRICANTS IS PROHIBITED. PROPER DISPOSAL METHODS WILL INCLUDE COLLECTION IN A SUITABLE CONTAINER AND DISPOSAL AS REQUIRED BY LOCAL AND STATE REGULATIONS.
B. PAINTS/FINISHES/SOLVENTS - ALL PRODUCTS WILL BE STORED IN TIGHTLY SEALED ORIGINAL CONTAINERS WHEN NOT IN USE. EXCESS PRODUCT WILL NOT BE DISCHARGED TO THE STORM WATER COLLECTION SYSTEM. EXCESS PRODUCT, MATERIALS USED WITH THESE PRODUCTS AND PRODUCT CONTAINERS WILL BE DISPOSED OF ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. (#28)
C. CONCRETE TRUCK WASHING - NO CONCRETE TRUCKS WILL BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ONSITE.
D. FERTILIZER/HERBICIDES - THESE PRODUCTS WILL BE APPLIED AT RATES THAT DO NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS OR ABOVE THE GUIDELINES SET FORTH IN THE CROP ESTABLISHMENT OR IN THE GSWCC MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA. ANY STORAGE OF THESE MATERIALS WILL BE UNDER ROOF IN SEALED CONTAINERS.
E. BUILDING MATERIALS - NO BUILDING OR CONSTRUCTION MATERIALS WILL BE BURIED OR DISPOSED OF ONSITE. ALL SUCH MATERIAL WILL BE DISPOSED OF IN PROPER WASTE DISPOSAL PROCEDURES.
F. ALL WATER SUPPLY WILL BE PROVIDED FROM PUBLIC WATER SUPPLY.
G. DUST SUPPRESSION OPERATIONS WILL BE DONE BY MEANS OF A WATER TRUCK SPRAYING WATER ON THE SURFACE OF THE SITE.
H. TEMPORARY/PORTABLE TOILET FACILITIES SHALL BE LOCATED ON SITE AS NECESSARY TO AVOID CONSTRUCTION ACTIVITIES. TOILET FACILITIES SHALL BE MAINTAINED AND CLEANED TO ENSURE USAGE BY ON-SITE PERSONNEL.
I. NO WASTE WILL BE DISPOSED OF INTO STORM WATER INLETS OR WATERS OF THE STATE. ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED A MINIMUM OF ONCE PER WEEK OR MORE OFTEN IF NECESSARY AND TRASH WILL BE HAULED AS REQUIRED BY LOCAL REGULATIONS. NO CONSTRUCTION WASTE WILL BE BURIED ONSITE. ALL PERSONNEL WILL BE INSTRUCTED ON PROPER PROCEDURES FOR WASTE DISPOSAL. A NOTICE STATING THESE PRACTICES WILL BE POSTED AT THE JOBSITE AND THE CONTRACTOR WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.

ANTICIPATED BEGINNING OF CONSTRUCTION: 04/22/19
ANTICIPATED END OF INITIAL CONSTRUCTION: 04/26/19

CONSTRUCTION ACTIVITY SCHEDULE

ITEM	WEEK 1	2	3	4	5	6	7	8
INITIAL EC BMP INSTALLATION	■							
MAINTENANCE OF EROSION CONTROL PRACTICES	■	■	■	■	■	■	■	■
UTILITY INSTALLATION		■	■	■				
BUILDING PAD GRADING AND SIDEWALK GRADING				■	■	■		
MODULAR RESTROOM BUILDING INSTALLATION						■		
SIDEWALK AND STEP INSTALLATION						■	■	
TEMPORARY GRASSING @ 14 DAY INTERVALS		■	■			■	■	
PERMANENT GRASSING @ 30 DAY INTERVALS				■	■			■
REMOVAL OF TEMPORARY BMP'S								■
FINAL CLEANUP								■

CERTIFICATIONS:

(#12) 1. "I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Paul A Boyer — 4-25-2019 — 41291
Name: PAUL BOYER, P.E. — DATE — GSWCC LEVEL 2 CERTIFICATION NO.

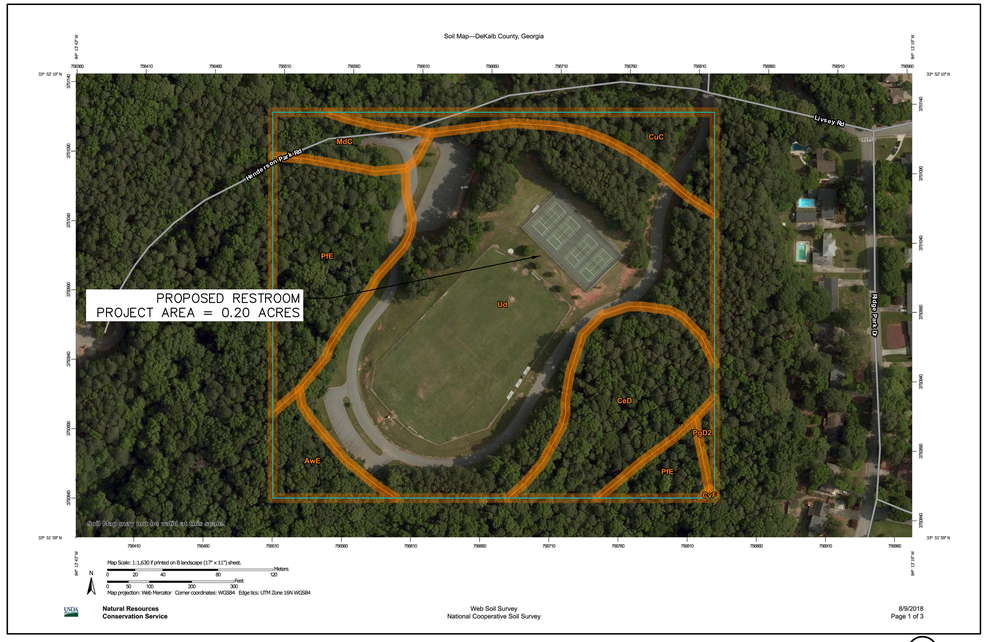
(#46)

SOILS LEGEND	
SYMBOL	DESCRIPTION
AwE	ASHLAR-WEDOWEE COMPLEX, 10 TO 25 PERCENT SLOPES
CeD	CECIL SANDY LOAM, 10 TO 15 PERCENT SLOPES
PfE	PACOLET SANDY LOAM, 15 TO 30 PERCENT SLOPES
Ud	URBAN LAND

(#2) **PAUL BOYER, PE GSWCC LEVEL II CERTIFICATION #41291 EXPIRES 4/05/2022**

(#39) **NO WATERS OF THE STATE ARE LOCATED WITHIN 200 FEET OF THE PROJECT SITE**

(#41) **THERE ARE NO WETLANDS LOCATED WITHIN 200 FEET OF THE PROJECT SITE**



(#41)

