PRE-BID MEETING:
9:00 AM, FRIDAY, NOVEMBER 10, 2017
150 TENNESSEE STREET
RINGGOLD, GEORGIA 30736

BID OPENING DATE:
2:00 PM, WEDNESDAY, NOVEMBER 27, 2017

SPECIFICATIONS
PROPOSAL, CONTRACTS AND BONDS
FOR

CITY OF RINGGOLD

TRAIL OF TEARS PHASE 2

FOR INFORMATION/ QUESTIONS:

Greta deMayo, PLA
KAIZEN Collaborative
greta.demayo@kaizencollaborative.com

TABLE OF CONTENTS

Technical Specifications (cont.)

ADVERTISEMENT TO BID
City of Ringgold Trail of Tears Phase 2
Ringgold, Georgia

Sealed bids will be received by **City of Ringgold** located at 150 Tennessee Street, Ringgold, GA 30736, until **2:00 p.m.** local time **Wednesday, November 27, 2017**, 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 the:

CITY OF RINGGOLD TRAIL OF TEARS PHASE 2 – This project involves the installation of a 10' wide concrete multi-use trail and a trailhead along South Chickamauga Creek on city owned property.

All Bids shall be in accordance with the Contract Documents and the *2103 Standard Specifications and 2016 Supplemental Specifications of the Georgia Department of Transportation.*

A **Pre-Bid Meeting** will be held at **150 Tennessee Street, Ringgold, Georgia 30736** on **Friday, November 10, 2017 at 9:00 a.m. Bidders are required to attend the Pre-Bid Meeting.**

HOW TO OBTAIN PLANS AND BID DOCUMENTS

A complete set of plans and said bid document may be obtained digitally for free by request email to: greta.demayo@kaizencollaborative.com

To maintain a "level playing field", and to assure that all bidders receive the same information, bidders are requested **NOT** to contact anyone other than representatives from **KAIZEN Collaborative:**

Greta deMayo, PLA
Project Manager
KAIZEN Collaborative
greta.demayo@kaizencollaborative.com

Proposals will be considered only from experienced and well-equipped contractors.

QUESTIONS AND CLARIFICATIONS:

Contractors should submit your questions and/or request for clarification about this contract to greta.demayo@kaizencollaborative.com no later than **10:00 a.m., Wednesday, November 15, 2017.**

ADDENDA:

Addendums will be emailed by **10:00 a.m., Friday, November 17, 2017.**

Bidder are required to Print and Acknowledged Addendum in your bid submitted.

BID BOND

Bids must be accompanied by an official bank check or Bid Bond in an amount of not less than ten percent (10%) of the amount bid. Prior to beginning of construction, the successful Bidder will file with City of Ringgold a Contract **Performance Bond of 100%** and a **Payment Bond of 110%** of the Contract Price, with the terms and surety to be approved by the City; and furnish satisfactory proof of carriage of the insurance required.

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

Construction must begin within ten (10) calendar days from the date of receipt of the Notice to Proceed as evidenced by official receipt of certified mail or acknowledgment of personal delivery, and must be completed within **120** calendar days from and including the date of receipt of such notice.

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

This 27th day of October, 2017.

By:

Dan Wright, City Manager
City of Ringgold

INSTRUCTIONS TO BIDDERS

GENERAL

Sealed bids will be received by **City of Ringgold** located at 150 Tennessee Street, Ringgold GA 30736, until **2:00 p.m.** local time **Wednesday, November 27, 2017**, 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 the:

PROJECT DESCRIPTION

CITY OF RINGGOLD TRAIL OF TEARS PHASE 2 – This project involves the installation of a 10' wide concrete multi-use trail and a trailhead along South Chickamauga Creek on city owned property.

All Bids shall be in accordance with the Contract Documents and the *2103 Standard Specifications and 2016 Supplemental Specifications of the Georgia Department of Transportation.*

PRE-BID MEETING

A **Pre-Bid Meeting** will be held at **150 Tennessee Street, Ringgold, Georgia 30736** on **Friday, November 10, 2017 at 9:00 a.m. Bidders are required to attend the Pre-Bid Meeting.**

City of Ringgold provides equal opportunity for all businesses and does not discriminate against any person or business because of race, color, religion, sex, national origin, and handicap or veterans status. This policy ensures all segments of the business community have access to supplying the goods and services needed.

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

Construction must begin within ten (10) calendar days from the date of receipt of the Notice to Proceed as evidenced by official receipt of certified mail or acknowledgment of personal delivery, and must be completed within **120** calendar days from and including the date of receipt of such notice.

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

SUBMITTING BIDS

Bids are to be submitted on the proper forms furnished in this contract by KAIZEN Collaborative and shall be addressed to the City of Ringgold at 150 Tennessee Street, Ringgold, GA 30736, sealed, dated and enclosed in an envelope appropriately marked on the outside **CITY OF RINGGOLD TRAIL OF TEARS PHASE 2** with the name of the Bidder, Contact Person, Email Address, Date, and Hour of Opening. **Bidders are ONLY**

required to print the documents under **Form of Proposal** and **Required Bid Submittal Check List.**

E-VERIFY AFFIDAVIT

Contractors not submitting the E-Verify affidavit will not be considered for the bid award.

ADDENDA AND INTERPRETATION

No interpretation of the meaning of the Contract Documents will be made orally to any Bidder. Every request for such interpretation should be submitted by email to **Greta deMayo, KAIZEN Collaborative, greta.demayo@kaizencollaborative.com by 10:00 a.m., Wednesday, November 15, 2017**. Any request not received in time to accomplish such interpretation and distribution shall not be accepted.

ACKNOWLEDGMENT OF ADDENDA

Addenda may be issued in response to changes in the Invitation to Bid. Addenda must be acknowledged in the Non –Collusion Certification either in a cover letter or by signing and returning the Addendum form. Acknowledgments must be received no later than the bid opening time and date. Failure to properly acknowledge any addendum may result in a declaration of non-responsiveness by the City of Ringgold.

AUTHORITY TO SIGN

If a proposal is made by an individual, the name and mailing address must be shown. If made by a firm or partnership, the name and mailing address of each member of the firm or partnership must be shown. If made by a corporation, the Certificate of Corporate Bidder must be executed. A post office box is not acceptable to the City as a mailing address. The Bidder should ensure that the legal and proper name of his proprietorship, firm, partnership, or corporation is printed or typed in the space provided on the proposal form.

GUARANTEE TO ACCOMPANY PROPOSAL

Bids must be accompanied by an official bank check or acceptable Bid Bond in an amount of not less than ten percent (10%) of the amount bid.

RIGHTS RESERVED

The City of Ringgold reserves the right to reject any or all bids, to waive informalities and to re-advertise. It is understood, and all bids are made subject to this agreement, that the City of Ringgold reserves the right to recommend which bid to deem lowest and best, and in arriving at this decision, full consideration will be given to the reputation of the Bidder, his financial responsibility, and work of this type successfully completed.

For consideration as a responsible bidder, the proposed bidder shall have been the general contractor engaged in construction of facilities of similar character for at least five years. 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 years may be required giving the location, size, and listing equipment available for use on this Work.

Any unauthorized additions, conditions, limitations, or provisions attached to the Proposal shall render it informal, and may be cause for rejection. The City of Ringgold reserves the right for waiving of informalities. 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 bid will be most advantageous to City of Ringgold, price and other factors considered. City of Ringgold is to make the determination in its sole discretion.

The Contract between the City of Ringgold and the Contractor shall be executed on the form attached, will be subject to all requirements of the Contract Documents, and shall form a binding contract between the contracting parties.

A Contract Performance Bond of 100% and a Payment Bond to 110% of the Contract Price with a surety company satisfactory to City of Ringgold must be provided by the successful Bidder by a surety company listed in the Federal Register and licensed to write surety insurance in the State of Georgia. 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.

The Contractor shall be required to furnish City of Ringgold with satisfactory proof of coverage of the insurance specified in the General Conditions. The City of Ringgold is to be named on all insurance.

FAILURE TO EXECUTE CONTRACT

If the successful Bidder, after having been notified of the acceptance of his Bid, fails to provide within ten (10) days the required Payment and Performance Bonds, Certificates of Insurance, and to sign the Contract, the amount of the Bid Bond shall be paid over to City of Ringgold as liquidated damages as costs of the bidding procedure. The acceptance of the payment of the Bid Bond shall not operate to bar any claim City of Ringgold might otherwise have against the Bidder and City of Ringgold 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

The Contract Time for completion of the Work for this Contract shall be as stated herein. For failure to complete the Work within this period, the Georgia DOT Standard

Specifications Construction of Transportation Systems, 2001 Edition, Section 108.08 will apply.

LOCATIONS AND SITE

The site of the proposed Work is within City of Ringgold property. The Contractor shall accept the site in its present condition and carry out all Work in accordance with the requirements of the Specifications and as shown on the Drawings. The Bidder shall, before submitting his Bid, visit the site and acquaint himself with the actual conditions and the location of any or all obstructions that may exist on the site.

The Contract Documents 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 City of Ringgold, or any other person, shall not affect the risks or obligations assumed by the Contractor or relieve him 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 the Contract Documents. 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 City has obtained all land and rights-of-way necessary for completion of the Work to be performed pursuant to the Contract Documents. The Contractor shall comply with all stipulations contained in easements acquired by the City. All easements and rights-of-way documents are available for inspection in the office of Dan Wright, City Manager, 150 Tennessee Street, Ringgold, GA 30736.

The Contractor agrees not to file any claim against the City of Ringgold, its officials or employees and agrees that the Contractor shall not be entitled to damages of any kind for the failure of the City to obtain rights-of-way. The Contractor shall accurately locate above and below ground utilities and structures which may be affected by the Work using whatever means may be appropriate.

GEORGIA OPEN RECORDS ACT

Without regard to any designation made by the person or entity making a submission, the City of Ringgold 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.

REQUIRED BID SUBMITTAL CHECK SHEET

The following submittals shall be completed and submitted with each Bid see table below "Required Bid Submittal Check Sheet." Please verify that these submittals are in the envelope before it is sealed.

Submit one (1) Original Bid, signed and dated, and two (2) complete copies of the Original Bid including all required attachments.

Item Number	Required Bid Submittal Check Sheet	Check (√)
1	Form of Proposal	
2	Certificate of Corporate Bidder	
3	Bid Bond	
4	Payment Bond	
5	Performance Bond	
6	Oath of Successful Bidder	
7	Non Collusion Certification	
8	Addenda (if any)	
9	Contractor Affidavit & Agreement	
10	Subcontractor Affidavit & Agreement	
11	Prime Contractor Work Authorization	
12	Subcontractor Work Authorization Certificate	
	Bidder's Name:	
	Contact Person:	
	Telephone Number:	
	Facsimile Number:	

FORM OF PROPOSAL

TO: CITY OF RINGGOLD
Attn: Dan Wright, City Manager
150 Tennessee Street
Ringgold, GA 30736

FOR: City of Ringgold Trail of Tears Phase 2

FROM: _____ Bidder

_____ Address

_____ City/State

_____ Telephone

The undersigned, as Bidder, declares that he has carefully examined 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 Proposal 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 following unit prices, to wit.

Section A: Multi-Use Trail					
Item Number	Quantity	Units	Item Description	Unit Price	Cost
140-1000	1	LS	MOBILIZATION		
210-0100	1	LS	GRADING COMPLETE (INCLUDING DEMOLITION)		
207-0203	92	CY	FOUND BKFILL MATL, TP II, 6IN, (#57 STONE, ROOT BRIDGING)		
603-7000	550	SY	PLASTIC FILTER FABRIC, NO TENSAR GRID (ROOT BRIDGING)		
444-1000	850	LF	SAWED JOINTS IN EXISTING PAVEMENTS -PCC		
441-5002	350	LF	CONCRETE HEADER CURB, 6 IN, TP 2		
502-9000	140	LF	TIMBER WOOD 2 PANEL HANDRAIL , INCL MATL		
500-3100	1	EA	STRUCTURAL SLAB CROSSING COMPLETE (STA 6+40)		
500-3101	135	CY	CLASS A CONCRETE TRAIL, 5 IN, 10 FT, (INCL 6' SIDEWALK CONNECTION TO EXISTING)		
500-3102	8	CY	CLASS A CONCRETE, 8 IN, HEAVY DUTY (TRAILHEAD HC PARKING)		
500-3103	1	EA	BLUEWAY ACCESS RIVER ROCK TRANSITION AREA, 6" THICK WITH FILTER FABRIC		
600-1001	1	LS	PARKING LOT BASE COURSE AND SURFACE COMPLETE (NO CURB)		
611-8120	1	LS	ADJUST UTILITY TO GRADE (WATER, GAS, ELECTRIC, ETC)		
636-1041	1	LS	TRAIL SIGNAGE COMPLETE (POST, CONC, SIGN, MATL)		
636-1042	3	EA	TRAIL DIRECTIONAL SIGNS		
636-1043	1	EA	TRAIL KIOSK SIGN		
636-1044	1	EA	TRAILHEAD ENTRANCE SIGN		
643-1432	160	LF	RECONFIGURE CHAIN LINK FENCE, MATCH EXISTING STYLE, 6' HT		
652-0095	1	EA	THERMOPLASTIC PVMT MARKING, HANDICAP SYMBOLS		
652-6502	850	LF	SKIP TRAF STRIPE, 5 IN, YELLOW (TRAIL CL)		
754-4000	1	EA	WASTE RECEPTACLE UNIT		
754-5000	3	EA	CITY OF RINGGOLD BENCH		
900-0526	2	EA	FIXED STEEL BOLLARDS		
900-0527	1	EA	REMOVABLE STEEL BOLLARDS		
901-0100	1	EA	3" CALIPER HARDWOOD TREE INSTALLED, STAKED, MULCH RING		
Section B: Erosion Control / Storm Drainage					
163-0232	0.8	AC	TEMPORARY GRASSING		
165-0030	1698	LF	MAINT OF TEMPORARY SILT FENCE/COMPOST SOCK		
164-002	1698	LF	SENSITIVE TYPE SEDIMENT BARRIERS		
643-8200	750	LF	BARRIER TREE FENCE (ORANGE), 4 FT		
700-6910	0.5	AC	PERMANENT GRASSING		
700-8000	0.5	AC	FERTILIZER MIX GRADE		
			TOTAL ESTIMATED CONSTRUCTION COST		

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 City of Ringgold through an inspection of the work completed. In no event shall the City of Ringgold be liable for payment in excess of the total Bid amount of:

$_____

(*Insert same "TOTAL BID" figure from above*) without proper prior written authorization via Change Order from the City of Ringgold.

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

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 Federal Register and licensed to write surety insurance in the State of Georgia, payable to City of Ringgold (or an official bank check), in the amount of ten percent of the above Bid, to-wit.

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

Bidder declares his intent to subcontract the portion of 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 City of Ringgold**.**

_____

_____

_____

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

_____

_____

_____

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

_____(Seal)
Bidder

By:_____

_____
Name (Typed or Printed)

_____
Title

_____
Bidder's Mailing Address

_____
Phone Number

_____
Fax Number

_____
E-Mail Address

CERTIFICATE OF CORPORATE BIDDER

I, _____, 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 _____ and _____ who executed this Proposal on behalf of the Bidder were, then and there, _____ and _____ respectively, and that said Proposal was duly signed by said officers 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 outstanding stock of said corporation as of this date are as follows:

_____

_____

_____

_____

_____

This _____ day of _____, 20____.

_____(Corporate Seal)
Secretary

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 insurance in the State of Georgia, are held and firmly bound unto Catoosa County, Georgia, in the full and just sum of _____ _____ Dollars ($_____) good and lawful money of the United States of America, to be paid upon demand of Owner's Representative and City of Ringgold, 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 City of Ringgold, a proposal for **City of Ringgold Trail of Tears Phase 2**

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

NOW, THEREFORE, the conditions of this obligation are such that if the Proposal be accepted, the Principal shall within ten (10) days from the date of Notice of Award of the Contract, execute a Contract in accordance with the Proposal and upon the terms, conditions, and prices set forth therein, and in the form and manner required by City of Ringgold, and execute a sufficient and satisfactory Performance Bond and Payment Bond payable to City of Ringgold, each in an amount of one hundred percent (100%) of the total Contract Price, in form and with security satisfactory to City of Ringgold 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 City of Ringgold, 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___.

_____(Seal)

Principal

By: _____

_____(Seal)

Surety

By: _____

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____ _____ (hereinafter called the Principal), as Principal, and _____, a corporation of the State of _____; with its principal office in the City of _____, (hereinafter called the Surety), as Surety, are held and firmly bound unto CITY OF RINGGOLD, GEORGIA (hereinafter called the Obligee), for the use and protection of all Subcontractors and all persons supplying labor, machinery, materials, and equipment in the prosecution of the Work provided for in the Contract hereinafter referred to in the full and just sum of _____ Dollars ($_____), to the payment of which sum, well and truly to be made, the Principal and Surety bind themselves, their, and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract, dated the day of _____ , 20____ A.D., with the Obligee for **City of Ringgold Trail of Tears Phase 2**, which Contract is by reference made a part hereof.