PRIME ENGINEERING® INCORPORATED
9715 NORTHSIDE PARKWAY NW
300 NORTHCREEK, SUITE 200
ATLANTA, GEORGIA 30327
404-425-7100

PROJECT:
HENDERSON PARK RESTROOM ADDITION
TUCKER, GA

PREPARED FOR:
DEKALB COUNTY

REVISIONS		
NO.	DATE	DESCRIPTION
1	10/25/2018	SUBMITTAL FOR LDP
2	4/11/2019	REV PER DEKALB GIS

SEAL (#2)
GEORGIA REGISTERED PROFESSIONAL ENGINEER PAUL A. BOYER 41291
GSWCC #41291
DATE: 9-12-2018

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DRAWING TITLE
E,S,&PC NARRATIVE AND NOTES

DRAWN BY: JAM	DESIGNED BY: PSB	CHECKED BY: RRM	
DRAWING DATE: 9/12/18	DRAWING SCALE: NTS	PROJECT NUMBER: 2013-0054	DRAWING NUMBER: C-002

ISSUED FOR CONSTRUCTION

R:\2013-0054 dekalb-henderson park restroom addition\3 engineering\Drawings\C-002-2013-0054.dwg Thu, 04/25/19 1:30 PM

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST
STAND ALONE CONSTRUCTION PROJECTS

SWCD: DEKALB

Project Name: HENDERSON PARK RESTROOM ADDITION **Address:** 4000 HENDERSON PARK ROAD, TUCKER, GA

City/County: DEKALB COUNTY **Date on Plans:** 04/11/2019

Name&email of person filling out checklist: _____

TO BE SHOWN ON ES&PC PLAN

Plan Page #	Included Y/N		
C-003	Y	1	The applicable Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of January 1 of the year in which the land-disturbing activity was permitted. (The completed Checklist must be submitted with the ES&PC Plan or the Plan will not be reviewed)
C-002	Y	2	Level II certification number issued by the Commission, signature and seal of the certified design professional. (Signature, seal and Level II number must be on each sheet pertaining to ES&PC plan or the Plan will not be reviewed)
N/A	N/A	3	Limits of disturbance shall be no greater than 50 acres at any one time without prior written authorization from the EPD District Office. If EPD approves the request to disturb 50 acres or more at any one time, the plan must include at least 4 of the BMPs listed in Appendix 1 of this checklist.* (A copy of the written approval by EPD must be attached to the plan for the plan to be reviewed.)
C-002	Y	4	The name and phone number of the 24-hour local contact responsible for erosion, sedimentation and pollution controls.
C-002	Y	5	Provide the name, address and phone number of primary permittee.
C-002	Y	6	Note total and disturbed acreage of the project or phase under construction.
C-002	Y	7	Provide the GPS location of the construction exit for the site. Give the Latitude and Longitude in decimal degrees.
ALL	Y	8	Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.
C-002	Y	9	Description of the nature of construction activity.
C-000	Y	10	Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.
N/A	N/A	11	Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, marshlands, etc. which may be affected.
C-002	Y	12	Design professional's certification statement and signature that the site was visited prior to development of the ES&PC Plan as stated on page 15 of the permit.
N/A	N/A	13	Design professional's certification statement and signature that the permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMPs and sampling to meet permit requirements as stated on page 15 of the permit.*
N/A	N/A	14	Clearly note the statement that "The design professional who prepared the ES&PC Plan is to inspect the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation."*
N/A	N/A	15	Clearly note the statement that "Non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers as measured from the point of wrested vegetation or within 25-feet of the coastal marshland buffer as measured from the Jurisdictional Determination Line without first acquiring the necessary variances and permits."
N/A	N/A	16	Provide a description of any buffer encroachments and indicate whether a buffer variance is required.
N/A	N/A	17	Clearly note the statement that "Amendments/revisions to the ES&PC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional."*
N/A	N/A	18	Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as authorized by a section 404 permit."*
C-002	Y	19	Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to land disturbing activities."*
C-002	Y	20	Clearly note statement that "Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source."*
C-002	Y	21	Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."*
N/A	N/A	22	Any construction activity which discharges storm water into an Impaired Stream Segment, or within 1 linear mile upstream of and within the same watershed as, any portion of an Biota Impaired Stream Segment must comply with Part III. C. of the Permit. Include the completed Appendix 1 listing all the BMPs that will be used for those areas of the site which discharge to the Impaired Stream Segment.*
N/A	N/A	23	If a TMDL Implementation Plan for sediment has been finalized for the Impaired Stream Segment (identified in item 22 above) at least six months prior to submittal of NOI, the ES&PC Plan must address any site-specific conditions or requirements included in the TMDL Implementation Plan.*
N/A	N/A	24	BMPs for concrete washdown of tools, concrete mixer chutes, hoppers and the rear of the vehicles. Washout of the drum at the construction site is prohibited.*
C-002	Y	25	Provide BMPs for the remediation of all petroleum spills and leaks.
N/A	N/A	26	Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed.*
N/A	N/A	27	Description of the practices that will be used to reduce the pollutants in storm water discharges.*
C-002	Y	28	Description and chart or timeline of the intended sequence of major activities which disturb soils for the major portions of the site (i.e., initial perimeter and sediment storage BMPs, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization).
N/A	N/A	29	Provide complete requirements of inspections and record keeping by the primary permittee.*
N/A	N/A	30	Provide complete requirements of sampling frequency and reporting of sampling results.*
N/A	N/A	31	Provide complete details for retention of records as per Part IV.F. of the permit.*
N/A	N/A	32	Description of analytical methods to be used to collect and analyze the samples from each location.*
N/A	N/A	33	Appendix B rationale for NTU values at all outfall sampling points where applicable.*
N/A	N/A	34	Delineate all sampling locations, perennial and intermittent streams and other water bodies into which storm water is discharged.*
N/A	N/A	35	A description of appropriate controls and measures that will be implemented at the construction site including: (1) initial sediment storage requirements and perimeter control BMPs, (2) intermediate grading and drainage BMPs, and (3) final BMPs. For construction sites where there will be no mass grading and the initial perimeter control BMPs, intermediate grading and drainage BMPs, and final BMPs are the same, the plan may combine all of the BMPs into a single phase.*
ALL	Y	36	Graphic scale and North arrow.
C-100	Y	37	Existing and proposed contour lines with contour lines drawn at an interval in accordance with the following:

Map Scale	Ground Slope	Contour Intervals, ft.
1 inch = 100ft or larger scale	Flat 0 - 2%	0.5 or 1
	Rolling 2 - 8%	1 or 2
	Steep 8% +	2,5 or 10

N/A	N/A	38	Use of alternative BMPs whose performance has been documented to be equivalent to or superior to conventional BMPs as certified by a Design Professional (unless disapproved by EPD or the Georgia Soil and Water Conservation Commission). Please refer to the Alternative BMP Guidance Document found at www.gaswcc.org.
N/A	N/A	39	Use of alternative BMP for application to the Equivalent BMP List. Please refer to Appendix A-2 of the Manual for Erosion & Sediment Control in Georgia 2016 Edition.*
N/A	N/A	40	Delineation of the applicable 25-foot or 50-foot undisturbed buffers adjacent to state waters and any additional buffers required by the Local Issuing Authority. Clearly note and delineate all areas of impact.
C-100	Y	41	Delineation of on-site wetlands and all state waters located on and within 200 feet of the project site.
N/A	N/A	42	Delineation and acreage of contributing drainage basins on the project site.
N/A	N/A	43	Provide hydrology study and maps of drainage basins for both the pre- and post-developed conditions.*
C-002	Y	44	An estimate of the runoff coefficient or peak discharge flow of the site prior to and after construction activities are completed.
N/A	N/A	45	Storm-drain pipe and weir velocities with appropriate outlet protection to accommodate discharges without erosion. Identify/Delineate all storm water discharge points.
C-002	Y	46	Soil series for the project site and their delineation.
C-202	Y	47	The limits of disturbance for each phase of construction.
C-002	Y	48	Provide a minimum of 67 cubic yards of sediment storage per acre drained using a temporary sediment basin, retrofitted detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment storage volume must be in place prior to and during all land disturbance activities until final stabilization of the site has been achieved. A written justfication explaining the decision to use equivalent controls when a sediment basin is not attainable must be included in the plan for each common drainage location in which a sediment basin is not provided. A written justification as to why 67 cubic yards of storage is not attainable must also be given. Worksheets from the Manual included for structural BMPs and all calculations used by the storage design professional to obtain the required sediment when using equivalent controls. When discharging from sediment basins and impoundments, permitees are required to utilize outlet structures that withdraw water from the surface, unless infeasible. If outlet structures that withdraw water from the surface are not feasable, a written justification explaining this decision must be included in the plan.
C-202	Y	49	Location of Best Management Practices that are consistent with and no less stringent than the Manual for Erosion and Sediment Control in Georgia. Use uniform coding symbols from the Manual, Chapter 6, with legend.
C-401	Y	50	Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.
C-401	Y	51	Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of the year that seeding will take place and for the appropriate geographic region of Georgia.

*If using this checklist for a project that is less than 1 acre and not part of a common development but within 200 ft of a perennial stream the * checklist items would be N/A.

Effective January 1, 2018

1 C-003 **E,S,&PC PLAN CHECKLIST**
NOT TO SCALE

PRIME ENGINEERING® INCORPORATED
3715 NORTHSIDE PARKWAY NW
300 NORTHCREEK, SUITE 200
ATLANTA, GEORGIA 30327
404-425-7100

PROJECT: HENDERSON PARK RESTROOM ADDITION
TUCKER, GA
PREPARED FOR: DEKALB COUNTY

REVISIONS

NO.	DATE	DESCRIPTION
1	10/25/2018	SUBMITTAL FOR LDP
2	4/11/2019	REV PER DEKALB GIS

SEAL

GEORGIA REGISTERED PROFESSIONAL ENGINEER PAUL S. BOYD
GSWCC #41291
DATE: 9-12-2018

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DRAWING TITLE
E,S,&PC PLAN CHECKLIST

DRAWING DATE	9/12/18
DRAWING SCALE	NTS
PROJECT NUMBER	2013-0054
DRAWING NUMBER	C-003
DRAWN BY	JAM
DESIGNED BY	PSB
CHECKED BY	RRM

ISSUED FOR CONSTRUCTION

R:\2013-0054 dekalb-henderson park restroom addition\3 engineering\Drawings\C-003-2013-0054.dwg Thu, 04/25/19 1:30 PM

TOTAL PARK PROPERTY AREA = 107.07 ACRES
PARCEL ID: 18 252 01 022

1 / C-100 **EXISTING CONDITIONS SURVEY**
SCALE: 1"= 200'

GRAPHIC SCALE
200 100 0 100 200
(IN FEET)
1 inch = 200 ft.

GEORGIA811 www.Georgia811.com
Know what's below. Call before you dig.

NORTH

PRIME ENGINEERING® INCORPORATED
3715 NORTHSIDE PARKWAY NW
300 NORTHCREEK, SUITE 200
ATLANTA, GEORGIA 30327
404-425-7100

PROJECT:
HENDERSON PARK RESTROOM ADDITION
TUCKER, GA

PREPARED FOR:
DEKALB COUNTY

REVISIONS

NO.	DATE	DESCRIPTION

SEAL
REGISTERED GEORGIA PROFESSIONAL ENGINEER JAMES A. MINOR
GSWCC #41291
DATE: 9-12-2018

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DRAWING TITLE
EXISTING CONDITIONS SURVEY

DRAWING DATE	4/11/2019
DRAWING SCALE	1"=200'
PROJECT NUMBER	2013-0054
DRAWING NUMBER	C-100
DRAWN BY	JAM
DESIGNED BY	PSB
CHECKED BY	RRM

ISSUED FOR CONSTRUCTION

R:\2013-0054 dekalb--henderson park restroom addition\3 engineering\Drawings\C-100 EXISTING CONDITION SURVEY.dwg Thu, 04/25/19 1:30 PM

1 C-101 OVERALL SITE PLAN
SCALE: XX

GRAPHIC SCALE
100 0 50 100
(IN FEET)
1 inch = 100 ft.

NORTH

R:\2013-0054 dekalb-henderson park restroom addition\3 engineering\Drawings\C-101 OVERALL SITE PLAN.dwg Thu, 04/25/19 1:31 PM