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

ALL persons who have furnished labor, material, machinery or equipment for use in the performance of said Contract shall have a direct right of action on this Bond, provided payment has not been made in full within ninety (90) days after the last day on which labor was performed, materials, machinery, and equipment furnished or the subcontract completed, as provided in O.C.G.A. §36-82-104.

PROVIDED, HOWEVER, that no suit or action shall be commenced hereunder by any person furnishing labor or material having a direct contractual relationship with a Subcontractor, but no contractual relationship express or implied with Principal, unless

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

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

Signed, Sealed and Dated this _____ day of _____, 20____ A.D.

ATTEST: _____ (SEAL)
Principal

_____ By: _____

WITNESS: _____ (SEAL)
Surety

_____ By: _____

PERFORMANCE BOND
CONSTRUCTION CONTRACT

KNOW ALL MEN BY THESE PRESENTS, that we,_____ _____, as Principal, and _____, as Surety, are held and firmly bound unto Catoosa County, Georgia, hereinafter called the Obligee, in the sum of _____ Dollars ($_____), for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

The condition of this obligation is that Principal has entered into a certain written Contract dated the _____ day of _____, 20____, with Obligee, a copy of which Contract is attached hereto and incorporated herein by reference.

If Principal shall indemnify Obligee against any pecuniary loss resulting from the breach of any of the terms, covenants, and conditions of such Contract to be performed by Principal and to faithfully account for all funds received by the Principal pursuant to said Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect subject to the following conditions. This obligation shall run continuously and shall remain in full force and effect until and unless the Bond is terminated as provided herein or as otherwise provided by law. This Bond covers the original Contract and all duly authorized modifications of said Contract that may hereafter be made. Any deviations from, or additions to, or modifications in the obligations of the original Contract may be made without the consent or knowledge of Surety and without in any way releasing Surety from liability under this Bond, except that no change will be made which increases the total Contract Price more than twenty percent in excess of the original Contract Price without notice to the Surety.

The business for the transaction of this Bond shall be deemed to have taken place in Catoosa County, Georgia, and if any action or proceeding is initiated in connection with this Bond and any of its obligations arising hereunder, the venue thereof shall be the Courts of the County of Catoosa, State of Georgia.

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.

This Bond shall be binding upon and inure to the benefit of the parties hereto, their successors, assigns, and legal representatives.

This Bond shall be construed in accordance with the provisions 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 seg.

IN WITNESS WHEREOF, Principal and Surety have executed this Bond at Ringgold, Georgia, this _____ day of _____, 20___.

ATTEST:

_____

_____(SEAL)
Principal

By: _____

_____
Typed Name and Title

WITNESS:

_____

_____ (SEAL)
Surety

By: _____

_____
Typed Name and Title

OATH OF SUCCESSFUL BIDDER

Personally appeared before the undersigned officer duly authorized by law to administer oaths _____ and _____ who, after being first duly sworn, depose and say that they are all the officers, agents, persons, or employees who have acted for or represented _____ in bidding or procuring the Contract with the City of Ringgold on the following Project: **City of Ringgold Trail of Tears Phase 2** and that said _____ and _____ has not by himself/themselves or through any persons, officers, agents, or employees prevented or attempted to prevent by any means whatsoever competition in such bidding, or by any means whatsoever prevented or endeavored to prevent anyone from making a bid therefore, or induced or attempted to induce another to withdraw a bid for said work.

_____
Signature of Affiant

_____
Name (Typed or Printed)

_____
Title

Sworn to and subscribed
before me this _____ day
of _____, 20___.

_____
Notary Public (Seal)
My Commission Expires:

_____

NON-COLLUSION CERTIFICATION

I hereby certify that I have not, nor has any member of the firm(s) or corporation(s), either directly or indirectly entered into any agreement, participated in any collusion, nor otherwise taken any action in restraint of free competitive bidding in connection with this submitted bid.

It is understood and agreed that this Proposal is one of several competitive bids made to City of Ringgold, and in consideration of mutual agreements of the bidders, similar hereto, and in consideration of the sum of One Dollar cash in hand paid, receipt whereof is hereby acknowledged, the undersigned agrees that this Proposal shall be an option, which is hereby given by the undersigned to City of Ringgold to accept or reject this proposal at any time within fifty (60) calendar days from the date on which this sealed proposal is opened and read, unless a longer period is specified in the Proposal or the successful bidder agrees in writing to a longer period of time for the award, and in consideration of the premises, it is expressly covenanted and agreed that this proposal is not subject to withdrawal by the Proposer or Bidder, during the term of said option.

I hereby acknowledge receipt of the following checked addenda of the Proposal, Plans, Specifications and/or other documents pertaining to the Contract.

Addenda Nos.: I____2____3____4____5____. I understand that failure to confirm the receipt of addenda is cause for rejection of bids.

Witness my hand and seal this the ____ day of _____, 20_____.

The bidder(s) whose signature(s) appear on this document, having personally appeared me, and being duly sworn, deposes and says that the above statements are true and correct.

Sworn to and subscribed before me this _____ day of _____, 20_____.

_____
(Name of Notary Public Here)

My Commission expires the _____day of _____, 20_____.

_____
(Federal ID No./IRS No.)

_____
(Print Company Name Here)

By _____(Seal)
Corporate President/Vice President or individual Owner or Partner (Strike through all except the one which applies.)

Joint Bidder:

_____
(Print Company Name Here)

By _____(Seal)
Corporate President/Vice President or individual Owner or Partner (Strike through all except the one which applies.)

Joint Bidder:

_____
(Print Company Name Here)

By _____(Seal)
Corporate President/Vice President or or individual Owner or Partner (Strike through all except the one which applies.)

ATTACHMENT A

CONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is contracting with CITY OF RINGGOLD, a political subdivision of the State of Georgia, has registered with and is participating in a federal work authorization program*[1] [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. § 13-10-91].

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to this contract with the CITY, then the contractor will secure from such subcontractor(s) similar verification of compliance with O.C.G.A. § 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08[2] or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a copy of each such verification to the CITY, at the time the subcontractor(s) is retained to perform such service.

_____	_____
Employment Eligibility Verification Program (EEV)/ Basic Pilot Program* User Identification Number	City of Ringgold EEV Basic Pilot Program* User Id. Number

_____

BY: Authorized Officer or Agent (Contractor Name) Date

_____

Title of Authorized Officer or Agent of Contractor

_____

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE___ DAY OF_____, 200__

_____

Notary Public

My Commission Expires: _____

_____

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

*[2] **See,** O.C.G.A. § 13-10-90; O.C.G.A. § 13-10-91; Rules of Georgia Department of Labor, "Georgia Security and Immigration Compliance Act" of 2006; Rule 300-10-1-07, and Rule 300-10-1-.08.*

ATTACHMENT B

SUBCONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with _____ (Name of Contractor) on behalf of CITY OF RINGGOLD, a political subdivision of the State of Georgia, has registered with and is participating in a federal work authorization program*[1] [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].

_____ _____

Employment Eligibility Verification Program (EEV)/ Basic Pilot Program* User Identification Number

City of Ringgold EEV Basic Pilot Program* User Id. Number

_____

BY: Authorized Officer or Agent (Subcontractor Name) Date

_____

Title of Authorized Officer or Agent of Contractor

_____

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE

_____ DAY OF _____, 20____

_____

Notary Public
My Commission Expires: _____

As of the effective date of O.C.G.A. § 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA

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SUBCONTRACTOR AFFIDAVIT AND AGREEMENT

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_____ _____

Employment Eligibility Verification Program (EEV)/ Basic Pilot Program* User Identification Number

City of Ringgold EEV Basic Pilot Program* User Id. Number

_____

BY: Authorized Officer or Agent (Subcontractor Name) Date

_____

Title of Authorized Officer or Agent of Contractor

_____

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE

_____ DAY OF _____, 20____

_____

Notary Public
My Commission Expires: _____

As of the effective date of O.C.G.A. § 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA

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ATTACHMENT B
SUBCONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with _____ (Name of Contractor) on behalf of CITY OF RINGGOLD, a political subdivision of the State of Georgia, has registered with and is participating in a federal work authorization program*[3] [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].

_____	_____
Employment Eligibility Verification Program (EEV)/ Basic Pilot Program* User Identification Number	City of Ringgold EEV Basic Pilot Program* User Id. Number

_____

BY: Authorized Officer or Agent (Subcontractor Name) Date

_____

Title of Authorized Officer or Agent of Contractor

_____

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE

_____ DAY OF _____, 20____

_____

Notary Public
My Commission Expires: _____

As of the effective date of O.C.G.A. § 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA

_____

ATTACHMENT C
PRIME CONTRACTOR'S WORK AUTHORIZATION CERTIFICATION[4]

Pursuant to O.C.G.A. § 13-10-91, all qualifying contractors and sub-contractors performing work within the State of Georgia on a contract with a public employer must register and participate in a federal work authorization program. Prime contractors may participate in 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").

The date by which a prime contractor must register and participate in a qualifying federal work authorization program depends on the number of employees in the prime contractor's company. If the prime contractor's company has 500 or more employees, it is required to register and participate in a qualifying federal work authorization program by July 1, 2007. If the prime contractor's company has 100 or more employees, it is required to register for and participate in a qualifying federal work authorization program by July 1, 2008. If the prime contractor's company has 99 employees or fewer, it is required to register for and participate in a qualifying federal work authorization program by July 1, 2009.

Certify compliance with O.C.G.A. § 13-10-91 by checking the appropriate line below:

_____ The undersigned has registered for and is participating in a qualifying federal work authorization program *or*

_____ The undersigned is not required to register for or participate in a qualifying federal work authorization program at this time. But, if the undersigned becomes a qualifying prime contractor in the future, the undersigned agrees to register for and participate in a qualifying federal work authorization program.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services within this state pursuant to this contract with a public employer, the undersigned will secure from such subcontractor(s) a verification of compliance with O.C.G.A. § 13-10-91 using the form "Subcontractor's Work Authorization Certification" or a substantially similar form. The undersigned will maintain records of compliance and provide a copy of each sub-contractor's verification to the public employer at the time the sub-contractor is retained to perform such service.

_____ _____
BY: Authorized Officer or Agent Date

_____ _____
Title of Authorized Officer or Agent Basic Pilot User Identification Number (if applicable)

_____ _____
Printed Name of Authorized Officer or Agent City of Ringgold Basic Pilot User Identification Number

With express authority on behalf of:

_____
Printed Name of Prime Contractor

Subscribed and Sworn before me on this ___ day of _____, 200__.

_____ My Commission Expires: _____.
Notary Public

[1] *Georgia Department of Transportation Prime Contractor's Work Authorization Certification Form*

ATTACHMENT D

SUBCONTRACTOR'S WORK AUTHORIZATION CERTIFICATION

Pursuant to O.C.G.A. § 13-10-91, all qualifying contractors and sub-contractors performing work within the State of Georgia on a contract with a public employer must register and participate in a federal work authorization program. Sub-contractors may participate in 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").

The date by which your company must register and participate in a federal work authorization program depends on the number of employees in your company. If your company has 500 or more employees, you are required to register and participate in a qualifying federal work authorization program by July 1, 2007. If your company has 100 or more employees, you are required to register and participate in a federal work authorization program by July 1, 2008. If your company has 99 employees or fewer, it is required to register and participate in a federal work authorization program by July 1, 2009.

Certify compliance with O.C.G.A. § 13-10-91 by checking the appropriate line below:

_____ The undersigned has registered for and is participating in a qualifying federal work authorization program, *or*

_____ The undersigned is not required to register for or participate in a qualifying federal work authorization program at this time. But, if the undersigned becomes a qualifying sub-contractor in the future, the undersigned agrees to immediately:

(1) Notify the covered prime contractor; *and*

(2) Register for and participate in a qualifying federal work authorization program.

_____ BY: Authorized Officer or Agent

_____ Date

_____ Title of Authorization Officer or Agent

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

_____ Printed Name

_____ Notary Public

_____ Basic Pilot User Identification Number

My Commission Expires: _____.

_____ City of Ringgold Basic Pilot User Identification Number

ATTACHMENT E

RESOLUTION ADOPTING POLICY CONCERNING DISPOSAL OF DEBRIS, SPOIL, DIRT AND OTHER MATERIALS FROM CITY OF RINGGOLD PUBLIC WORKS PROJECTS

WHEREAS, from time to time the City of Ringgold, either through its own departments or through agreements with independent contractors or other third parties, performs various public works projects which include, but are not limited to sewer projects, road projects, storm water projects and other construction projects; and

WHEREAS, in connection with the performance of public works projects, it is from time to time necessary for debris, dirt, spoil, and/or related materials to be excavated, hauled, and removed from the project site or sites and disposed of or dumped at separate locations; and

WHEREAS, for liability, regulatory, insurance, and budgetary reasons, and for the safety of City of Ringgold employees and citizens, the Ringgold City Council finds that it is prudent to adopt a formal policy concerning how and in what manner debris, dirt, spoil, and/or related materials are to be excavated, hauled, or otherwise removed from the site of City of Ringgold public works projects and where and in what manner said items are to be disposed of, placed, or dumped.

NOW, THEREFORE, it is hereby RESOLVED by the Ringgold City Council as follows:

RESOLVED, that the Ringgold City Council hereby adopts the following policy concerning the excavation and removal of debris, dirt, spoil, and/or related materials from the site of any City of Ringgold public works project and concerning the disposal, dumping, or placement of said materials:

"No City employee or any third party working under any contract or agreement with the City of Ringgold shall excavate or remove debris, dirt, spoil, and/or related material from the site of any City of Ringgold public works project or dispose, dump, or place the same except in compliance with the following conditions and requirements:

(1) All excavation and removal of dirt, debris, spoil material, or related material shall at all times be done and carried out in compliance with appropriate and applicable federal, state and local statues, regulations, and ordinances, and the plans and specifications prepared by the engineer retained by the City of Ringgold, if applicable; and

(2) All debris, dirt, spoil, and/or related material excavated and removed from the site of any City of Ringgold public works project shall be hauled to and disposed of, dumped, and/or placed at a site or location which is either (a) an inert or other appropriate landfill permitted and approved by the Georgia Department of Natural Resources, Environmental Protecting Division; or (b) a site or location which is permitted and approved by the City of Ringgold or Catoosa County and the Georgia Department of Natural Resources, Environmental Protection Division, and which is shown and designated as an approved site on the engineer's plans which are approved for a particular public works project; or (c) on easements, rights of

way or other property owned by the City of Ringgold or Catoosa County upon which there is a need for dirt, spoil, or fill material. Debris, dirt, spoil, and/or related material shall not be dumped, deposited, or placed upon private or any other property unless said property meets one or more of the criteria set forth herein."

and;

FURTHER RESOLVED, that the policy adopted herein shall be effective immediately and shall remain in full force and effect until such time as it is modified, amended, and/or terminated by the Ringgold City Council; and

FURTHER RESOLVED, that the provisions of the policies adopted herein shall be incorporated into any and all bid specifications and contracts with third parties for City of Ringgold public works projects; and

FURTHER RESOLVED, that the policy adopted herein shall be applicable to all employees of the City of Ringgold and shall be incorporated into and made a party of the personnel policies of the City of Ringgold. Violations of the policy adopted herein shall be addressed and handled by the City Manager or appropriate Department Head utilizing the disciplinary procedures of the existing personnel policies of the City of Ringgold.

SO RESOLVED this 8th day of February, 2010.

CITY OF RINGGOLD

BY:_____
Mayor Joe Barger

ATTEST:

_____
Judy Pace, City Clerk

GENERAL CONDTIONS

CITY OF RINGGOLD

TRAIL OF TEARS PHASE 2

FOR INFORMATION/ QUESTIONS:

Greta deMayo, PLA
KAIZEN Collaborative
greta.demayo@kaizencollaborative.com

INDEX TO GENERAL CONDITIONS

SCOPE

The following is a general description of the extent of work under the Contract.

A. Work included:

Construction Documents and Project Specifications:

KAIZEN COLLABRATIVE
2390 Main Street
Tucker, Georgia 30084
404.239.2521
Greta deMayo, PLA

B. Work not included in this Contract:

SITE OF THE WORK AND OWNER

A. **Trail of Tears Phase 2**

B. Owner: **City of Ringgold, Georgia**

ACCESS TO WORK

City of Ringgold and the Landscape Architect shall at all times have access to the Work wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access.

SUBMITTAL PERIOD FOR PRODUCTS AND SUBSTITUTIONS

Substitutions: Where items of equipment or materials are specifically identified herein by a manufacturer's name, model, or catalog number, only such specific item may be used in the Base Bid. If the Bidder wishes to use items of equipment or materials other than those named in his Base Bid, the Bidder shall apply in writing for the Owner's approval of substitution at least ten (10) days prior to opening of bids, submitting with his request for approval complete descriptive and technical data on the items or item he proposes to furnish. Approved substitutions will be listed in the Addendum issued to all Bidders prior to opening of bids.

MEASUREMENTS AND DIMENSIONS

Before ordering material or doing work, which is dependent for proper size or installation upon coordination with conditions, the Contractor shall verify all dimensions by taking measurements at the project site 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. Any difference which may be found must be submitted to the Owner for resolution before proceeding with the Work.

If a minor change in the Work is found 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 City before making the change. If the

Contractor fails to make such request, no excuse will thereafter be entertained for Contractor's failure to carry out work in the required manner or provide required guarantees, warranties, or bonds and Contractor shall not be entitled to any change in the Contract Sum or the Contract Time on account of such failure.

If any portion of the Contract Documents shall be in conflict with any other portion, the various documents comprising the Contract Documents shall govern in the following order of precedence: Contract, Modifications issued after execution of the Contract; the General Conditions of the Contract; Supplementary Conditions; 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.

STORAGE FACILITIES AND WORK AREAS

The Contractor shall cooperate with the Owner in any required use of its property and arrange for storage of materials on job site in such areas as are mutually agreed upon. The Contractor shall allot suitable and proper space to his 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, sheds, or storage platforms, the Contractor shall move same as and when directed, at his own expense.

IMPROVEMENTS ON PUBLIC PROPERTY

The Contractor shall pay all highway fees and for all damages to sidewalks, streets, or other public property, or to public utilities. Contractor shall secure all permits, authorizations, and certificates of inspection or occupancy that may be required by authorities having jurisdiction over the Work. Said certificates shall be delivered to the Owner upon completion of the Work.

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 Owner.

MANUFACTURERS' CERTIFICATIONS

The Owner 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.

SAMPLES

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

AS-BUILT DRAWINGS

The Contractor shall, upon completion of the Work, furnish a marked set of Drawings

indicating the field changes, as actually installed and as specified under these sections of the Specifications, and deliver them to the Owner.

MAINTENANCE MANUAL

Contractor shall, prior to completion of Contract, deliver to the Owner two copies of a manual, assembled and bound, presenting for the Owner'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 Owner 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 article.

LANDSCAPE ARCHITECT

a. Lead Design Consultant:

KAIZEN COLLABRATIVE
2390 Main Street
Tucker, Georgia 30084
404.239.2521
Greta deMayo, PLA

b. It is the intent of the parties that nothing contained herein shall be interpreted to assign to the Landscape Architect any status under this Contract other than that of an independent contractor.

01 DEFINITIONS OF TERMS

Wherever used in the Contract Documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

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

"Amendment" shall mean a written order to the Contractor authorizing an addition, deletion, or revision in the Work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time, as approved by the Owner.

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

"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 Documents.

"Change Order" shall mean a written order to the Contractor authorizing an addition, deletion, or revision in the Work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time, as approved by the Owner.

"City" shall mean City of Ringgold.

"Contract Documents" shall consist of Advertisement for Bids, Proposal, Bid Bond, Certificate of Corporate Bidder, Oath of Successful Bidder, Contract, Contract Performance Bond, Payment Bond, Instructions to Bidders, General Requirements, General Conditions, Supplementary Conditions, Technical Specifications, Certificates of Insurance, and Drawings. The intent of these documents is to include 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 therefor. The Contract Documents shall be considered as one, and whatever is called for by any one of them shall be as binding as if called for by all.

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

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

"Contractor" or "General Contractor" shall mean the individual, firm, 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.

"Drawings" shall mean the part of the Contract Documents which show largely through graphical presentation the characteristics and scope of the Work to be performed and which have been prepared or approved by the Landscape Architect.

"Field Order" shall mean a written order effecting a change in the Work not involving an adjustment in the Contract Price or an extension of the Contract Time, issued by the Owner to the Contractor during construction.

"Landscape Architect" shall mean and individual, partnership, or corporation performing professional design services as an independent contractor.

"Notice of Award" shall mean the written notice of the acceptance of the Bid from the Owner to the successful Bidder as evidenced by return receipts of registered or certified letters.

"Notice to Proceed" shall mean written communication issued City of Ringgold to the Contractor authorizing him to proceed with the Work and establishing the date of commencement of the Work as evidenced by official receipt of certified mail or acknowledgment of personal delivery.

"Owner" shall mean City of Ringgold.

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

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

"Shop Drawings" shall mean all drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by the Contractor, a Subcontractor, manufacturer, Supplier, or distributor, which illustrate how specific portions of the Work shall be fabricated or installed.

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

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

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

"Supplementary Conditions" shall mean a part of the Contract Documents consisting of modifications to the General Conditions.

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

"Suppliers" 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" of the Contractor or Subcontractor shall include all labor, material, equipment, transportation, skill, tools, machinery and other equipment, and things useful or necessary in order to complete the Contract.

02 APPLICABLE REQUIREMENTS

The work shall comply with the Contract Documents and with all applicable codes, laws, and regulations of the City, State, or Federal agencies which may have cognizance of any part of the Work. In the event of any conflict between the terms of this Contract and such codes, laws, and regulations, the codes, laws, and/or regulations shall prevail. If the Contractor performs any work knowing it to be contrary to such codes, laws, or regulations, and without such notice to the Owner, he shall assume full responsibility therefore and shall bear any and all costs necessary to correct the Work.

03 CONTRACT SECURITY

The Contractor shall furnish a Contract Performance Bond equaled to one hundred percent (100%) of the Contract Price and a Payment Bond equaled to one hundred ten percent (110%) of the Contract Price. 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. The surety on each Bond shall be a surety company satisfactory to the Owner and listed in the Federal Register and licensed to write surety insurance in the State of Georgia.

04 NOTICE AND SERVICE THEREOF

Any notice to Contractor from the Owner relative to any part of this Contract shall be in writing and considered delivered and the service thereof completed, when said notice is posted by mail, to the said Contractor at his last given address or delivered in person to said Contractor or his authorized representative on the work site.

05 SPECIFICATIONS

5.01 The Specifications, the Drawings accompanying them, and the other Contract Documents 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.

5.02 The General Contractor will be held responsible to furnish all labor and materials necessary to complete the Work as indicated by the Drawings and Specifications.

5.03 Unless otherwise stipulated, the General Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary for the execution and completion of the Work. He shall be responsible for entire Work and every part thereof.

5.04 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.

5.05 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.

5.06 *GDOT Standard Specifications Construction of Transportation Systems,* 2001 & 2008 edition, apply to this contract and are incorporated by reference. Additional specifications are for items not included in the GDOT standard specifications.

5.07 Contractor shall comply with all AASHTO and ADA design criteria for multi-use trails.

06 DRAWINGS AND SPECIFICATIONS

6.01 The intent of the Drawings and Specifications is that the Contractor shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the Work in accordance with the Contract Documents and all incidental work necessary to complete the Project in an acceptable manner, ready for use, occupancy, or operation by the Owner.

6.02 In case of conflict between the Drawings and Specifications, the Specifications shall govern. Figure dimensions on Drawings shall govern over scale dimensions, and detailed drawings shall govern over general drawings.

6.03 If existing utilities or structures are indicated by the Contract Documents, no warranty is made as to the accuracy or completeness of such indication.

6.04 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 Owner and the Landscape Architect, 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.

6.05 The Landscape Architect 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 Documents. The additional drawings and instructions thus supplied will become a part of the Contract Documents. The Contractor shall carry out the Work in accordance with the additional detail drawings and instructions.

6.06 Abridging: 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, mention therein, or indications on the Drawings of articles, materials, operations, or methods requires that the Contractor:

1. Provide each item mentioned and indicated, of quality or subject to qualifications noted.
2. Perform according to conditions stated, each operation prescribed.
3. Provide therefore all necessary labor, equipment, and incidentals.

6.07 Wording: Whenever in these Specifications or on the Drawings 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 Owner is intended, and similar words, "approved," "acceptable," "satisfactory," or words of like import shall mean approved by, acceptable to, or satisfactory to the Owner.

6.08 Specification Sections: 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 Owner an arbiter to establish limits to the contracts between the Contractor and Subcontractors, nor shall such separation be interpreted as superseding normal union jurisdictions.

6.09 Language: 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 Owner for the entire Contract and the execution of all work referred to in the Contract Documents.

07 PRESENT DOCUMENTS GOVERN

The Contractor shall 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 Documents for this job shall govern the Work.

08 CONTRACTOR'S SHOP DRAWINGS

8.01 The approved Drawings will be supplemented by such Shop Drawings as are needed to adequately control the Work. It is mutually agreed that all authorized alterations affecting the requirements and information given on the approved Drawings shall be in writing.

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

8.03 Shop Drawings must be approved by the Landscape Architect before the work in question is performed. Drawings for false work, centering, and form work may also be required, and in such cases shall be likewise subjected to approval unless approval be waived. It is expressly understood, however, that approval of the Contractor's Shop Drawings does not relieve the Contractor of any responsibility for accuracy of dimensions and details. It is mutually agreed that the Contractor shall be responsible for agreement and conformity of his Shop Drawings with the approved Drawings and Specifications.

8.04 It is the responsibility of the Contractor to check all Shop Drawings before same are submitted to the Landscape Architect for approval. Shop Drawings which have not been checked and approved by the Contractor will not be approved.

8.05 Shop Drawings shall be submitted only by the Contractor who shall indicate by a signed stamp on the drawings that he has checked the Shop Drawings 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 Shop Drawings be accepted from anyone other than the Contractor.

8.06 The Contractor shall furnish the Owner and the Landscape Architect with at least six copies of all Shop Drawings for approval. Two finally approved copies will be returned to the Contractor for his use.

8.07 The Contract Price shall include the cost of furnishing all Shop Drawings and the Contractor will be allowed no extra compensation for such drawings.

8.08 The approval of such Shop Drawings 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 Landscape Architect 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 Shop Drawings. When the Contractor does call such deviations to the attention of the Landscape Architect, he shall state in his letter 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.

09 INSTRUCTIONS, CHANGES, ETC.

9.01 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 Change Order in all cases, and no verbal orders will be regarded as a basis for claims for extra work.

9.02 If the Contractor claims that any instruction by Drawings or otherwise involves extra cost or an extension of time, he shall notify the Owner in writing within ten (10) days after the receipt of such instructions and in any event before proceeding to execute the Work. Thereafter, the procedure shall be the same as that described for changes in the Work. No such claim shall be valid unless made in accordance with the terms of this section.

9.03 No claims for extra cost will be considered based on an escalation of material prices throughout the period of the Contract.

9.04 No extra work is to be performed or any changes made that involves any extra cost or extension of time unless approved by the Owner and authorized by Change Order.

10 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 conformation 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. No verbal agreement or conversation with any officer, agent, or employee of the Owner or the Owner, either before or after the execution of the Contract, shall affect or modify any of the terms or obligations herein contained.

11 MATERIALS, SERVICES, AND FACILITIES

11.01 The Contractor shall at all times employ sufficient labor and equipment for prosecuting the Work to full completion in the manner and time specified. Failure of the Contractor to provide adequate labor and equipment may result in 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 within the time specified in the Contract.

11.02 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.

11.03 Manufactured articles, materials, and equipment shall be applied, installed,

connected, erected, cleaned, and conditioned as directed by the manufacturer.

11.04 Materials, supplies, and equipment to be incorporated into the Work shall be new and unused unless otherwise specifically stated in the Contract Documents. The source of supply for all such products shall be submitted to the Landscape Architect, together with detailed descriptions thereof in the form of samples, Shop Drawings, tests, or other means necessary to adequately describe the items proposed. If, after trial, it is found that sources of supply, even though previously approved by the Landscape Architect, have not furnished products meeting the intent of the Contract Documents, the Contractor shall thereafter furnish products from other approved sources, and shall remove completed Work incorporating products which do not meet Contract requirements.

12 REQUESTS FOR SUBSTITUTIONS

Requests for substitutions of proprietary products or of a particular manufacturer or vendor must be accompanied by documentary proof of equality, and difference in price and deliveries, if any, in form of certified quotations from Suppliers of both specified and proposed equipment. The item proposed for substitution shall be equal to or superior to the specified item or items, in construction, efficiency, and utility in the opinion of the Landscape Architect. The opinion of the Landscape Architect shall be final and no substitute material or article shall be purchased or installed without such written approval.

In case of a difference in price, the Owner 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 Owner with any savings to be obtained. However, the Owner shall not be charged for any additional cost in case of a price difference.

13 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 at the site shall be made by bureaus, laboratories, or agencies approved by the Landscape Architect. The cost of such inspection and testing shall be paid by the Contractor. The Contractor shall furnish evidence satisfactory to the Landscape Architect that the material and finished articles have passed the required tests prior to the incorporation of such materials and finished articles in the Work.

14 INSPECTION OF WORK

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

14.02 If the specifications, the Owner instructions, laws, ordinances, or a public authority require any work to be specially tested or approved, the Contractor shall give the Landscape Architect timely notice of its readiness for observation or

inspection. If the inspection is by another authority, then the Landscape Architect 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 Landscape Architect upon completion. If any work should be covered up without approval or consent of the Landscape Architect, it shall, if required by the Landscape Architect be uncovered for examination at the Contractor's expense.

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

15 AUTHORITY OF THE LANDSCAPE ARCHITECT

15.01 The Contractor shall perform all of the Work herein specified under the general direction, and to the entire satisfaction, approval, and acceptance of the Landscape Architect. The Landscape Architect shall decide all questions relating to measurements of quantities, the character 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 these Specifications will be decided by the Landscape Architect.

15.02 The approval of the Landscape Architect of any materials, plants, 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 Documents, or from any duty, obligations, performance guarantee, or other liability imposed upon him by the provisions of the Contract.

16 PROHIBITED INTERESTS

No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any design, 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, landscape architect, attorney, engineer, or inspector of or for the the Owner who is authorized is such capacity and on behalf of the Owner 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.

17 REJECTIONS OF WORK AND MATERIALS

17.01 All materials and equipment furnished and all work done that is not in accordance with the Drawings or Specifications or that is defective will be rejected. All rejected materials, equipment, or work shall be removed immediately. If rejected

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

17.02 Inspection of the Work shall not relieve the Contractor of any of his obligations to fulfill his Contract and defective work shall be made good regardless of whether such work, material, or equipment has been previously inspected by the Landscape Architect and accepted or estimated for payment. The failure of the Landscape Architect to condemn improper materials or workmanship shall not be considered as a waiver of any defect which may be discovered later, or for work actually defective. All work, material, and/or equipment shall be guaranteed against defects for a period of one year from date of Project acceptance as established by the Owner.

18 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 Landscape Architect, 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.

19 ROYALTIES AND PATENTS

The Contractor shall hold and save the Owner and its 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 Owner, unless otherwise specifically stipulated in the Contract Documents.

20 CONTRACTOR'S PERSONNEL

20.01 The Contractor will supervise and direct the Work. He 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 start of the Work and shall be approved by the Owner prior to start of the Work. 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 Project Superintendent. The Superintendent shall represent the Contractor, and all directions given to the Superintendent shall be as binding as if given to the Contractor.

20.02 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 on the Work any unfit person or persons or anyone unskilled in the work assigned him.

21 LINES, GRADES, AND MEASUREMENTS

21.01 Such stakes and markings as the Landscape Architect may set for either its or the Contractor's guidance shall be preserved by the Contractor. Failure to protect such stakes or markings, or gross negligence on the Contractor's part resulting in loss of same, may result in the Contractor being charged for their replacement.

21.02 The Contractor must exercise proper care and caution to verify the grades and figures given him before proceeding with the Work, and shall be responsible for any damage or defective work caused by his failure of such care and caution. He shall promptly notify the Landscape Architect of any errors or discrepancies he may discover in order that the proper corrections may be made.

22 PERMITS AND INSPECTION FEES

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

23 LAWS AND REGULATIONS

The Contractor's attention is directed to the fact that all applicable Federal, State, and City 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 Documents the same as though herein written out in full. The Contractor shall keep himself fully informed of all laws, ordinances, and regulations of the Federal, State, and City in any manner affecting those engaged or employed in the Work or the materials used in the Work or in any way affecting the conduct of the Work and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over same. If any discrepancy or inconsistency should be discovered in this Contract, or in the Drawings or Specifications herein referred to, in relation to any such law, regulation, ordinance, order, or decree, he shall herewith report the same, in writing, to the Landscape Architect. He shall at all times himself observe and comply with all such laws, ordinances, and regulations, and shall protect and indemnify the Owner and its agents against any such law, ordinance, regulation, order, or decree, whether by himself or by his employees.