PRIME ENGINEERING®
INCORPORATED
5715 NORTHSIDE PARKWAY NW
300 NORTHCREEK, SUITE 200
ATLANTA, GEORGIA 30327
404-425-7100

PROJECT:
HENDERSON PARK RESTROOM ADDITION
TUCKER, GA

PREPARED FOR:
DEKALB COUNTY

REVISIONS

NO.	DATE	DESCRIPTION
1	10/25/2018	SUBMITTAL FOR LDP
2	4/25/2019	REVISED WATER LINE INFO

SEAL
GEORGIA REGISTERED PROFESSIONAL ENGINEER NO. 41291 PAUL S. BOLING
GSWCC #41291
DATE: 9-12-2018

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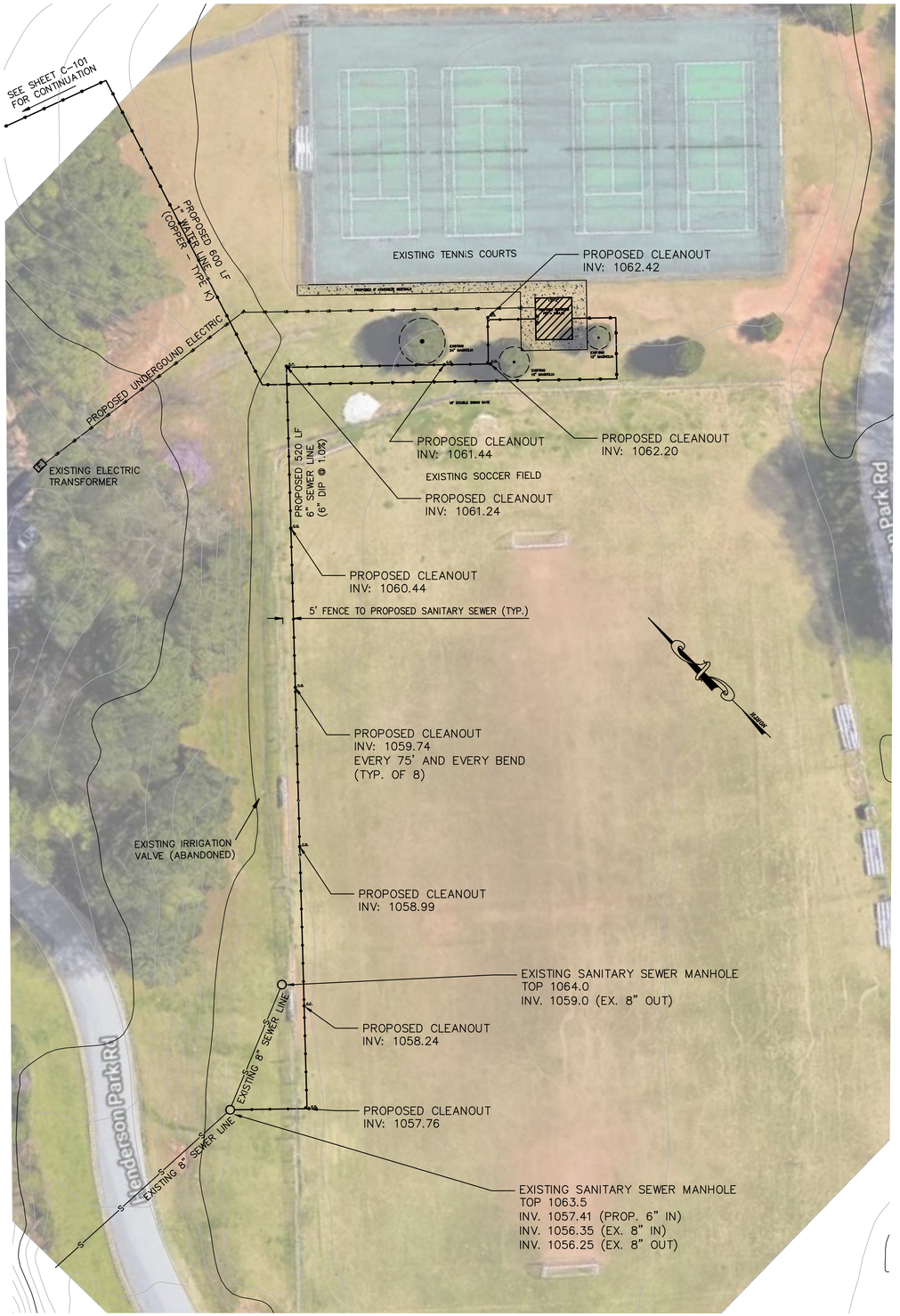
DRAWING TITLE
OVERALL SITE PLAN

DRAWN BY	JAM
DESIGNED BY	PSB
CHECKED BY	RRM
DRAWING DATE	9/12/18
DRAWING SCALE	XX
PROJECT NUMBER	2013-0054
DRAWING NUMBER	C-101

ISSUED FOR CONSTRUCTION



1 C-200 **UTILITY PLAN**
SCALE: 1"=30'

GRAPHIC SCALE
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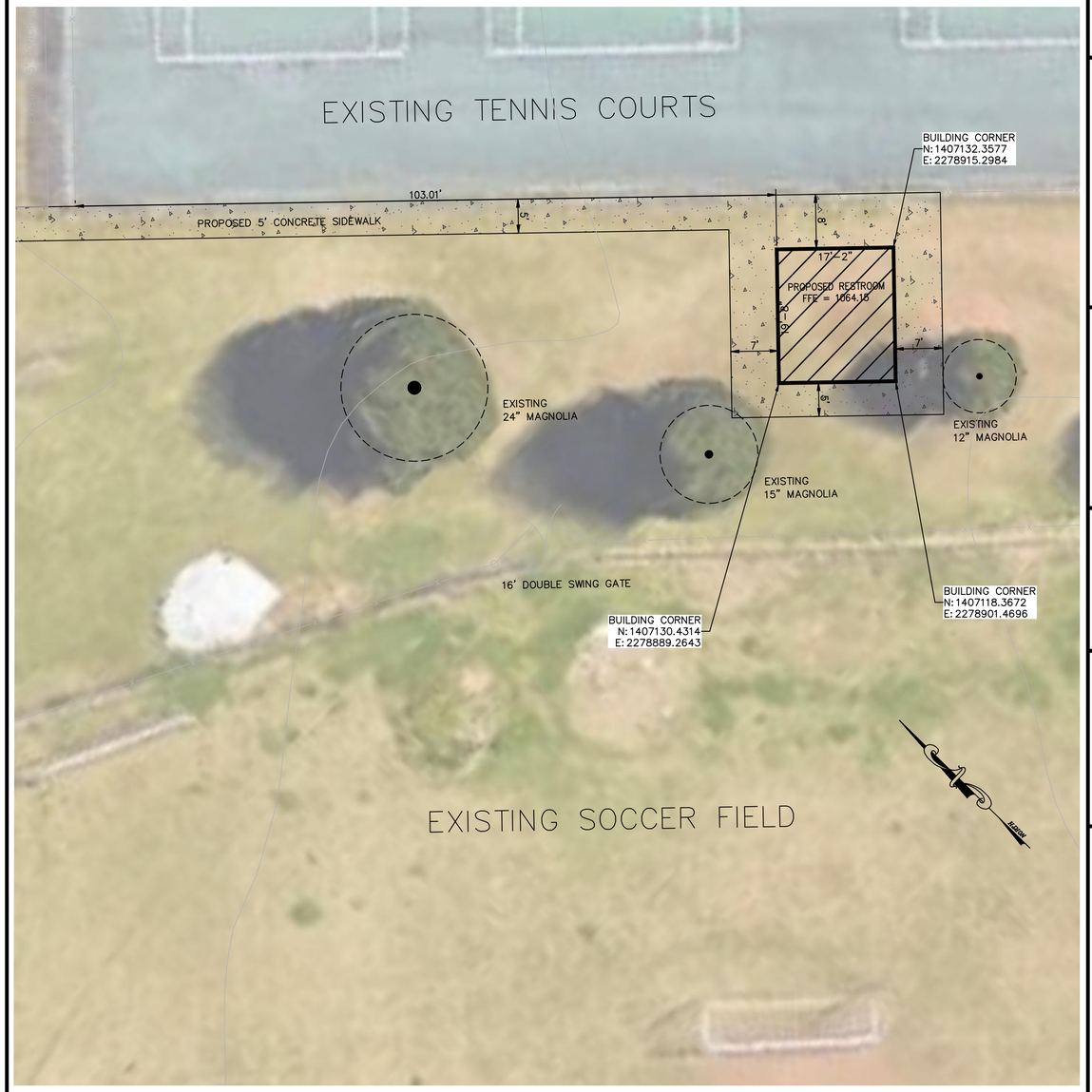
(IN FEET)
1 inch = 30 ft.