24 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 means, except as herein otherwise expressly specified, necessary, or proper to perform and complete all the Work required by this Contract, within the time herein specified, in accordance with the provisions of this Contract and said Specifications and in accordance with the Drawings of the Work covered by this Contract and any and all supplemental drawings of the Work

covered by this Contract. He shall furnish, erect, maintain, and remove such construction, plants, and such temporary works as may be required. He alone shall be responsible for the safety, efficiency, and adequacy of his plants, 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 of the Contract and Specifications, local ordinances, and State and Federal laws; and shall do, carry on, and complete the entire Work.

25 SUBCONTRACTING

25.01 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 the Work and the contractor proposed to perform it have been declared in the Proposal to the Contract; or the Contractor shall have obtained written approval from the Owner. **THE CONTRACTOR FURTHER UNDERSTANDS AND AGREES THAT ANY WORK ON THIS PROJECT WHICH THE CONTRACTOR SECURES IN VIOLATION OF THIS PROVISION SHALL BE DEEMED A GRATUITY FROM THE CONTRACTOR FOR WHICH THE OWNER SHALL NOT BE OBLIGATED TO PAY.**

25.02 Nothing contained in this Contract shall create any contractual relation between any Subcontractor and the Owner.

26 ASSIGNMENTS

The Contractor shall not assign the whole or any part of this Contract or any monies due or to become due hereunder without written consent of the Owner.

27 CONTRACTOR'S HOLD HARMLESS AGREEMENT

The General Contractor shall be responsible from the time of signing the Contract, or from the time of the beginning of the first work, whichever shall be the earlier, for all injury or damage of any kind resulting from this work, to persons or property, including employees and property of the Owner. The Contractor shall exonerate, indemnify, and save harmless the Owner from and against all claims or actions, and all expenses incidental to the defense of any such claims, litigation, and actions, based upon or arising out of damage or injury (including death) to persons or 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 and shall assume and pay for, without cost to the Owner, 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. The Contractor expressly agrees to defend against any claims brought or actions filed against the Owner, where such claim or action involves, in whole or in part, the subject of the indemnity contained herein, whether such claims or actions are rightfully or wrongfully brought or filed.

28 INSURANCE REQUIREMENTS

28.01 The Contractor shall furnish the following along with Bonds and Contract

Documents sent to the Owner for execution:

1. Certificates of Insurance in companies doing business in Georgia and acceptable to the Owner covering:
   a. Statutory Workers Compensation Insurance.
   b. Comprehensive General Liability Insurance covering all operations with combined single limit of $1,000,000, inclusive of protection against bodily injury due to excavation, shoring, underpinning, and blasting, to the extent to which such risks are present.
   c. Comprehensive Automobile Liability Insurance with form coverage for all owned, non-owned and hired vehicles with combined single limit of $1,000,000.
   d. Umbrella or Excess Insurance coverage cannot be used to reach the limits stated above in (2.) and (3.)
2. Certificates of Insurance must be executed in accordance with the following provisions:
   a. Certificates to contain policy number, policy limits, and policy expiration date of all policies issued in accordance with this Contract;
   b. Certificates to contain the location and operations to which the insurance applies;
   c. Certificates to contain Contractor's protective coverage for any Subcontractor's operations;
   d. Certificates to contain Contractor's contractual liability insurance coverage;
3. Certificates are to be **issued** to: City of Ringgold

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

28.03 The Contractor agrees to carry statutory Workers Compensation Insurance and to have all Subcontractors likewise carry statutory Workers Compensation Insurance.

28.04 Insurance shall be written by a company licensed to do business in the State of Georgia.

28.05 The Contractor shall furnish evidence of coverage to the Owner. Form of policy shall be Completed Value Builder's Risk Form.

28.06 If after loss no special agreement is made, replacement of injured work shall be ordered and executed as provided for changes in the Work.

29 LAND AND RIGHTS-OF-WAY

29.01 Prior to entering on any land or right-of-way, the Contractor shall ascertain the requirements of applicable permits or easements obtained by the Owner, 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 otherwise required by

the Contract Documents, and shall compensate the Owner fully for any loss or expense arising from failure of the Contractor to perform as required by such entity.

29.02 The Contractor shall provide at his own expense and without liability to the the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.

30 PROTECTION OF WORK, PROPERTY, AND PERSONS

30.01 The Contractor will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. He will 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 Work 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.

30.02 The Contractor will comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the Work, all necessary warning safeguards for devices and safety and protection of the Work, the public, and adjoining property. He will notify owners of adjacent utilities when prosecution of the Work may affect them. The Contractor will remedy all damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

30.03 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. The Contractor shall mark the location of existing utilities and structures, 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. He shall notify the Owner promptly on discovery of any conflict between the Contract Documents and any existing facility.

30.04 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 Owner, 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 Owner within ten (10) days of the date of performing such work or deviations in the manner prescribed for a Change Order.

30.05 All existing utilities, both public and private, including sewer, gas, water, electrical, and telephone services, etc., 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 Owner harmless from the result of any damage that may occur as a result of the Contractor's activities.

31 PRIOR USE BY THE OWNER

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

32 CLEANING UP

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 Owner.

33 BARRICADES

33.01 Lanterns: Contractor shall provide continuously burning lanterns at all barricades and at 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.

33.02 Access to Site: Delivery of construction materials and equipment shall be only from locations approved by the Owner.

34 CHANGES IN THE WORK

34.01 The Owner may at any time, as the need arises, order changes within the scope of Work without invalidating the agreement. If such changes increase or decrease the amount due under the Contract Documents, or in the time required for performance of the Work, an adjustment may be authorized by Change Order.

34.02 The Landscape Architect, also, 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 Landscape Architect unless the Contractor believes that such Field Order entitles him to a change in Contract Price or Time, or both, in which event he shall give the Owner written notice thereof within fifteen days after the receipt of the ordered change, and the Contractor shall not execute such changes pending the receipt of an executed Change Order or further instruction from the Owner.

34.03 The Contract Price may be changed only by a Change Order. 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 or more 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 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.

35 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

35.01 It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning, rate of progress, and the time for completion of the Work are essential conditions of this Contract; and it is further mutually understood and agreed that the Work embraced in this Contract shall be commenced on a date to be specified in the Notice to Proceed.

35.02 The Contractor agrees that said work shall be prosecuted regularly, diligently, and uninterrupted at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, which 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.

35.03 If the said Contractor shall neglect, fail or refuse to complete the Work within the time herein specified, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the Owner, the amount specified herein, not as a penalty, but as liquidated damages.

35.04 It is further agreed that time is of the essence of each and every portion of this Contract and of the Specifications wherein a definite portion and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be the essence of this Contract. Provided, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor including, but not restricted to, acts of God, or to the public enemy, acts of the Owner, acts of another contractor in the performance of the contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather exceeding the average climatic conditions in the area of the Work.

35.05 Provided further, that the Contractor shall within ten (10) days from the beginning of such delay, notify the Owner, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter.

35.06 Where the Owner has beneficial occupancy of a usable facility prior to the expiration of the specified Contract Time, but where contract work items remain outstanding, the Owner, at its option, may, in lieu of all or a portion of liquidated damages owed by the Contractor, charge the Contractor for actual cost of administering the Contract for the period subsequent to expiration of the Contract

completion date (not to exceed the total amount which could be assessed under liquidated damages).

36 PAYMENTS TO CONTRACTOR

36.01 Cost Breakdown - The Contractor shall be prepared to submit a cost breakdown immediately after the opening of Bids. Cost breakdown shall be based on values of parts of the Work as divided according to sections of the Specifications, and shall be further subdivided into labor and materials.

36.02 Equipment, Materials, and Work Covered by Partial Payments - All equipment, materials, and work covered by progress payments shall, upon payment thereof, become the sole property of the Owner, 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.

36.03 Based upon Applications for Payment submitted to the Owner by the Contractor, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

36.04 The period covered by each Application for Payment shall be one calendar month ending on the 25th day of the month.

36.05 Provided an Application for Payment is received by the Owner not later than the 25th day of a month, the Owner shall make payment to the Contractor during the following month. If an Application for Payment is received by the Owner after the application date fixed above, payment shall be made by the Owner at the time of payment of the next timely-submitted Application for Payment.

36.06 Each Application for Payment shall be based upon the Schedule of Values submitted by the Contractor in accordance with the Contract Document. The Schedule of Values shall allocate the entire Contract Sum among the various portions of the Work and be prepared in such form and supported by such data to substantiate its accuracy as the Owner may require. This Schedule, unless objected to by the Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment.

36.07 Applications for Payment shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

36.08 Subject to the provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

36.09 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Total Contract Sum allocated to that portion of the Work in the Schedule of Values, less retainage of ten percent (10%). Pending final determination of cost to the Owner of changes in the Work;

36.10 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of ten percent (10%).

37 SCHEDULES, REPORTS, AND RECORDS

37.01 The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records, and other data as the Owner may request concerning work performed or to be performed.

37.02 Prior to the first partial payment estimate, the Contractor shall submit schedules showing the order in which he proposes to carry on the Work, including dates at which he will start the various parts of the Work, estimated date of completion of each part; and, as applicable, the dates at which special detail drawings will be required, and respective dates for submission of Shop Drawings, the beginning of manufacture, the testing and the installation of materials, supplies and equipment.

37.03 The Contractor shall also submit a schedule of payments that he anticipates he will earn during the course of the Work.

38 OWNER'S RIGHT TO SUSPEND OR TERMINATE WORK

38.01 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 repeatedly fails to supply sufficient skilled workers or suitable materials or equipment, 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 Documents, then the Owner may, without prejudice to any other right or remedy and after giving the Contractor and his surety a maximum of seven days from delivery of a written notice, declare the Contract in default, take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor, and call upon the surety to finish the Work by whatever method deemed expedient.

38.02 Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may therefore accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability. If the Contractor can establish or it is otherwise 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 Owner and the rights and obligations of the parties governed accordingly.

38.03 Upon seven days' written notice to Contractor, the Owner may, for its own

convenience and at its sole option, without cause and without prejudice to any other right or remedy of the Owner, elect to terminate the Contract. In such case, Contractor shall be paid (without duplication of any items):

1. For completed and acceptable work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such work;
2. For expenses sustained in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with Uncompleted Work;
3. For amounts paid in settlement of terminated contracts with Subcontractors and Suppliers;
4. Reasonable expenses directly attributable to termination including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals, and court costs;
5. Contractor shall not be paid on account of anticipatory profits or overhead or consequential damages.

39 ACCEPTANCE OF WORK AND FINAL PAYMENT

39.01 Before final acceptance of the Work and payment to the Contractor of the percentage retained by the Owner, the following requirements shall be complied with:

1. Final Inspection: Upon notice from the Contractor that his work is completed, the Landscape Architect shall make a final inspection of the Work, and shall notify the Contractor of all instances where his work fails to comply with the Drawings and Specifications, as well as any defects he may discover. The Contractor shall immediately make such alterations as are necessary to make the Work comply with the Drawings and Specifications.
2. Final Payment: When the Work under this Contract is completed, a final payment request shall be submitted representing the original Contract Price and Change Orders to the Contract. The final payment shall not be due until the Contractor shall have completed all work necessary and reasonably incidental to the Contract, including final clean-up.

39.02 Acceptance of the Work and the making of final payment shall not constitute a waiver of any claims by the Owner. Payments otherwise due the Contractor may be withheld by the Owner because of defective work not remedied and unadjusted damage to others by the Contractor or Subcontractors, vendors, or laborers.

39.03 All claims for final payment must be submitted within sixty (60) days after the Work has been completed and accepted by the Owner. Failure to present said claims within that period shall constitute a waiver of the claim by the Contractor. All claims are subject to final approval and audit by the Owner.

40 GUARANTEE AND CORRECTION OF WORK

The Contractor shall guarantee all Work to have been accomplished in conformance with the Contract Documents. Neither the final certificate of payment nor any provision of the Contract Documents, nor partial or entire occupancy or use of the Work by the

Owner, shall constitute an acceptance of any part of the Work not done in accordance with the Contract Documents, or relieve the Contractor of liability for incomplete or faulty materials or workmanship. The Contractor shall promptly remedy any omission or defect in the Work and pay for any damage to other improvements or facilities resulting from such omission or defect which shall appear within a period of one year from the date of final acceptance, unless a longer period is elsewhere specified. In the event that the Contractor should fail to make repairs, adjustments, or other remedy that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

41 VENUE

The law of the State of Georgia shall govern the construction of this Contract. The courts of the County in which the Owner is located shall have exclusive jurisdiction to try disputes arising under or by virtue of this Contract.

SUPPLEMENTARY GENERAL CONDITIONS

01 ARCHAEOLOGICAL RESOURCES

1.01 If archaeological resources are excavated or found, STOP WORK IMMEDIATELY and contact Owner.

02 SIDEWALK CONSTRUCTION

2.01 The contractor will not disrupt use of sidewalks on both sides of a street simultaneously.

03 SAFEGUARDS TO SITE AND PUBLIC

3.01 The contractor shall be responsible until final completion and final acceptance for the proper management, care and maintenance of the site and he shall be held liable for all damage to persons or property or both caused or allowed to have been caused by, or incident to, the execution of this contract (excepting the sole negligence of the Owner), and shall defend all suits or claims existing from, or incident to, the work under the contract (excepting the sole negligence of the Owner) without expense to the Owner, or the Landscape Architect; the Owner reserving the right to retain out of any payment sufficient money to settle any and all such claims.

04 EXISTING BUILDINGS:

4.01 Where existing buildings are on the site, the operation of these facilities shall not be interrupted without the Owner's permission. Secure permission in writing for demolition, building utility cut off, etc. Owner's permission will be required for workmen to occupy or be present in the existing building.

4.02 Existing occupied areas must be free of any construction materials, equipment or workmen except with permission. Existing driveways, entrances and required exits must be maintained sufficiently to permit adequate automotive, bus and foot traffic to and from the buildings.

05 AS-BUILT DRAWINGS:

5.01 As the work progresses, the Contractor shall record on a clean set of drawings, all change and deviations from the contract drawings. These as-built drawings shall show the exact fine locations of all sanitary sewers, water lines and storm sewer lines and other utilities by off-distance to surface improvements such as buildings or curbs. Upon completion of the work the Contractor shall deliver these-as built drawings to the Landscape Architect for transmission to the Owner.

06 REPAIRING DAMAGED WORK:

6.01 Should the Contractor or his workmen or material cause any damage to the work or material of others, or existing work, such shall be repaired or replaced by the party originally furnishing it, or causing such damage, or by such component party as the Landscape Architect may approve. Damage shall also include

damage to the grounds and site after lawns and planting beds have been implemented. Such repairs or replacement being under the direction of the Landscape Architect and the cost thereof shall be paid by the Contractor causing the damage.

07 TEMPORARY FACILITIES

Provide the following items which are to be removed before final acceptance of the work.

7.01 Toilets: Provide on the premises in an approved location a suitable chemical toilet approved by the Health Department with full screening for the use of the workmen during entire construction. Same shall be maintained in a sanitary condition. When existing toilet occupied buildings are on the premises, they are not to be used at any time.

7.02 Equipment and Work Area: An all weather surfaced area adequate for job parking autos, trucks and equipment and storage of materials must be provided.

7.03 Temporary Utilities: Contractor will provide and pay for all water, phone, electricity, and other temporary utilities until substantial completion and Owner acceptance.

7.04 Safety and Fire Protection: All applicable provisions of the job safety laws, the County Fire Marshal, and the National Fire Protection Association shall be followed. Fire extinguishers and first aid equipment shall be provided in the office. Lighting shall be provided for all areas to which workmen have access. Warning lights shall be provided, with barriers if indicated, at all hazards such as pits, ditches, fences, etc., including those outside the fenced work area.

Required Provisions

for

CITY OF RINGGOLD

TRAIL OF TEARS PHASE 2

October 27, 2017

INDEX TO SPECIAL PROVISIONS

First Use 2001 Specifications: November 01, 2002
Revised: November 19, 2006

PROMPT PAYMENT:

Prime Contractors, who sublet a portion of their work, shall pay their subcontractors for satisfactory performance of their contracts no later then 10 calendar days from receipt of each payment made to them.

Any delay or postponement of payment among the parties may take place only for good cause with prior written approval from the Department.

If the contractor is found to be in noncompliance with these provisions, it shall constitute a breach of contract and further payments for any work performed may be withheld until corrective action is taken. If corrective action is not taken, it may result in termination of the contract.

All subcontract agreements shall contain this requirement.

BUY AMERICA

Revised: March 25, 1992
Revised: January 7, 1994
Revised: June 9, 1995
First Use 2001 Specifications: November 01, 2002

All manufacturing processes for steel and iron materials and steel and iron coatings permanently incorporated into this project must occur in the United States of America. However, pig iron and processed, pelletized, or reduced iron ore used in the production of these products may be manufactured outside the United States.