GRAPHIC SCALE
10 0 5 10
(IN FEET)
1 inch = 10 ft.

2 C-200 **RESTROOM SITE & STAKING PLAN**
SCALE: 1"=10'

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404-425-7100

PROJECT: HENDERSON PARK RESTROOM ADDITION
TUCKER, GA
PREPARED FOR: DEKALB COUNTY

REVISIONS

NO.	DATE	DESCRIPTION
1	10/25/18	SUBMITTAL FOR LDP
2	2/19/2019	REV PER DEKALB COMMENTS

SEAL
GEORGIA REGISTERED PROFESSIONAL ENGINEER PAUL S. BOLTON
GSWCC #41291
DATE: 9-12-2018

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DRAWING TITLE
STAKING, SITE, & UTILITY PLAN

DRAWING DATE	9/12/18
DRAWING SCALE	AS SHOWN
PROJECT NUMBER	2013-0054
DRAWING NUMBER	C-200
DRAWN BY:	JAM
DESIGNED BY	PSB
CHECKED BY:	RRM

ISSUED FOR CONSTRUCTION

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NORTH

1 / C-201 GRADING PLAN
SCALE: 1"=10'

NOTE:
ACTUAL GRADES MAY BE ADJUSTED TO MATCH TOPOGRAPHY, BUT PRIOR APPROVAL REQUIRED FROM CITY UPON COMPLETION. NO STANDING WATER SHALL OCCUR.

GRAPHIC SCALE
10 0 5 10
(IN FEET)
1 inch = 10 ft.

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PROJECT:
HENDERSON PARK RESTROOM ADDITION
TUCKER, GA

PREPARED FOR:
DEKALB COUNTY

REVISIONS

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DRAWING TITLE
GRADING PLAN

DRAWN BY:	JAM
DESIGNED BY	PSB
CHECKED BY	RRM
PROJECT NUMBER	2013-0054
DRAWING NUMBER	C-201
DRAWING DATE	9/12/18
DRAWING SCALE	1"=10'

ISSUED FOR CONSTRUCTION

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EROSION CONTROL LEGEND

CODE	PRACTICE	DETAIL	SYMBOL
Ds1	DISTURBED AREA STABILIZATION (MULCH)	1 / C-401	Ds1
Ds2	TEMPORARY SEEDING	2 / C-401	Ds2
Ds4	PERMANENT VEGETATION WITH SODDING	4 / C-401	Ds4
Sd1-NS	SILT FENCE (TYPE NON-SENSITIVE)	5 / C-401	
Co	TEMPORARY GRAVEL CONSTRUCTION EXIT	6 / C-401	
Tr	TREE PROTECTION	7 / C-401	

1 / C-202 EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN
SCALE: 1"=30'

GRAPHIC SCALE
30 0 15 30
(IN FEET)
1 inch = 30 ft.

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404-425-7100

PROJECT:
HENDERSON PARK RESTROOM ADDITION
TUCKER, GA
PREPARED FOR:
DEKALB COUNTY

REVISIONS

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DRAWING TITLE
EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN

DRAWING DATE	9/12/18
DRAWING SCALE	1"=30'
PROJECT NUMBER	2013-0054
DRAWING NUMBER	C-202
DRAWN BY:	JAM
DESIGNED BY	PSB
CHECKED BY	RRM

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MULCHING APPLICATION FOR TEMPORARY STABILIZATION	Ds1
MATERIAL	APPLICATION
STRAW OR HAY	APPLY AT A DEPTH OF 2" TO 4"
WOOD WASTE, CHIPS, SAWDUST, BARK	APPLY AT A DEPTH OF 2" TO 3"
POLYETHYLENE FILM	APPLY PER MANUFACTURE'S RECOMMENDATION

1 C-401 MULCHING
NOT TO SCALE

Ds1

SEEDING RATES FOR TEMPORARY SEEDINGS Ds2

SPECIES	RATE PER ACRE	RATE PER 1000 SF	PLANTING DATES MTS–L'STONE	PIEDMONT	COASTAL
RYE					
ALONE	168 LBS.	3.9 LBS	8/15–12/1	9/1–1/1	9/15–3/1
IN MIXTURES	28 LBS.	0.6 LBS	8/15–12/1	9/1–1/1	9/15–3/1
ANNUAL RYEGRASS					
ALONE	40 LBS.	0.9 LB	8/15–11/15	9/1–12/15	9/15–1/1
ANNUAL LESPEDEZA					
ALONE	40 LBS.	0.9 LBS	3/1–4/1	3/1–4/1	2/1–3/1
IN MIXTURES	10 LBS.	0.2 LBS	3/1–4/1	3/1–4/1	2/1–3/1
WEEPING LOVEGRASS					
ALONE	4 LBS.	0.1 LBS	4/1–6/1	4/1–6/1	3/1–6/1
IN MIXTURES	4 LBS.	0.1 LBS	4/1–6/1	4/1–6/1	3/1–6/1
SUDANGRASS					
ALONE	60 LBS.	1.4 LBS	5/1–8/1	5/1–8/1	4/1–8/1
BROWNTOP MILLET					
ALONE	40 LBS.	0.9 LBS	4/15–6/15	4/1–7/1	4/1–7/1
IN MIXTURES	10 LBS.	0.2 LBS	4/15–6/15	4/1–7/1	4/1–7/1
WHEAT					
ALONE	180 LBS.	4.1 LBS	9/15–12/1	10/1–12/15	10/15–1/1

UNUSUAL SITE CONDITION MAY REQUIRED HEAVIER SEEDING RATES. SEEDING DATES MAY NEED TO BE ALTERED TO FIT TEMPERATURE VARIATIONS AND LOCAL CONDITIONS.