This requirement, however, does not prevent a minimal use of foreign materials and coatings, providing that the cost of materials and coatings used does not exceed one-tenth of one percent (0.1 percent) of the total contract cost or $2500.00 whichever is greater.

NOTE: Coatings include: epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of the material.

CONVICT PRODUCED MATERIALS

March 25, 1992
Revised: September 6, 1993
First Use 2001 Specifications: November 01, 2002

Materials produced by convict labor after July 1, 1991, may not be used for Federal-Aid highway construction projects unless it meets the following criteria:

1. The materials must be produced by convicts who are on parole, supervised release or probation from a prison; or,

2. If produced in a qualified prison facility, the amount of such materials produced in any 12-month period in such facility for such construction during the 12-month period ending July 1, 1987. A qualified prison is defined as one producing convict made materials prior to July 1, 1987.

Technical Specifications

for

CITY OF RINGGOLD

TRAIL OF TEARS PHASE 2

October 27, 2017

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INDEX TO PROJECT SPECIFICATIONS

01 SUMMARY OF WORK

1.00 GENERAL

1.01 SUMMARY

A. The Owner is:
City of Ringgold
150 Tennessee Street
Ringgold, GA 30736
Dan Wright, City Manager

1.02 PROJECT DESCRIPTION

A. This project involves the installation of a 10' wide concrete multi-use trail and a concrete canoe launch along West Chickamauga Creek on city owned property. All design criteria follows the *GDOT Standard Specifications, 2001 Edition and the GDOT Supplemental Specifications for Construction of Roads and Bridges, 2008 Edition*.

B. The Prime Design Consultant for this project is (herein referred to as the
KAIZEN COLLABRATIVE
1668 Belle Isle Circle, NE
Atlanta, Georgia 30329
404.626.3519
Greta deMayo, RLA

1.03 REGULATORY REQUIREMENTS

All work shall be done in conformance with the rules and regulations of the local authority having jurisdiction. The Owner is responsible for obtaining and paying for the building permits. The Contractor is responsible for obtaining and paying for all applicable development fees and permits.

1.04 ACCESS TO THE SITE AND USE OF THE PREMISES

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. Other areas are off limits to all construction personnel.

C. Storage areas will be available on site.

D. Do not install, or allow to be installed, signs other than specified sign(s) and signs identifying the principal entities involved in the project.

2.00 PRODUCTS (NOT USED)

3.00 EXECUTION

3.01 PRE-CONSTRUCTION MEETING

A. A pre-construction meeting will be held at a time and place designated by the Owner, for the purpose of identifying responsibilities of the Contractor personnel and explanation of administrative procedures.

B. The Contractor shall also use this meeting for the following minimum agenda:

- Construction schedule.
- Use of areas of the site.
- Delivery and storage.
- Safety.
- Security.
- Cleaning up.

C. The Contractor shall also provide at this meeting Subcontractor procedures relating to:

- Submittals.
- Change orders.
- Applications for payment.
- Record documents.

D. Attendees shall include:

- The Primary Design Consultant and any Subconsultants.
- The Contractor and its Superintendent.
- Major subcontractors, suppliers, and fabricators.
- Others interested in the work.

3.02 SECURITY PROCEDURES

A. Limit access to the site to persons involved in the work.
B. Provide secure storage for materials for which the Owner has made payment and which are stored on site.
C. Secure completed work as required to prevent loss.

3.03 COORDINATION

If necessary, inform each party involved, in writing, of procedures required for coordination; include requirements for giving notice, submitting reports, and attending meetings.

(End of Section)

02 TEMPORARY FACILITIES

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

1.01 RELATED DOCUMENTS:

Drawings and general provisions of Contract, including Supplementary General Conditions and other Division-1 Specification sections, apply to work of this section.

1.02 DESCRITION OF REQUIREMENTS:

Definitions: Specific administrative and procedural minimum actions are specified in this section, as extensions of provisions in General Conditions and other contract documents. These requirements have been included for special purposes as indicated. Nothing in this section is intended to limit types and amount of temporary work required, and no omission from this section will be recognized as an indication by the Landscape Architect that such temporary activity is not required for successful completion of the work and compliance with requirements of contract documents.

1.03 JOB CONDITIONS:

A. General: Establish and initiate use of temporary facility at time first reasonably required for proper performance of the work. Temporary use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.

B. Conditions of Use: Install, operate, maintain and protect temporary facilities in a manner and at locations which will be safe, non-hazardous, sanitary and protective of persons and property, and free of deleterious effects.

1.04 TEMPORARY CONSTRUCTION FACILITIES:

The types of temporary construction facilities required include, but not limited to, drainage, de-watering equipment, fencing for enclosure of work, and establishing temporary electricity and water hook-ups. Provide facilities reasonably required to perform construction operations properly and adequately.

1.05 SECURITY/PROTECTION PROVISIONS:

The types of temporary security and protection provisions required include, but not by way of limitation, fire protection, barricades, warning signs/lights, work area enclosure/lockup, personnel security program (theft prevention), silt fence installation, construction exit, tree protection fencing, job sign, and similar site provisions intended to minimize property losses, personal injuries provisions intended to minimize property losses, personal injuries and claims for damages at the project site. Provide security/protection services in coordination with activities and in a manner to achieve 24-hour, 7-day-per-week effectiveness. **(End of Section)**

03 EROSION AND SEDIMENTATION CONTROL

GDOT Sections 160,161,162, 163, 165,166, 167, 170,171

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

1.01 SCOPE

A. Work described in this section includes temporary erosion control during construction and the establishment of permanent control after construction. Temporary erosion control includes, but is not limited to, the installation and maintenance of hydroseeding of specific grass in disturbed areas, silt fences and hay bales, sediment ponds and construction exits during construction.

B. Submittals and Permits
   1. The Contractor shall submit description, drawings and schedule for proposed temporary and permanent erosion and sedimentation controls to local authority for permitting.
   2. All fines imposed for improper or inadequate erosion control, or the absence thereof, shall be paid by the Contractor.
   3. Land disturbance activity shall not commence until the Land Disturbance Permit is issued and displayed prominently at the Project Site. The Owner shall verify posting of permit before allowing the Contractor to proceed.

C. Basic Principles
   1. Conduct the earthwork and excavation activities in such a manner to fit the topography, soil type and condition.
   2. Minimize the disturbed area and the duration of exposure to erosive elements.
   3. Stabilize disturbed areas immediately at no additional cost to the Owner.
   4. Safely convey run-off from the site to a stable outlet such that erosion will not be increased off site.
   5. Retain sediment on site that was generated on site.
   6. Minimize encroachment upon watercourses.

D. Implementation
   1. Specified erosion and sediment control measures shall be installed prior to any clearing, grading, excavation, filling, or other land disturbing activities, except those operations necessary to install such measures.
   2. The erosion and sedimentation control measures shown on the drawings are minimal requirements. The Contractor's method of operations may dictate additional measures not shown on the drawings which shall be the Contractor's responsibility to determine and install.
   3. The Contractor's failure to stabilize disturbed areas immediately following intermediate or final grading may dictate a stoppage of work by the Landscape Architect until such measures are erected.

4. The Contractor shall notify the Landscape Architect of any changes and/or additions to the erosion and sedimentation control plan necessary to accommodate the Contractor's methods of operation.
5. The Contractor shall be solely responsible for control of erosion and prevention of sedimentation of any adjacent waterways.
6. The Contractor shall be responsible for the cost of repairs for damage to the Owner's property, adjacent properties, and any of the work of this Project, resulting from inadequate or improperly installed erosion control measures, or the absence thereof.
7. The Contractor shall install controls, which ensure that storm water and drainage from the disturbed areas of the Project Site shall pass through some type of filter requirements of the current standards of the State of Georgia.

E. Temporary erosion and sedimentation control procedures shall be directed toward:
   1 Preventing soil erosion at the source.
   2. Preventing silt and sediment from entering waterways, streets, drives, public rights-of-way and all adjacent properties and easements.

F. Permanent Erosion Control: Permanent erosion control measures shall be implemented to prevent sedimentation of the waterways and to prevent erosion of the Project Site.

1.02 QUALITY ASSURANCE

A. General: Perform all work under this Section in accordance with all pertinent rules and regulations including, but not necessarily limited to, those stated above and these Specifications.

B. Conflicts: Where provision of pertinent rules and regulations conflict with these Specifications, the more stringent provisions shall govern.

C. Wherever the terms "approve", "approval" or "approved" are used, they shall mean the approval of the Landscape Architect.

D. Materials and workmanship are subject to inspection by the Landscape Architect or Owner at any time and place, before or after installation, for compliance.

E. Perform work in compliance with the *Manual for Erosion and Sediment Control in Georgia* and the *On-Site Erosion Control Handbook*.

F. Daily Inspections: Contractor shall inspect sediment and erosion control measures at the end of each working day and provide immediate repairs or maintenance before the end of the work day. Failure to bring measures into compliance before the end of the workday shall result in a stoppage of work until compliance is obtained.

2.00 PRODUCTS

2.01 TEMPORARY EROSION AND SEDIMENTATION CONTROL MATERIALS

A. Silt fence fabric shall meet the Georgia Department of Transportation's TEMPORARY SILT FENCE, most recent edition.

B. Posts shall be square-cut soft wood, minimum three feet long, with a diameter of at least 2x2 inches, and shall have a flat, saw-cut top and a machine-turned point at the bottom. Spacing shall be not more than six feet on center.

C. Hay bales shall be clean, seed-free cereal hay type.

D. Filter stone shall be crushed stone conforming to the Georgia Department of Transportation's requirements.

E. Stone for Construction Exits: Provide stone meeting requirements of ASTM D 448, size #1 (1-1/2 to 3-1/2-inch diameter).

2.02 FILTER FABRIC

A. The filter fabric for use under riprap shall be a monofilament, polypropylene woven fabric meeting the specifications as established by Task Force 25 for the Federal Highway Administration.

B. The filter fabric shall have an Equivalent Opening Size (EOS) of 70.

C. Filter fabric under riprap shall be equal to Mirafi, Amoco or Exxon.

3.00 EXECUTION

3.01 GENERAL

A. Standards: Provide all materials and promptly take all actions necessary to achieve effective erosion and sedimentation control in accordance with the *Georgia Erosion and Sedimentation Act*, the *On-Site Erosion Control Handbook*, and the *Manual for Erosion and Sediment Control in Georgia*, as shown on Drawings, and as specified herein.

B. Implementation: The work shown on the approved plans and working drawings shall be considered a minimum requirement. What is shown shall not relieve the Contractor of the responsibility to actively take all steps necessary to control soil erosion and sedimentation or to immediately install additional measures as required.

3.02 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Silt dams, silt fences, traps, barriers, check dams, appurtenances and other temporary measures and devices shall be installed as indicated on the approved plans and drawings, shall be maintained until no longer needed and shall then be removed. Deteriorated hay bales and dislodged filter stone shall be replaced with new materials.

B. Temporary erosion and sedimentation control devices shall be installed and maintained from the initial land disturbance activity until the satisfactory completion and establishment of permanent erosion control measures.

C. Placement of Filter Fabric: The surface to receive fabric shall be prepared to a relatively smooth condition free from obstructions, depressions and debris. The fabric shall be placed with the long dimension running up the slope and shall be placed to provide a minimum number of overlaps. The strips shall be placed to provide a minimum width of one foot of overlap for each joint. The filter fabric shall be anchored in place with securing pins of the type recommended by the fabric manufacturer. Pins shall be placed on or within 3-inches of the centerline of the overlap. The fabric shall be placed so that the upstream strip overlaps the downstream strip. Any contaminated fabric or any fabric damaged during its installation or during placement of riprap shall be removed and replaced with uncontaminated and undamaged fabric at no expense to the Owner.

3.03 PERMANENT EROSION CONTROL

A. Permanent erosion control shall include:
   1. Restoring the work site to its original contours, unless shown otherwise on the Drawings or directed by the Landscape Architect.
   2. Permanent vegetative cover shall be performed in accordance with Article 3.04 of this Section.
   3. Permanent stabilization of steep slopes shall be performed in accordance with Article 3.05 of this Section, or as directed by the Landscape Architect.

B. Permanent erosion control measures shall be implemented as soon as practical after the completion of pipe installation or land disturbance for each segment of the Project. In no event shall implementation be postponed when no further activities related to pipe installation or grading will impact that portion or segment of the Project.

3.04 GRASSING

A. General
   1. All references to grassing, unless noted otherwise, shall relate to establishing temporary and permanent vegetative cover as specified herein for seeding, fertilizing, mulching, etc.
   2. Specified permanent grassing shall be performed at the first appropriate season following establishment of final grading in each section of the site.
   3. Permanent vegetative cover shall include sod, seed, shrubs, trees and ground cover as shown on the Drawings.

4. Permanent grassing shall mean seeding and sodding as described on Drawings and as specified.

B. Replant grass removed or damaged in residential areas using the same variety of grass and at the first appropriate season. Outside of residential or landscaped areas, grass the entire area disturbed by the work, on completion of work, as specified on the Drawings.

C. Grassing activities shall comply with the Manual for Erosion and Sediment Control in Georgia, and as specified on the Drawings. Where permanent grassing cannot be immediately established due to season or other circumstances, the Contractor shall provide temporary vegetative cover until the appropriate season for application of permanent seeding. The Contractor shall return to the site, remove existing temporary vegetative cover as required, prepare seedbed as specified for permanent seeding, and install permanent vegetation.

(End of Section)

04 DEMOLITION

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

1.01 PROJECT CONDITIONS

A. Conduct demolition activities without interference of vehicle and pedestrian traffic in adjacent areas

B. Protect portions of existing buildings to remain, utilities, and benchmarks from damage. Repair or replace if damaged by this Work, at no additional cost.

2.00 PRODUCTS

(Excluded)

3.00 EXECUTION

3.01 SITE DEMOLITION

A. Remove existing above and below construction indicated to be removed to full depth encountered.

B. Disconnect and seal off abandoned utilities and utilities removed encountered prior to start of demolition. Disconnect utilities below existing grade level of public utility being disconnected. Maintain utility service to facilities in use.

(End of Section)

05 CLEARING AND GRUBBING

GDOT Sections: 201,202,204,205,206,207,208

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

1.01 SCOPE

A. Clearing and grubbing includes, but is not limited to, removing from the Project site, 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. Precautionary measures that prevent damage to existing features to remain are part of the Work.

B. Clearing and grubbing operations shall be coordinated with temporary and permanent erosion and sedimentation control procedures.

1.02 QUALITY ASSURANCE

A. The Contractor shall comply with applicable codes, ordinances, rules, regulations and laws of local, municipal, state or federal authorities having jurisdiction over the Project. All required the Contractor should obtain permits of a temporary nature for construction operations.

B. Open burning, if allowed, shall first be permitted by the local authority having jurisdiction. The Contractor shall notify the local fire department and abide by fire department restrictions.

1.03 JOB CONDITIONS

Location of the Work: The area to be cleared and grubbed is shown schematically on the Drawings. It includes all areas designated for construction.

2.00 PRODUCTS

2.01 EQUIPMENT

The Contractor shall furnish equipment of the type normally used in clearing and grubbing operations including, but not limited to, tractors, trucks, loaders, root rakes and burning equipment.

3.00 EXECUTION

3.01 CLEARING AND GRUBBING

A. Materials to be cleared, grubbed and removed from the Project site include, but are not limited to, all trees, stumps, roots, brush, trash, organic matter, paving, miscellaneous structures, debris and abandoned utilities.

B. Grubbing shall consist of completely removing roots, stumps, trash and other debris from all graded areas so that topsoil is free of roots and debris and as noted on the Drawings. Topsoil is to be left sufficiently clean so that further picking and raking will not be required.

C. All stumps, roots, foundations and planking embedded in the ground shall be removed and disposed of. Piling and butts of utility poles shall be removed to a minimum depth of two feet below the limits of excavation for structures, trenches and roadways or two feet below finish grade, whichever is lower.

D. Landscaping features shall include, but are not necessarily limited to, fences, cultivated trees, property corners, man made improvements, and other signs within the right-of way and easement. The Contractor shall take extreme care in moving landscape features and promptly re-establishing these features.

E. Surface rocks and boulders shall be grubbed from the soil and spoiled at a location to be determined on the site if not suitable as rip rap.

F. The entire construction area shall be grubbed by heavy tractors with root rakes. Raking shall generally proceed along the contour rather than up and down slopes so as to inhibit soil erosion.

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, in the Landscape Architect's opinion, is significantly damaged shall be replaced with new fence material.

J. The Contractor shall exercise special precautions for the protection and preservation of trees, fences, etc. situated within the limits of the construction area but not directly within excavation and/or fill limits. The Contractor shall be held liable for any damage the Contractor's operations have inflicted on such property.

K. The Contractor shall be responsible for all damages to existing improvements resulting from Contractor's operations.

3.02 DISPOSAL OF DEBRIS

A. 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, city and municipal regulations. No debris of any kind shall be deposited in any stream or body of water, or in any street or alley.

B. 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, shoved onto abutting private properties or buried on the Project.

C. When approved in writing by the Landscape Architect and when authorized by the proper authorities, the Contractor may dispose of such debris by burning on the Project site provided all requirements set forth by the governing authorities are met.

D. The authorization to burn shall not relieve the Contractor in any way from damages, which may result from Contractor's operations. On easements through private property, the Contractor shall not burn on the site unless written permission is also secured from the property owner, in addition to authorization from the proper authorities.

(End of Section)

06 EARTHWORK

GDOT Sections: 209,210,211,212,214,215,216,217,218,219,221

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

1.01 SCOPE

A. This Section includes earthwork and related operations, including, but not limited to, clearing and grubbing the construction site, dewatering, excavating all classes of material encountered, pumping, draining and handling of water encountered in the excavations, handling, storage, transportation and disposal of all excavated and unsuitable material, construction of fills and embankments, backfilling around structures and pipe, backfilling all trenches and pits, compacting, all sheeting, shoring and bracing, preparation of subgrades, surfacing and grading, and any other similar, incidental, or appurtenant earthwork operation which may be necessary to properly complete the work.

B. The Contractor shall provide all services, labor, materials and equipment required for all earthwork and related operations necessary or convenient to the Contractor for furnishing complete Work as shown on the Drawings or specified in these Contract Documents.

1.02 GENERAL

A. Earthwork operations shall be performed in a safe and proper manner with appropriate precautions being taken against all hazards.

B. All excavated and filled areas for structures, trenches, fills, topsoil areas, embankments and channels shall be maintained by the Contractor in good condition at all times until final acceptance by the Owner. The Contractor using material of the same type, as the damaged material shall repair all damage caused by erosion or other construction operations.

C. Earthwork within the rights-of-way of the Department of Transportation and the local jurisdiction shall be done in accordance with requirements and provisions of the permits issued by those agencies for the construction within their respective rights-of-way. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these Specifications.

D. The Contractor shall control grading in a manner to prevent surface water from running into excavations. Obstruction of surface drainage shall be avoided and means shall be provided whereby storm water can flow uninterrupted in existing gutters, other surface drains or temporary drains. Free access must be provided to all fire hydrants and meters.

E. No classification of excavated materials will be made. Excavation work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the work, regardless of the type, character, composition or condition thereof.

F. Tests for compaction and density when deemed necessary by the Owner shall be conducted by an independent testing laboratory selected by the Contractor. The Contractor as a part of this Contract shall pay for costs of compaction tests performed by an independent testing laboratory. The Contractor shall make all necessary excavations and shall supply any samples of materials necessary for conducting compaction and density tests. The Contractor shall pay the cost of all retests made necessary by the failure of materials to conform to the requirements of these Contract Documents.

1. The soils testing laboratory is responsible for the following:
   a. Laboratory compaction tests in accordance with ASTM D 698.
   b. Field density tests in accordance wit ASTM D 1556, D 2937, D 2922 or D 2167 for each two feet of lift; one test for each 5,000 square feet of fill.
   c. Inspecting and testing stripped site, subgrades and proposed fill materials.

2. The Contractor's duties relative to testing include:
   a. Notifying laboratory of conditions requiring testing.
   b. Coordinating with laboratory for field testing.
   c. Providing representative fill soil samples to laboratory for test purposes. Providing 50 pound samples of each fill soil.
   d. Paying costs for additional testing performed beyond the scope of that required and for retesting where initial tests reveals nonconformance with specified requirements.

3. Inspection
   a. Earthwork operations, suitability of excavated materials for fill and backfill, and placing and compaction of fill and backfill is subject to inspection. The Designer and the Owner will observe earthwork operations.
   b. Foundation subgrades and proofrolling operations are required to be inspected by a geotechnical Designer to verify suitable bearing and construction.

G. All earthwork operations shall comply with the requirements of OSHA construction Standards, Part 1926, Subpart P, Excavations, Trenching, and Shoring, and Subpart O, Motor Vehicles, Mechanized Equipment, and Marine Operations, and shall be conducted in a manner acceptable to the Landscape Architect.

H. It is understood and agreed that the contractor has made a thorough investigation of the surface and subsurface conditions of the site and any special construction problems, which might arise as a result of nearby watercourses and floodplains. The Contractor shall be responsible for

providing all services, labor, equipment and materials necessary or convenient to the Contractor for completing the work within the time specified in these Contract Documents.

2.00 PRODUCTS

2.01 MATERIALS AND CONSTRUCTION

A. Earthwork Materials

1. Fill Material, General
   a. Approval Required: All fill material shall be subject to the approval of the Designer.
   b. Notification: For approval of imported fill material, notify the Landscape Architect at least one week in advance of intention to import material, designate the proposed borrow area and permit the Designer to sample as necessary from the borrow area for the purpose of making acceptance tests to prove the quality of the material.

2. On-Site Fill Material: All on-site fill material shall be soil exclusive of organic matter, frozen lumps or other deleterious substances. On-site fill material shall contain no rocks or lumps over 4-inches maximum in dimension.

3. Imported Fill Materials: All imported fill material shall meet the requirements of on-site fill material.

4. Sand Cushions and Sand Fill: Sand cushions and sand fill shall consist of a sand-gravel fill of such gradation that 100 percent will pass a 3/8-inch sieve and not more than 10 percent by weight is lost by washing.

5. Coarse Aggregate: Coarse aggregate shall conform to the Georgia Department of Transportation Standard Specifications for No. 57 Stone, and shall have the following gradation:

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

6. Fine Aggregate: All fine aggregate shall conform to the Georgia Department of Transportation Standard Specifications for Construction and shall have the following gradation:

Sieve Size	% Passing
No. 4	100
No. 16	25 - 75
No. 100	0 - 25

7. Pea Gravel: Pea gravel shall be clean, naturally rounded aggregate, 1/8 to 3/4-inch in diameter per ASTM C 33.

8. Top Soil: Dark, organic weed free loam, free of muck.

B. Sheeting, Bracing and Timbering: The Contractor shall furnish, place and maintain all sheeting, bracing and timbering required to properly support trenches and other excavations in open cut and to prevent all movement of the soil, pavement, structures or utilities outside of the trench or pit.

1. General
   a. Cofferdams and bracing design, including computations, shall be prepared by the Contractor before commencing construction operations. Drawings and design computations shall be signed and sealed by a professional Designer registered in the State of Georgia. The drawings and design computations shall be submitted to the Designer.

   b. Sheeting, bracing and timbering shall be so placed as to allow the work to be constructed to the lines and grades shown on the drawings and as ordered by the Designer.

   c. If at any time the method being used by the Contractor for supporting any material or structure in or adjacent to any excavation is not reasonably safe, the Contractor shall provide additional bracing and support necessary to furnish the added degree of safety.

   d. All sheeting in contact with the concrete or masonry shall be cut off as directed by the Designer and left in place.

2. Timber: Timber may be substituted for steel sheet piling when approved by the Designer. Timber for shoring, sheeting or bracing shall be sound and free of large or loose knots and in good condition. Size and spacing shall be in accordance with OSHA regulations.

3. Steel Sheet Piling: Steel sheet piling shall be the continuous interlock type. The weight, depth and section modules of the sheet piling shall be sufficient to restrain the loads of earth pressure and surcharge from existing foundations and /or live loads. Procedure 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. Steel piling within three feet of an existing building, structure or pipeline shall remain in place, unless otherwise directed by the Designer.

4. Remove bracing and sheeting in units when backfill reaches the point necessary to protect the structures and adjacent property. Leave sheeting in place when in the opinion of the Designer it cannot be safely removed. Cut off sheeting left in place at least two feet below the surface.

5. Other Materials: All other materials, not specifically described but required for proper completion of the work of this Section, shall be as selected by the Contractor subject to the approval of the Designer.

6. Stockpile Area: The stockpile area shown on the Drawings, or as directed by the Designer, shall be used to stockpile soil material for backfilling around structures and to stockpile needed topsoil.

3.00 EXECUTION

3.01 GENERAL

A. Safety: Comply with local regulations and with the provisions of the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America, Inc., Occupational Safety and Health Act and all other applicable safety regulations.

B. General: Perform all rough and finish grading required to attain the elevations indicated on the Drawings. Perform finish grading to an accuracy of ±0.10 foot.

C. Topsoil

1. Remove all topsoil to a depth at which subsoil is encountered, from all areas under building, pavements, and from all areas which are to be cut to lower grades or filled.

2. With the Designer's approval, topsoil to be used for finish grading shall be stored on the site.

3. Other topsoil may be used for fill in non-critical areas with approval of the Designer.

4. Properly dispose of all excess topsoil off site.

D. Bracing and Sheeting

1. Furnish, put in place, and maintain all sheeting, bracing and shoring as may be required to properly support the sides of all excavations and to prevent all movement of earth which could in any way injure the work, adjacent property or workers.

2. Properly support all excavations where necessary to conform to all pertinent rules and regulations and these Specifications, even though, such locations may not be indicated on the Drawings.

3. Exercise care in the removal of sheeting, shoring, bracing and timbering to prevent collapse or caving of the excavation faces being supported and damage to the work and adjacent property.

4. Do not leave any sheeting or bracing in the trench or excavation after completion of the work, unless approved by the Designer.

E. Obstructions

1. Remove and dispose of all trees, stumps, roots, boulders, sidewalks, driveways, pavement, pipes and the like, as required for the performance of the work.

2. Exercise care in excavating around catch basins, inlets and manholes so as not to disturb or damage these structures.

3. Avoid removing or loosening castings or pushing dirt into catch basins, inlets and manholes.

4. Damaged or displaced structures or castings shall be repaired, replaced and dirt entering the structures during the performance of the work shall be removed at no additional cost to the Owner.

F. Utilities to be abandoned

1. When pipes, conduits, sewers or other structures are removed from the trench leaving dead ends in the ground, such ends shall be fully plugged or sealed with brick and non-shrink grout.

2. Abandoned structures such as manholes or chambers shall be entirely removed unless otherwise specified or indicated on the Drawings.

3. All material from abandoned utilities which can be readily salvaged shall be removed from the excavation and stored on the site at a location as directed by the Owner.

4. All salvageable materials will remain the property of the Owner unless otherwise indicated by the Owner.

G. Extra Earth Excavation

1. In case soft, excessively wet, or otherwise unsuitable material is encountered below the final subgrade elevation of an excavation or underneath a structure, the Designer may order the removal of this material and its replacement with crushed stone or other suitable material in order to make a suitable foundation for the construction.

2. All extra excavation made at the order of the Designer will be paid for on the basis of actual volume of the excavation as measured by the Owner and or Designer.

H. Treatment after Completion of Grading

1. After grading is completed, permit no further excavation, filling or grading, except with the approval of the Designer.

2. Use all means necessary to prevent the erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

3.02 EXCAVATION

A. Method

1. All excavation shall be by open cut from the surface except as indicated on the Drawings.

2. All excavations for pipe appurtenances and structures shall be made in such manner and to such depth and width as will give ample room for building the structures and for bracing, sheeting and supporting the sides of the excavation, for pumping and draining groundwater and wastewater which may be encountered, and for the removal from the excavation of al materials excavated.

3. Take special care so that the soil below the bottom of the structure to be built is left undisturbed.

B. Grades

1. Excavate to grades indicated on the Drawings.

2. Where excavation grades are not indicated on the Drawings, excavate as required to accommodate installation.

C. Disposal of Excavated Material

1. Properly dispose of all excavated material not needed to complete filling, backfilling and grading.

2. Dispose of unsuitable excavated material off site at locations secured by the Contractor and in accordance with all requirements of federal, state, city and municipal regulations. No debris of any kind shall be deposited in any stream or body of water, or on any street or alley. No debris shall be deposited on any private property except by written consent of the property owner. In no case shall any unsuitable material be left on the Project, shoved onto abutting private properties, or be buried in embankments or trenches on the Project.

3.03 EXCAVATING FOR STRUCTURES

A. Excavation: Excavation shall include all substances to be excavated. Excavation for structures shall be to limits not less than two feet outside wall lines, to allow for formwork and inspection, and further as necessary to permit the trades to install their work. All materials loosened or disturbed by excavation shall be removed from surfaces to receive concrete or crushed stone.

B. Excavation for Foundations: Footings and slabs on grades shall rest on undisturbed earth, rock or compacted materials to insure proper bearing.

1. Unsuitable Foundation Material
   a. Any material in the opinion of the Designer, which is unsuitable for foundation, shall be removed and replaced with compacted crushed stone, or with compacted fill material as directed by the Designer. Crushed stone shall meet the requirements of the Georgia Department of Transportation Specification for No. 57 stone.
   b. No determination of unsuitability will be made until all requirements for dewatering are satisfactorily met.

2. Foundation in Rock
   a. Foundations for a structure shall be on similar materials. Should excavation for a foundation be partially in rock, the Contractor shall undercut that portion of the rock 12-inches and bring the excavation to grade with compacted crushed stone.

3. Pipe Trenches Beneath Structures
   a. Where piping or conduit passes beneath footings or slabs resting on grade, trenches shall be excavated to provide a minimum of 6-inches clearance from all surfaces of the pipe or conduit. The trench shall be backfilled to the base of the structure with concrete.
   b. No separate payment will be made for concrete backfill of trenches beneath structures. The cost of this work and all costs incidental to it shall be included in the price bid for the item to which the work pertains.

4. Unauthorized Excavation
   a. Care shall be taken that excavation does not extend below bottom levels of footings or slabs on earth or rock. Should the excavation, through carelessness or neglect, be carried below such levels, the Contractor shall fill in the resulting excess excavation with concrete under footings and compacted crushed stone or other approved material under slabs. Crushed stone or gravel shall meet the Georgia Department of Transportation Specification for No. 57 stone. Should excavation be carried beyond outside lines of footings such excess excavation shall be filled with concrete, or formwork shall be provided, as directed by the Designer.

   b. Additional costs of corrective work, made necessary by unauthorized excavation of earth or rock, shall be borne by the Contractor.

5. Unsuitable Bearing
   a. If suitable bearings for foundations are not encountered at the elevations indicated on the Drawings, immediately notify the Designer.
   b. Do not proceed further until instructions are received and necessary measurements made for purposes of establishing additional volume of excavation.

3.04 FILL

A. Controlled Fill

1. The fill for roadways, parking areas, walks, structures, and building slabs on grade shall be controlled fill.

2. After the existing ground or excavated area has been proofrolled and examined by the Designer, all holes and other irregularities shall be filled and compacted before the main fill is placed.

3. The fill shall be placed in even layers not exceeding 8-inches in depth and shall be thoroughly compacted as herein specified.

4. If an analysis of the soil being placed shows a marked difference from one location to another, the fill being placed shall not be made up of a mixture of these materials.

5. Each different type of material shall be handled continuously so that field control of moisture and density may be based upon a known type of material.

6. No fill shall be placed following a heavy rain without first making certain on isolated test areas that compaction can be obtained without damage to the already compacted fill.

7. All areas of subgrade shall be evaluated and approved by the Designer prior to fill placement.

8. Small boulders and blast rock, 24-inches and smaller in dimension may be placed in deep fills where approved by the Geotechnical Lab. Rock fill shall extend no closer than 5 feet of final grades.

B. Proofrolling

1. All areas where roadways, parking areas, sidewalks, structures, and buildings are to be constructed shall be proofrolled to detect soft spots prior to the placement of fill material or structure material.

2. Proofrolling shall consist of the moving a 20-30 ton loaded dump truck or pneumatic-tired roller over the subgrade before the subgrade is shaped. Proofrolling shall be witnessed by the Designer. Where steepness of grade will not allow proofrolling, subgrade shall be evaluated by the Designer.

3. Pneumatic-tired rollers shall have not fewer than four pneumatic tired wheels which shall be of such size and ply that tire pressures can be maintained between 80 and 100 pounds per square inch for 25,000 pound wheel load during rolling operations. Unless otherwise required, rolling shall be done with tires inflated to 90 psi. The roller wheels shall be located abreast in a rigid steel frame. Each wheel shall be loaded with

an individual weight box so that each wheel will bear an equal load when traversing uneven ground. The weight boxes shall be suitable for ballast loading such that the load per wheel shall be 25,000 pounds. The spacing of the wheels shall insure that the distance between the nearest edges of adjacent tires shall be not greater than on-half of the tire width of a single tire at the operating pressure for a 25,000 pound wheel load. The roller shall be operated no faster than 10 miles per hour.

4. Subgrade shall be proofrolled with six passes of the truck or roller. Depressions that develop during the proofrolling operation shall be filled with suitable material and those filled areas shall be proofrolled with six passes of the roller. If, after having been filled and proofrolled, the subgrade still contains depressions, the area shall be undercut to the full depth of the soft material or five feet whichever is less, backfilled, recompacted, and rolled to achieve a subgrade acceptable to the Designer.