Ds2

2 C-401 TEMPORARY SEEDING
NOT TO SCALE

Ds3 PERMANENT SEEDING FOR WET AREAS

SPECIES	RATE PER 1000 SQ. FT.	RATE PER ACRE	PLANTING DATES MTS–L'STONE	PIEDMONT	COASTAL
MAIDENCANE SPRIGS	ALL	2' x 3' SPACING	2/1–3/31	2/1–3/31	2/1–3/31
REED CANARY GRASS					
ALONE	1.1 LBS.	50 LBS.	8/15–10/15	9/1–10/15	
WITH OTHER PERENNIALS	0.7 LBS.	30 LBS.	8/15–10–15	9/1–10/15	

RATES ARE FOR BROADCAST SEED ONLY. IF A SEED DRILL IS USED, REDUCE RATES WILL BE ONE–HALF. UNUSUAL SITE CONDITIONS MAY REQUIRE HEAVIER SEEDING RATES. SEEDING DATES MAY NEED TO BE ALTERED TO FIT TEMPERATURE VARIATIONS AND LOCAL CONDITIONS.

Ds3 FERTILIZER RATES

TYPES OF SPECIES	PLANTING YEAR	FERTILIZER (N–P–K)	RAT LBS./ACRE	N TOP DRESSING RATE (LBS./ACRE)
COOL SEASON GRASSES	FIRST	6–12–12	1500	50–100
	SECOND	6–12–12	1000	
	MAINTENANCE	10–10–10	400	30
COOL SEASON GRASSES AND LEGUMES	FIRST	6–12–12	1500	0–50
	SECOND	0–10–10	1000	
	MAINTENANCE	0–10–10	400	
WARM SEASON GRASSES	FIRST	6–12–12	1500	50–100
	SECOND	6–12–12	800	50–100
	MAINTENANCE	10–10–10	400	30
WARM SEASON GRASSES AND LEGUMES	FIRST	6–12–12	1500	50
	SECOND	0–10–10	1000	
	MAINTENANCE	0–10–10	400	

Ds3 LIME RATES AND ANALYSIS

1. WHERE PERMANENT VEGETATION IS TO BE ESTABLISHED, AGRICULTURAL LIME SHALL BE APPLIED AS INDICATED BY SOIL TEST OR AT THE RATE OF 1 TO 2 TONS PER ACRE. AGRICULTURAL LIME SHALL BE WITHIN THE SPECIFICATIONS OF THE GEORGIA DEPARTMENT OF AGRICULTURE.
   LIME SPREAD BY CONVENTIONAL EQUIPMENT WILL BE "GROUND LIMESTONE." GROUND LIMESTONE IS CALCITIC OR DOLOMITIC LIMESTONE GROUND SO THAT 90% OF THE MATERIAL WILL PASS THROUGH A 10–MESH SIEVE, NOT LESS THAN 50% WILL PASS THROUGH A 50–MESH SIEVE AND NOT LESS THAN 25% WILL PASS THROUGH A 100–MESH SIEVE.
   AGRICULTURAL LIME SPREAD BY HYDRAULIC SEEDING EQUIPMENT WILL BE "FINELY GROUND LIMESTONE" SPANNING FROM THE 180 MICRON SIZE TO THE 5 MICRON SIZE. FINELY GROUND LIMESTONE IS CALCITIC OR DOLOMITIC LIMESTONE GROUND SO THAT 95% OF THE MATERIAL WILL PASS THROUGH A 100–MESH SIEVE.
   IT IS DESIRABLE TO USE DOLOMITIC LIMESTONE IN THE SAND HILLS, SOUTHERN COASTAL PLAIN AND ATLANTIC COAST FLATWOODS MLRAS.
2. NO AGRICULTURAL LIME IS REQUIRED WHERE WHERE ONLY TREES ARE PLANTED.

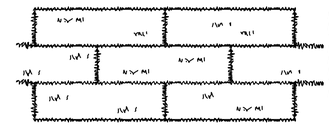
3 C-401 PERMANENT SEEDING
NOT TO SCALE

Ds3 SEEDING RATES FOR PERMANENT SEEDINGS

SPECIES	RATE PER ACRE	RATE PER 1000 SQ. FT.	PLANTING DATES MTS–L'STONE	PIEDMONT	COASTAL
BAHIA, PENSACOLA					
ALONE OR WITH ANNUALS	60 LBS.	1.4 LBS.		4/1–5/31	3/1–5/31
WITH OTHER PERENNIALS	30 LBS.	0.7 LBS.		4/1–5/31	3/1–5/31
BAHIA, WILMINGTON					
ALONE OR WITH ANNUALS	60 LBS.	1.4 LBS.	3/15–5/31	3/1–5/31	
WITH OTHER PERENNIALS	30 LBS.	0.7 LBS	3/15–5/31	3/1–5/31	
COMMON BERMUDAGRASS					
HULLED SEED					
ALONE OR WITH ANNUALS	10 LBS.	0.2 LBS.		4/1–5/31	3/15–5/31
WITH OTHER PERENNIALS	6 LBS.	0.1 LBS.		4/1–5/31	3/15–5/31
UNHULLED SEED					
ALONE OR WITH ANNUALS	10 LBS.	0.2 LBS.		10/1–2/28	11/1–1/31
WITH OTHER PERENNIALS	6 LBS.	0.1 LBS.		10/1–2/28	11/1–1/31
CROWNVETECH					
WITH WINTER ANNUALS OR COOL SEASON GRASSES	15 LBS.	0.3 LBS.	9/1–10/15	9/1–10/15	
TALL FESCUE					
ALONE	50 LBS.	1.1 LBS.	3/1–4/15	8/15–9/30	8/15–10/15
WITH OTHER PERENNIALS	30 LBS.	0.7 LBS.	3/1–4/15	8/15–9/30	8/15–10/15
SERICA LESPEDEZA					
SCARIFIED SEED	60 LBS.	1.4 LBS.	3/15–5/31	3/1–5/31	3/1–5/31
UNSCARIFIED SEED	75 LBS.	1.7 LBS.	9/1–2/28	9/1–2/28	9/1–2/28
SEED–BEARING HAY	3 tons	1338 LBS.	1/1–2/28	1/1–2/1	10/15–1/15
AMBRO LESPEDEZA, APPALOW LESPEDEZA, & VIRGATA LESPEDEZA					
SCARIFIED SEED	60 LBS.	1.4 LBS.	4/1–5/31	3/15–5/31	3/1–5/15
UNSCARIFIED SEED	75 LBS.	1.7 LBS.	9/1–2/28	9/1–2/28	
WEEPING LOVEGRASS					
ALONE	4 LBS.	0.1 LBS.	3/1–5/31	3/15–5/31	4/15–5/31
WITH OTHER PERENNIALS	2 LBS.	0.05 LBS.	3/1–5/31	3/15–5/31	4/15–5/31

UNUSUAL SITE CONDITIONS MAY REQUIRE HEAVIER SEEDING RATES. SEEDING DATES MAY NEED TO BE ALTERED TO FIT TEMPERATURE VARIATIONS AND LOCAL CONDITIONS.