5. After the proofrolled subgrade has been accepted by the Designer, the surface of the subgrade shall be finish rolled with a smooth steel wheel roller weighing not less than 10 tons. Finished surface of the subgrade shall be within a tolerance of 1/4-inch at every point.

6. Conduits, pipes, culverts and underdrains shall be neither disturbed nor damaged by proofrolling operations. Rollers shall neither pass over, nor approach closer than five feet to, conduits, pipes, culverts and underdrains unless the tops of those products are deeper than three feet.

C. Placement

1. Prior to placement of any material in embankments, the area within embankment limits shall be stripped of topsoil and all unsuitable materials removed as described under Article 3.02. The area shall then be scarified to a depth of at least 6-inches.

2. Fill materials shall be placed in continuous approximately horizontal layers extending the full width of the embankment cross-section and the full dimension of the excavation where practical and having a net compacted thickness of not over 6-inches.

3. Fill materials shall be placed at optimum moisture content within practicable limits (not less than three percent above or below optimum). Optimum moisture shall be maintained by sprinkling the layers as placed or by allowing materials to dry before placement.

4. Bench new fill into existing slope materials for existing slopes steeper than 5 (H) to 1 (V). Benches shall be generally horizontal with a maximum height of two feet.

5. New fill shall be adequately tied into in-situ soils so that no predefined plane of weakness exists between new fills and in-situ materials.

D. Compaction

1. Fill materials shall be compacted to dry densities as determined by the Standard Proctor Compaction Test performed in accordance with ASTM D 698.

2. Compact each layer of backfill and fill materials and the top 12 inches of subgrade forstructures, roadways, parking areas, sidewalks, courts and buildings shall be compacted to 95 percent of the maximum dry density (ASTM D 698). Fill placed for general site grading shall be compacted to 90 percent of the maximum dry density (ASTM D 698).

3. Compaction of embankments shall be by suitable rollers. Placement and compaction of materials shall extend beyond the final contours sufficiently to insure compaction of the material at the resulting final surface. Final contours shall then be achieved by a tracked bulldozer shaping the face of the embankment.

4. Compaction of backfill around structures shall be accomplished by suitable portable compaction equipment.

5. If tests indicate that density of fill is less than that specified, the area shall be either recompacted or undercut, filled, and compacted until specified density is achieved.

E. Final Grading: Upon completion of construction operations, the area shall be graded to finish contour elevations and grades shown on the Drawings within 0.10 foot. Graded areas shall be made to blend into conformation with remaining ground surfaces. All surfaces shall be left smooth and free to drain. All Spigged and Sod areas shall be graded with a LAZER controlled, hydraulically activated land plane or motor grader to establish a final grade that is within 1/4" of the desired slope and grade.

F. Moisture

1. If fill material is too wet, provide and operate approved means to assist the drying of the fill until suitable for compaction.

2. If fill material is too dry, provide and operate approved means to add moisture to the fill layers.

3.05 BACKFILLING

A. Backfill carefully to restore the ground surface to its original condition. Dispose of surplus material.

B. Compact backfill underlying roadways, parking areas, sidewalks, structures, and buildings to 95 percent of the maximum dry density (ASTM D 698).

C. Backfill for Pipe

1. Initial: Place initial backfill material carefully around the pipe above bedding in uniform 6-inch layers to a depth of at least 18 inches above the pipe bell. Compact each layer thoroughly with suitable hand tools. Do no disturb or damage the pipe. Backfill on both sides of the pipe simultaneously to prevent side pressures. Initial backfill material is earth material excavated from the trench which is clean and free of rock, organics, and other unsuitable material. If materials excavated from the trench are not suitable for use as initial backfill material, obtain suitable materials elsewhere.

2. Final: After initial backfill material has been placed and compacted, backfill with general excavated material. Place backfill material in uniform layers and thoroughly compact with heavy power tamping tools of the "Wacker" type.

3. Settlement: If trenches settle, re-fill and grade the surface to conform to the adjacent surfaces.

4. Additional Material
   a. Where final grades above the pre-existing grades are required to maintain minimum cover, additional fill material will be shown on the Drawings.
   b. Utilize excess material excavated from the trench if the material is suitable.

D. Backfilling around Structures

1. General
   a. Remove debris from excavations before backfilling.
   b. Do not backfill against foundation walls until so directed by the Owner's Agent or the Landscape Architect nor until all indicated perimeter insulation and/or waterproofing are in place.
   c. Protect such insulation and/or waterproofing during filling operations.
   d. Wherever possible, backfilling shall be simultaneous on both sides of walls to equalize lateral pressures.
   e. Do not backfill against walls until all permanent construction is in place to furnish lateral support on both top and bottom of wall.
   f. Backfilling against walls is to take place after all the concrete in the affected members has attained the specified strengths.

2. Materials: Backfill material placed against structures built or encountered during the work of this Section shall be suitable fill material. No broken concrete, bricks or similar materials will be permitted as backfill.

3.06 EXCESS WATER CONTROL

A. Regulations and Permits: The Owner will obtain all necessary soil erosion control permits in accordance with the State of Georgia and all pertinent rules, laws, and regulations of all applicable federal, city and municipal regulatory agencies.

B. Unfavorable Weather
   1. Do not place, spread or roll any fill material during unfavorable weather conditions.
   2. Do not resume operations until moisture content and fill density are satisfactory to the Designer.

C. Provide berms or channels to prevent flooding of subgrade. Promptly remove all water collected in depressions.

D. Pumping and Drainage
   1. Provide, maintain and use at all times during construction adequate means and devices to promptly remove and dispose of all water from every source entering the excavations or other parts of the work.
   2. Dewater by means, which will insure dry excavations, preserve final lines and grades, do not disturb or displace adjacent soil.
   3. All pumping and drainage shall be done with no damage to property or structures and without interference with the rights of the public, owners of private property, pedestrians, vehicular traffic or the work of other contractors, and in accordance with all pertinent laws, ordinances and regulations.
   4. Do not overload or obstruct existing drainage facilities.

3.07 SETTLEMENT

A. The Contractor shall be responsible for all settlement of backfill, fills and embankments, which may occur within one year after final acceptance of the Work by the Owner.

B. The Contractor shall make, or cause to be made, all repairs or replacements made necessary by settlement within 30 days after receipt of written notice from the Designer or Owner.

3.08 CLEANING

Upon completion of the work of this Section, remove all rubbish, trash and debris resulting from construction operations. Remove surplus equipment and tools. Leave the site in a neat and orderly condition acceptable to the Designer, and in conformance with General Conditions of these Specifications.

(End of Section)

07 CONCRETE MULTIUSE TRAIL & SIDEWALKS

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

1.01 SCOPE

A. This section shall cover the work and equipment to install and construct concrete multiuse trails and sidewalks. The Contractor shall furnish all labor, materials and equipment necessary to perform the work as specified on the Drawings.

B. The contractor shall construct the multiuse trails and sidewalks to the lines, grades and dimensions indicated on the Drawings and described in the Specifications.

2.00 MATERIALS

2.01 CONCRETE

A. A. Pay item 500-3101, Concrete is 5-inch, shall use Class “A” concrete, 3000 psi, in accordance with section 500.1.03, no extra payment will be made for the use of class A concrete.

B. Concrete pavement completed and accepted will be paid for at the full contract unit price per cubic yard. Payment is full compensation for furnishing and placing materials, reinforcement, dowels, joint materials, supplies, and incidentals to complete the work.

C. Portland cement shall conform to ASTM specifications C150-62. The concrete shall have a minimum compressive strength of 3000 psi at the end of 28 days or as noted on drawings.

2.02 FORMS

A. Forms shall be of 2” thick wood members or steel, straight, of sufficient strength to resist springing during depositing and consolidating concrete, and of a height equal to the full depth of finished multiuse trails and sidewalk. Use flexible forms to form radius bends.

B. Each form shall be coated with non-staining, clear, paraffin base form oil that will not discolor or deface surface of concrete.

3.00 INSTALLATION

3.01 SUBGRADE PREPARATION

Subgrade shall be prepared as specified on the drawings.

3.02 FORMS

Forms shall be set with upper edge true to line and grade and shall be held rigidly in place by stakes. Forms shall be coated with form oil each time before concrete is placed. Wood forms may instead be thoroughly wetted with water before concrete is placed. Side forms shall not be removed for less than twelve hours after finishing has been completed.

3.03 EXPANSION JOINTS

Transverse expansion joints shall be installed at sidewalk returns and opposite expansion joints in adjoining curbs. Where multiuse trails and sidewalks are not in contact with curb, transverse expansion joints shall be installed at intervals of as indicated on the Drawings. Transverse expansion joints shall be filled with 1/2" thick joint filler strips. Joint filler shall be placed with steel pins or other devices to operations are completed, joint edges shall be rounded with an edging tool having a radius of 1/8" and concrete over the joint filler shall be removed. Expansion joints shall be formed about structures and features that project through or into the multiuse trails and sidewalks, and at abutting buildings, using joint filler of type, thickness and width indicated. Filler shall be installed in such manner as to form a complete, uniform separation between structure and multiuse trails and sidewalks. At the end of the curing period, expansion joints shall be carefully cleaned and any material protruding above top of concrete shall be cut flush with concrete. Sealing of joints in multiuse trails and sidewalks is not required.

3.04 CONCRETE PLACEMENT AND FINISHING

A. Place concrete in forms in one layer of thickness indicated. Use a strike-off guide by side forms to bring surface to proper section. Tamp and consolidate concrete with tamping bars, finish with wood float, and apply a brush finish across width of sidewalk using a medium-hair brush. All corners and edges shall be edged and troweled with 1/2" radius. The finished surface shall not vary more than 3/16" in 10' - 0". Unless other spacing is indicated, provide contraction joints not to exceed 1 1/2 times the multiuse trails and sidewalk's width. Form contraction joints in fresh concrete by cutting a grove in top surface to a depth of one inch, using a jointer with a radius of 1/8" and cutting blade not more than 1/8" thick. Completed surface shall be uniform in color, and free of surface blemishes and tool marks.

B. Saw-cut joints as noted on Drawings.

3.05 CURING AND PROTECTION

A. Curing: Immediately after finishing operations, the exposed concrete surfaces shall be cured in accordance with applicable requirements of concrete sections.

B. Protection: After curing, debris shall be removed, and the area adjoining the sidewalk shall be backfilled, graded and compacted to conform to the surrounding area in accordance with line and grades indicated. Completed

multiuse trails and sidewalk shall be protected from damage until accepted. Any damaged concrete or concrete that does not drain properly shall be removed and reconstructed at no additional cost to the Owner.

(End of Section)

08 SEWERS AND APPURTENANCES

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

1.01 SCOPE

A. Furnish all materials, labor and equipment necessary to construct the sewers and appurtenances as shown on the Drawings including trench excavation and backfill.

B. Locations of new sewer lines, manholes, inlets, cleanouts, etc., shall be located as indicated on the Drawings relative to the buildings or other structures.

1.02 JOB CONDITIONS

A. Where work requires interruption of existing public utility service, obtain written permission from affected utility company for interruption.

B. Standards: Comply with applicable codes, ordinances, rules, regulations, and laws of local, municipal, state or federal authorities having jurisdiction.

C. Protection of Existing Utilities: Protect existing power lines, water mains, gas lines, telephone lines and other utilities. Should any functioning underground utility be uncovered during the work, notify Landscape Architect for determination of whether or not they are to be removed. Repair any damage to utility lines and restore service to original condition.

D. Coordination and Scheduling of Work:
   1. Coordinate work with earthwork operations to avoid interference. Protect established construction stakes.
   2. Establish and maintain centerlines, grades and elevations.
   3. Construction of new sewers and drainage systems shall proceed as early in construction programs as possible. Maintain adequate drainage of the project area at all times. Prevent flooding of adjacent roads and private properties.
   4. Temporary Drainage: Wherever possible, new sewers and inlets to serve the various drainage areas shall be constructed and placed in service. Where this is not possible, temporary drainage facilities shall be provided, as required. These may include temporary pipes, temporary connections into completed sewers, or such other means as the circumstances may require.

1.03 SUBMITTALS

A. Submittals as required in Division I of these Specifications shall be made for each type of piping material, structure, castings and compression type joint gaskets. Indicate product descriptions and installation procedures.

B. Prior to submitting shop drawings, review the submittal for compliance with Division I of the Specifications.

2.00 PRODUCTS

2.01 GENERAL

A. Materials to be incorporated into the work shall be new and unused, and shall conform to all applicable requirements of these Specifications. Submittal and approval of all materials, shop drawings or samples shall be in conformance with Division I of these Specifications.

2.02 BEDDING MATERIAL

A. Crushed stone utilized for bedding shall meet the requirements of the Georgia Department of Transportation Specification.

2.03 MANHOLES AND INLETS

A. Precast Concrete Sections
   1. Precast concrete sections shall meet the requirements of ASTM C 478. The minimum compressive strength of the concrete in precast sections shall be 4,000 psi.

   2. The minimum wall thickness shall be one-twelfth of the inside diameter of the base, riser or the largest cone diameter.

   3. Transition slabs, which convert bases larger than four feet in diameter to four-foot diameter risers, shall be designed by the manhole manufacturer to carry the live and dead loads exerted on the slab.

   4. Seal joints between precast sections by means of rubber O-rings gaskets or flexible butyl rubber sealant. Butyl rubber sealants shall meet the requirements of AASHTO M-198. Sealant shall be pre-formed type with a minimum nominal diameter of 1-inch. Butyl rubber sealant shall be equal to Kent Seal No. 2 or Concrete Sealants CS202.

   5. Precast concrete sections (including transition slabs) shall accommodate an H-20 loading.

B. Brick and Mortar
   Brick shall be whole and hard burned, conforming to ASTM C 32 Grade MS. Mortar shall be made of one part Portland cement and two parts clean sharp sand. Cement shall be Type 1 and shall conform to ASTM C 150. Sand shall meet ASTM C 53.

C. Concrete

Concrete shall have a compressive strength of not less than 3000 psi, with not less than 5.5 bags of cement per cubic yard and slump between 3 and 5-inches. For job mixed concrete, submit the concrete mix design for approval by the Landscape Architect. Ready-mixed concrete shall be mixed and transported in accordance with ASTM C 94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

D. Frames, Covers and Gratings
Frames, covers and gratings shall be of the type shown on the Drawings. Iron castings shall conform to ASTM A 48, Class 30. All castings shall be true to pattern in form and dimensions, free from faults, sponginess, cracks, blowholes and other defects affecting their strength. Bearing surfaces between cast frames and gratings shall be machined, fitted together and match marked to prevent rocking. All castings shall be thoroughly cleaned and painted or coated with a coal tar pitch varnish.

2.04 PIPING MATERIALS

A. Corrugated Steel Pipe

1. Corrugated Steel Pipe shall be 16 gauge steel, furnished in accordance with AASHTO M 36.

2. Pipe shall have paved inverts and be fully coated inside and outside with a bituminous coating 0.05-inch thick, in accordance with AASHTO M 190.

3. Joint pipe with bands of the same gauge and corrugations as the pipe. Coupling bands shall be so constructed to lap on an equal portion of each of the pipe sections to be connected. Each end of each pipe section shall have a minimum of two annular corrugations and shall fully engage, over the entire periphery, one corrugation on each pipe end. Seal joints with O-ring gaskets, or with unstretched Ramneck material applied for the full width of the band.

2.05 ADAPTOR COUPLINGS/DONUTS

A. Adaptor couplings shall be elastomeric plastic sleeves designed to connect pipes of dissimilar materials. Adaptor shall provide a positive seal against infiltration and exfiltration and remain leakproof and rootproof up to 4.3 psi. The adaptor manufacturer shall provide steel clamps and required accessories. Couplings shall be equal to products of Fernco and shall be installed in accordance with the manufacturer's recommendations.

B. Adaptor donuts shall be polyvinyl chloride (PVC), compressible seals designed for sealing joints between sewer pipes of different sizes and/or dissimilar materials. Adaptor shall provide a positive seal against infiltration and exfiltration and remain leakproof and rootproof up to 4.3 psi. Donuts shall be equal to products of Fernco and shall be installed in accordance with the manufacturer's recommendations.

3.00 EXECUTION

3.01 CONSTRUCTION

A. Install pipe lines and accessories in accordance with the applicable regulations of The City with reference to construction operations, safety, traffic control, road maintenance and repair.

B. The Contractor shall open trenches, install pipe line and backfill. The trench shall not be opened any further ahead of pipe laying operations than is necessary. Trenches shall be backfilled and excess material removed immediately behind laying operations. Excavating and backfilling, for any portion of trench, shall be completed the same day.