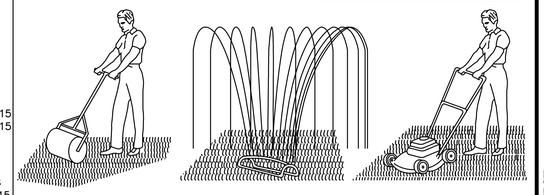
Ds3 SYMBOL USED ON PLANS



LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.

BUTTING ANGLED ENDS CAUSED BY THE AUTO – MATIC SOD CUTTER MUST BE MATCHED CORRECTLY.

NOTES:
DISTURBED GRASS IN FIELD AREA (W/I FENCE) IS BERMUDA SOD. THIS SOD SHALL BE REPLACED

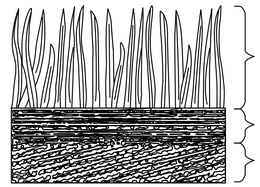


ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

MOW WHEN THE SOD IS ESTABLISHED – IN 2–3 WEEKS. SET THE MOWER HIGH (2"–3").

APPEARANCE OF GOOD SOD



SHOOTS – OR GRASS BLADES. GRASS SHOULD BE GREEN AND HEALTHY, MOWED AT A 2"–3" CUTTING HEIGHT.

THATCH – GRASS CLIPPINGS AND DEAD LEAVES, UP TO 1/2" THICK.

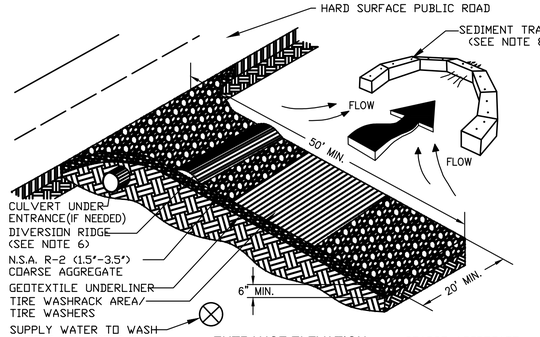
ROOT ZONE – SOIL AND ROOTS SHOULD BE 1/2" – 3/4" THICK, WITH DENSE ROOT MAT FOR STRENGTH.

4 C-401 SODDING
NOT TO SCALE

#51

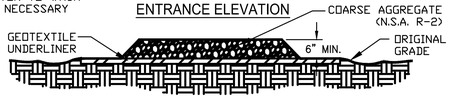
Ds4

EXIT DIAGRAM



NOTES:
1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
3. AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION R–2 (1.5"–3.5" STONE).
4. GRAVEL PAD SHALL HAVE A MINIMUM THICKNESS OF 6".
5. PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20'.
6. A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%.
7. INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
8. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
9. WASHRACKS AND/OR TIRE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY, WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVE MUD AND DIRT.
10. MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS–OF–WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

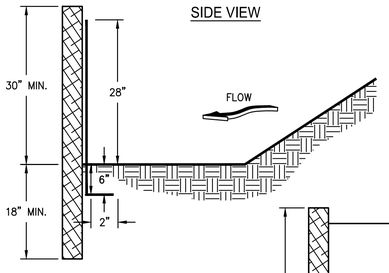
ENTRANCE ELEVATION



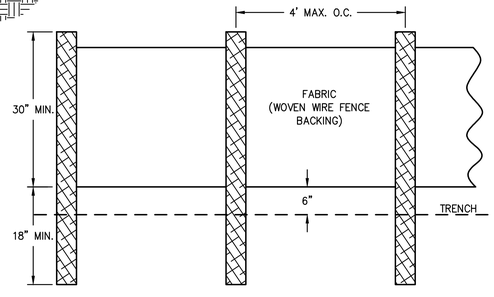
6 C-401 CONSTRUCTION EXIT
NOT TO SCALE

Co

SIDE VIEW



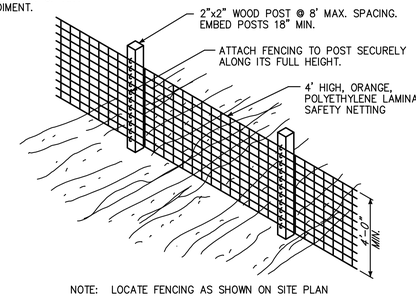
FRONT VIEW



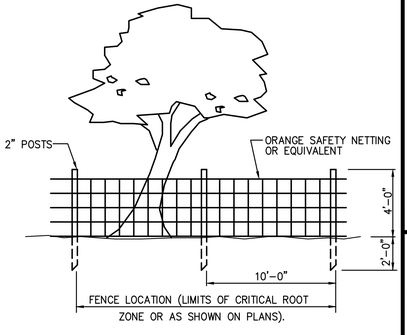
NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

5 C-401 TEMPORARY SILT FENCE - TYPE S (SENSITIVE)
NTS

Sd1-NS



NOTE: LOCATE FENCING AS SHOWN ON SITE PLAN



7 C-402 TREE SAVE FENCE
NOT TO SCALE

PRIME ENGINEERING® INCORPORATED
9715 NORTHSIDE PARKWAY NW
300 NORTHCREEK, SUITE 200
ATLANTA, GEORGIA 30327
404-425-7100

PROJECT: HENDERSON PARK RESTROOM ADDITION
TUCKER, GA
PREPARED FOR: DEKALB COUNTY

REVISIONS

NO.	DATE	DESCRIPTION
1	10/25/2018	SUBMITTAL FOR LDP

SEAL

REGISTERED PROFESSIONAL ENGINEER PAUL BOSCO GEORGIA
GSWCC #41291
DATE: 9-12-2018

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DRAWING TITLE
EROSION CONTROL DETAILS

DRAWN BY	JAM
DESIGNED BY	PSB
CHECKED BY	RRM
DRAWING DATE	9/12/18
DRAWING SCALE	NTS
PROJECT NUMBER	2013-0054
DRAWING NUMBER	C-401

ISSUED FOR CONSTRUCTION

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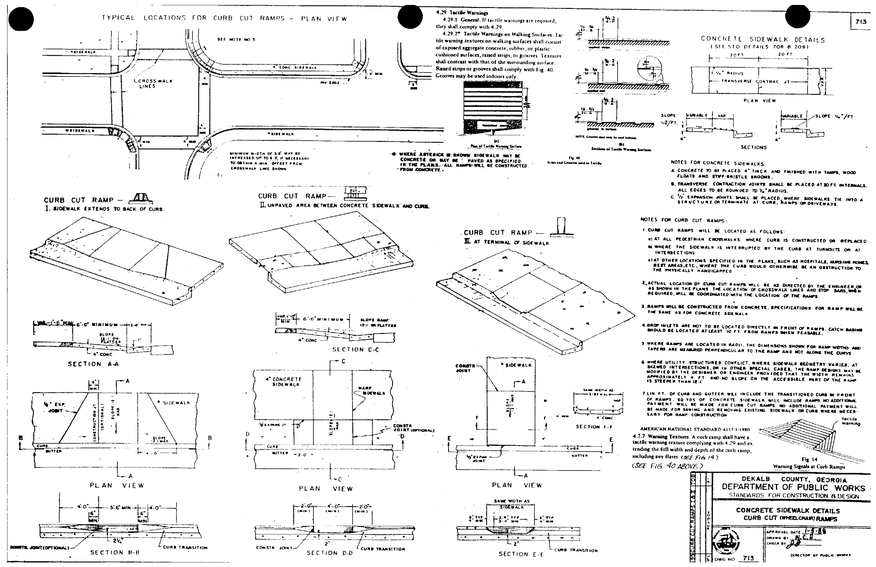

1 C-402 SIDEWALK DETAIL
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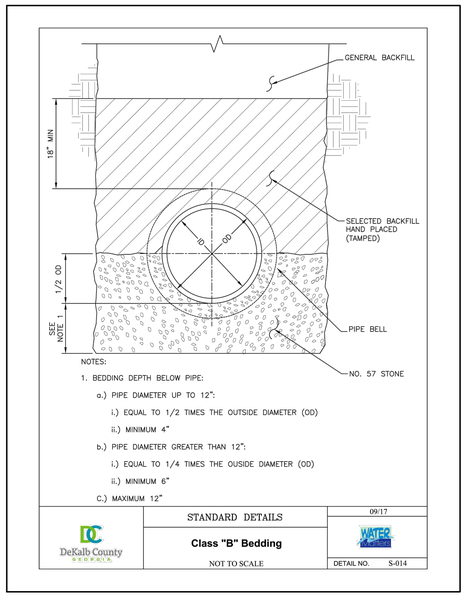

2 C-402 PIPE BEDDING
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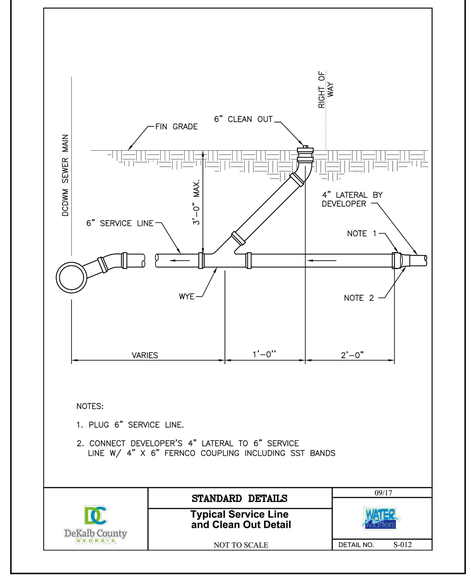

3 C-402 CLEAN OUT DETAIL
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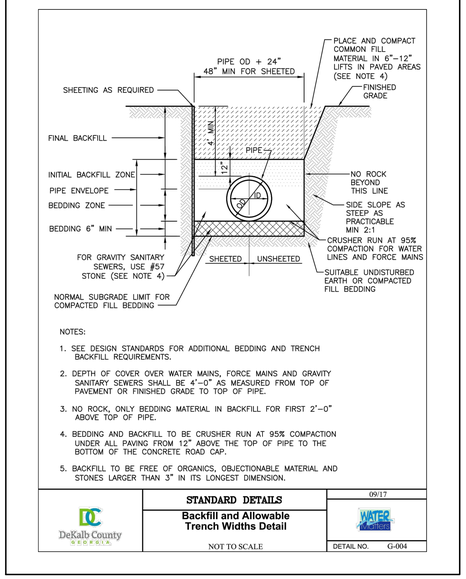

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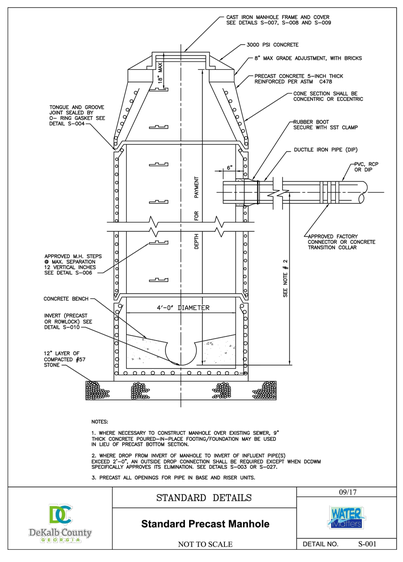

5 C-402 MANHOLE CORE
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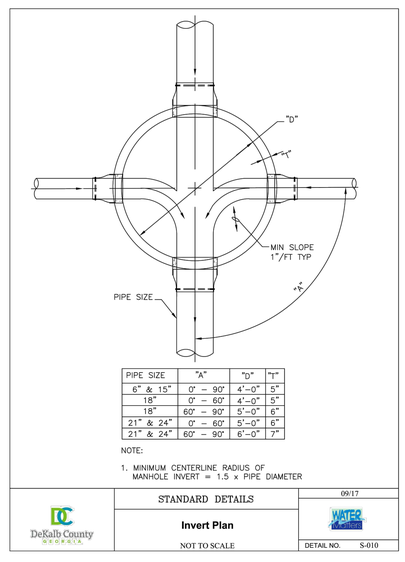

6 C-402 INVERT PLAN
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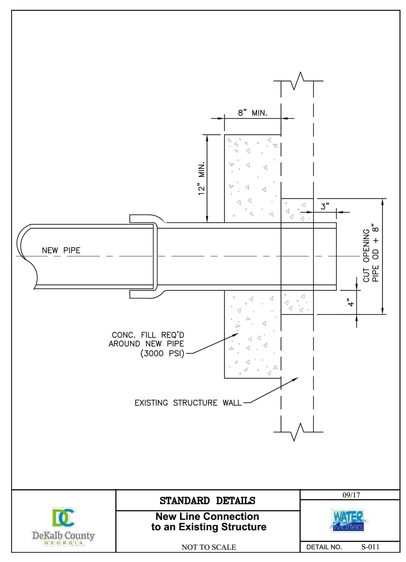

7 C-402 NEW LINE CONNECTION
NOT TO SCALE

PRIME ENGINEERING®
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404-425-7100

PROJECT:
HENDERSON PARK RESTROOM ADDITION
TUCKER, GA
PREPARED FOR:
DEKALB COUNTY

REVISIONS

NO.	DATE	DESCRIPTION
1	10/25/2018	SUBMITTAL FOR LDP

SEAL
REGISTERED ENGINEERING PROFESSIONAL GEORGIA PAUL S. BOLTON
GSWCC #41291
DATE: 9-12-2018

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DRAWING TITLE
CONSTRUCTION DETAILS

DRAWN BY	JAM
DESIGNED BY	PSB
CHECKED BY	RRM
DRAWING DATE	8/17/2018
DRAWING SCALE	NTS
PROJECT NUMBER	2013-0054
DRAWING NUMBER	C-402

ISSUED FOR CONSTRUCTION

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