C. Excavated material shall not be placed along highways, streets and roadways in such manner as to obstruct traffic. All scattered excavated material shall be kept swept away and shall not be allowed to remain on the pavement.

D. During the time period between pavement removal and completing permanent pavement replacement, maintain highways, streets and roadways by the use of steel running plates. The edges of running plates shall have asphalt placed around their periphery to minimize vehicular impact. The backfill above the pipe shall be compacted, as specified elsewhere up to the existing pavement surface to provide support for the steel running plates.

E. All side ditches, culverts, cross drains, and other drainage structures shall be kept clear of excavated material and be free to drain at all times.

3.02 EXCAVATION

Excavation of trenches is specified in *GDOT Standard Specifications,* 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition.

3.03 BEDDING OF SEWER

A. Lay all pipes with Class 'C' bedding unless shown or specified otherwise.

B. Prepare the trench bottom to support the pipe uniformly throughout its length. Provide bell holes to relieve pipe bells of all load. If the trench is excavated to excessive width or depth, provide the next better class of bedding. In rock trenches, bed pipe in at least eight inches of crushed stone material.

C. Before being placed in the trench, each section of pipe shall be carefully examined for defects and the inside of the pipe shall be swabbed clean. The bottom of the trench shall be so shaped that the pipe will have a bearing on the earth along its entire length. The pipe shall not rest on rock at any point.

D. When work is suspended or at night, the open ends of all pipe lines shall be promptly closed over in such a manner as will prevent the entrance of dirt, mud or other objectionable matter.

3.04 INSTALLING PIPE

A. The pipe and appurtenances must be so laid in the trench so that the interior surface shall conform accurately to the grade and alignment as indicated on the drawings. Pipe laying shall be done so as to disturb as little as possible the pipe previously laid. Before laying, the pipe shall be wiped clean of all dirt and foreign matter, and the joining surfaces of bells and spigots shall be clean and dry.

B. As the work progresses, the interior of the pipes shall be carefully freed of all dirt and superfluous material of every description.

3.05 BACKFILLING

Backfilling of trenches is specified in *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition.

3.06 CAST-IN-PLACE CONCRETE CONSTRUCTION

A. Cast-in-place inlets shall be constructed in place with the base, walls and top all monolithically cast using removable forms of a material and design approved by the Landscape Architect.

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 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. The base shall be deposited down through the wall forms onto undisturbed earth or 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 60 degrees from the bottom of the forms to the bearing surface both inside and outside of the inlet. When this is complete and before additional concrete is added, the concrete must be carefully vibrated on each side of each pipe.

D. The base shall be concentric with the inlet and have a minimum diameter of 16-inches grater than the outside diameter of the inlet, and 10-inch minimum thickness under the lowest pipe. Minimum wall thickness shall be 6-inches.

E. Additional concrete must be deposited in evenly distributed layers of approximately 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.

F. If adjustment of the frame elevation is called for, concrete "donut" sections or brick shall be used.

G. Form marks and offsets shall not exceed 1-inch on the outside surface of the inlet. Form marks and offsets shall not exceed 1/2-inch inside of the inlet. All offsets on the inside surface shall be smoothed and rubbed so there is no projection or irregularity capable of scratching a worker or catching and holding water or soiled materials. Honeycombed areas shall be completely removed immediately upon removal of the forms and replaced with concrete as directed by the Landscape Architect.

H. 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.

3.07 BRICK CONSTRUCTION

A. Brickwork shall be constructed using one part Portland cement to two parts clean sand, thoroughly mixed to workable plastic mixture. Not over 20 pounds of hydrated lime per sack of cement may be added. No re-tempered mortar shall be used. Brick shall be laid with mortar joints 3/8-inch thick. The inside of the inlet shall be neatly finished with cement mortar 1/2-inch thick.

B. Each sixth brick course shall be a "Stretcher" course. Inside joints shall be trowel struck flush joints to provide smooth, clean surfaces. Joints shall be broken in successive layers. Wall thickness for inlets 10 feet and less deep shall be 8 inches. Wall thickness for the portion of inlets over 10 feet deep shall be 12-inches.

C. After the foundation has been prepared and has been approved by the Landscape Architect, the bottom shall be constructed to the required line and grade. After the bottom has been allowed to set for a period of not less than 24 hours, the inlet shall be constructed thereon, care being exercised to form the incoming and outgoing sewer pipe into the wall of the inlet at the required elevation.

D. Manhole steps shall be inserted into the wall of the manhole at the proper locations and elevations as the work progresses and shall be securely embedded in the masonry.

3.08 PRECAST CONCRETE CONSTRUCTION

A. Handle sections carefully to prevent cracking or chipping. Provide uniform bedding of the bottom section to prevent uneven loading. Install gaskets and joint sealants in accordance with manufacturer's recommendations to produce a watertight structure.

B. After the base section has been set, and inverts formed, the precast sections shall be placed thereon, care being exercised to form the incoming and outgoing pipes into the wall of the inlet at the required elevations.

C. Seal all joints and lift holes, both inside and out, with grout and between precast sections in addition to joint sealant.

3.09 INVERTS

All inverts shall conform to the shape indicated on the Drawings or as directed by the Landscape Architect. The 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 inlet shall be made to a true curve with as a large radius as the size of the inlet will permit.

3.10 CASTINGS

A. Cast iron frames shall be set accurately to line and finished elevation so that subsequent adjustments will not be necessary.

B. Where inlets are constructed in paved areas or integral with curb and gutter, the top surface of the frame and grate shall be tilted to conform to the exact slope, crown and grade of the existing adjacent pavement or curb and gutter.

C. Frames shall be set in full cement mortar beds as shown on the Drawings.

3.11 CONNECTIONS TO EXISTING MANHOLES

A. Sewers shall connect to existing manholes as shown on the drawings. Existing manhole inverts shall be altered to suit the new connection.

B. Verify the invert elevations of existing manholes or sewer where new connections are to be made before starting construction of any proposed sewer. If at variance with those indicated on the Drawings, notify the Landscape Architect.

3.12 INSPECTION

A. Before acceptance of any sewer or system of sewers, the lines shall be cleaned to the satisfaction of the Landscape Architect and the City. Where any obstruction is met, the Contractor will be required to clean the sewers by means of rods, swabs, or other instruments. Lines and manholes shall be flushed and washed down before final inspection at the request of the Landscape Architect.

B. As-Built Drawings - Subcontractor to furnish three (1) sets of As-Built Drawings on mylar with dimensions to nearest buildings.

(End of Section)

09 DUST CONTROL

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

1.01 GENERAL

During the performance of the work required by these specifications or any operations appurtenant thereto, whether within the project limits provided by the Owner or elsewhere, the Contractor shall furnish all the labor, equipment, materials, and means required, and shall carry out proper and efficient measures wherever and as often as necessary to reduce the dust nuisance, and to prevent dust which has originated from his operations from damaging trees, shrubs, vegetation, vehicles, buildings, and dwellings, or causing a nuisance to persons or animals. The Contractor will be held liable for any damage resulting from dust originating from his operations under these specifications.

(End of Section)

10 WATER POLLUTION CONTROL

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

1.01 GENERAL

A. The Contractor shall comply with applicable Federal and State laws, orders, and regulations concerning the control and abatement of water pollution.

B. The Contractor's construction activities shall be performed by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, and other objectionable pollutants and wastes into streams, watercourses, lakes, and underground water sources. Such pollutants and wastes include, but are not restricted to, refuse, garbage, cement, concrete, sewage effluent, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution. Sanitary solid wastes shall be disposed of on land by burial at approved sites or by other approved methods.

C. Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or watercourses shall be conducted in a manner to prevent muddy water and eroded materials from entering the streams or watercourses by construction of intercepting ditches, bypass channels, barriers, settling ponds, or by other approved means.

D. Turbidity increases in a stream that is caused by construction activities shall be limited to the increases above the natural turbidities permitted under the State water quality standards prescribed for that stream. When necessary to perform required construction work in the stream channel, the prescribed turbidity limits may be exceeded, as approved by the Engineer, for the shortest practicable period required to complete such work. This required construction work may include such work as diversion of a stream, construction or removal of cofferdams, specified earthwork in or adjacent to a stream channel, and construction of turbidity control structures. Mechanized equipment shall not be operated in flowing water except as necessary to construct crossings or to perform the required construction.

E. Waste waters from aggregate processing or other construction operations shall not enter streams, watercourses, or other surface waters without the use of such turbidity control methods as settling ponds, gravel-filter entrapment dikes, approved flocculating processes which are not harmful to fish, recirculation systems for washing of aggregates, or other methods as approved by the Engineer. Any such waste waters discharged into surface waters shall be essentially free of settleable material. For the purpose of these specifications, settleable material is defined as that material which will settle from the water by gravity during a l-hour quiescent detention period.

(End of Section)

11 PRODUCTS AND SUBSTITUTIONS

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

1.01 RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-l Specification sections, apply to work in this section.

1.02 DESCRIPTION OF REQUIREMENTS

Substitutions: The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to contract documents, where requested by the Landscape Architect are "changes" not "substitutions". Requested substitutions during bidding period, which have been accepted prior to Contract Date, are included in contract document and are not subject to requirements for substitutions as specified herein. Governing authorities do not constitute "substitutions"; and do not constitute as a basis for change orders, except as provided for in contract documents. Otherwise, Contractor's requests for changes in products, materials and methods of construction required by contract documents are considered requests for "substitutions", and are subject to requirements hereof.

1.03 PRODUCT DELIVERY-STORAGE-HANDLING:

General: Deliver, handle and store products in accordance with manufacturer's recommendations and by methods and means which will prevent damage, deterioration, and loss including theft. Control delivery schedules to minimize long-term storage of products at site and overcrowding of construction spaces. In particular, provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.

1.04 WARRANTIES (GUARANTEES):

Warranties on the work are in several categories, including those of the General Conditions, and including the appropriate sections in Division-2.

2.00 PRODUCTS

2.01 Procedures for Selecting Products: Contractor's options for selecting products are limited by contract document requirements, and governing regulations, and are not controlled by industry traditions or procedures experienced by Contractor on previous Site construction project. Required procedures include, but are not necessarily limited to, the following for various indicated methods of specifying.

2.02 Single Product/Manufacturer Name: Provide product indicated, except advise Landscpae Architect before proceeding, where known that named product is not feasible or acceptable.

2.03 "Or Equal": Where named products in specifications text are accompanied by the term "or equal", or other language of similar effect, comply with those contract document provisions concerning "substitutions" for obtaining Landscape Architect's approval (by change order) to provide an unnamed product.

2.04 SUBSTITUTIONS:

A. Conditions: Contractor's request for substitution will be received and considered when extensive revisions to contract documents are not required and changes are in keeping with general intent of contract documents; when timely, fully documented and properly submitted; and when one or more of the following conditions is satisfied, all as judged by the Landscape Architect. Otherwise, request will be returned without action except to record non-compliance with these requirements.

B. Where request is directly related to an "or equal" clause or other language of same effect in contract documents.

C. Where required product, material or method cannot be provided within Contract Time, but not as a result of Contractor's failure to pursue the work promptly to coordinate various activities properly.

D. Where required product, material or method cannot be provided in a manner which is compatible with other materials of the work, or cannot be properly coordinated, therewith, or cannot be warranted as required, or cannot be used without adversely affecting Owner's insurance coverage or completed work, or will encounter other substantial non-compliance which are not possible or otherwise overcome except by making requested substitution, which Contractor thereby certifies to overcome such non-compatibility, non-coordination, non-warranty, non-insurability or other non compliance as claimed.

E. Where required product, material or method cannot receive required approval by a governing authority, and requested substitution can be so approved.

F. Where substantial advantage is offered to Owner, in terms of cost, time, energy conservation or other valuable considerations.

G. Work-Related Submittals: Contractor's submittal of, (and Landscape Architect's acceptance of) shop drawings, product data or samples which indicated work not complying with requirements of contract documents, does not constitute an acceptable and valid request for, nor approval of, a substitution.

2.05 GENERAL PRODUCT REQUIREMENTS

A. General: Provided products which comply with requirements, and which are undamaged and unused at time of installation, and which are complete with accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for intended use and effect.

B. Standard Products: Where available, provide standard products of types which have been produced and used previously and successfully on other projects and in similar applications.

C. Continued Availability: Where additional amounts of a product, by nature of its application, are likely to be needed by Owner at a later date for maintenance and repair or replacement work, provide a standard, domestically produced product which is likely to be available to Owner at such later date.

D. Nameplates: Except as otherwise indicated for required approval labels, and operating data, do not permanently attach or imprint manufacturer's or producer's nameplates of trademarks on exposed surfaces of products which will be exposed to view either in occupied spaces or on exterior of the work.

E. Labels: Locate required labels and stamps on a concealed surface or, where required for observation after installation, or an accessible surface which, in occupied spaces, is not conspicuous.

3.0 EXECUTION

(NOT APPLICABLE)

(End of Section)

12 TRAIL SIGNAGE

Where conflicts in specifications exist, *GDOT Standard Specifications*, 2001 edition, and *GDOT Supplemental Specifications for Construction of Roads and Bridges*, 2008 edition, shall always supercede other documents and specifications.

1.00 GENERAL

A sign matrix which outlines the proposed signs will be provided to the awarded contractor. The contractor will need to purchase and install all signs according to criteria list below. Quantities Sign Material is provide in SF and Metal Post in LF in the Cost Summary. Contractors are responsible for reinstalling any existing road signs at their current location. Please note that following criteria for signs.

- Trail Signs are 080 Aluminum signs,½ rounded corners, digital print, graffiti proof laminate, vinyl backing.
- Signs are mounted on 8ft square 2x2x1/4 in black metal post.
- Contractor will coordinate location and installation with Owner

.

(End of Section)

13 PROJECT CLOSEOUT

1.00 GENERAL

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

1.01 DESCRIPTION OF REQUIREMENTS

Definitions: Closeout is hereby defined to include general requirements near the end of Contract Time, in preparation for final acceptance, final payment, normal termination of Contract, occupancy by Owner and similar actions evidence of completing the work. Specified requirements for individual units of work are specified in sections of Division 2. Time of closeout is directly related to "Substantial Completion", and therefore may be either a single time period for entire work or a series of time period for individual parts of the work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section.

1.02 PREREQUISITES FOR SUBSTANTIAL COMPLETION

A. General: Prior to requesting Landscape Architect's inspection for certification of substantial completion (for either entire work or portions thereof), complete the following and list known exceptions in request:

B. In progress payment request, coincident with or first following date claimed, show either 100% completion for portion of work claimed as "substantially complete", or list incomplete items, value of incompletion, and reasons for being incomplete.

C. Include supporting documentation for completion as indicated in these contract documents.

D. Submit statement showing accounting of changes to the Contract Sum. Advise Owner of pending change-over requirements. Submit special warranties, workmanship/maintenance bonds, maintenance agreements, final certifications and similar documents.

E. Obtain and submit releases enabling Owner's full and unrestricted use of the work and access to services and other releases (if any). Deliver tools, spare parts, extra stocks of materials, and similar physical items to Owner. Discontinue (or change over) and remove from project site temporary facilities and services, construction tools, and similar elements.

F. Complete final cleaning up requirements, including touchup painting of marred surfaces.

G. Touch-up and otherwise repair and restore marred exposed finishes.

H. Inspection Procedures: Upon receipt of Contractor's request, Landscape Architect will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial substantial completion, Landscape Architect will advise Contractor of work which must be performed prior to issuance of certificate; and repeat inspection when requested and assured that the work has been substantially completed. Results of completed inspection will form initial "punch list" for final acceptance.

1.03 PREREQUISITES FOR FINAL ACCEPTANCE:

A. General: Prior to requesting the Engineer's final inspection for certification of final acceptance and final payment, as required by General Conditions, complete the following and list known exceptions (if any) in request:

B. Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Includes certificates of insurance for products and completed operations where required.

C. Submit update final statement, accounting for any additional (final) changes to the Contract Sum.

D. Submit Guarantee form, executed Consent of Surety, AIA Document G703; Release of Liens, AIA Document G706A; Affidavit Payment of Debts and Claims, AIA Document G706; and Certificate of Substantial Completion, AIA Document G704.

E. Submit certified copy of Engineer's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by the Landscape Architect.

F. Submit consent to surety.

G. Revise and submit evidence of final (continuing) insurance coverage complying with insurance requirements.

H. Submit record drawings, maintenance manuals, final project photographs, damage settlement survey, and similar final record information.

I. Reinspection Procedure: Upon receipt of Contractor's notice that the work has been completed, including punch-list items resulting from earlier inspections, and expecting incomplete items delayed because of acceptable circumstances, the Landscape Architect will reinspect the work. Upon completion of reinspection, the Landscape Architect will either prepare certificate of final acceptance or advise Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.

1.04 RECORD DOCUMENT SUBMITTALS:

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A. General: Specific requirements for record documents are indicated in individual sections of these specifications. Other requirements are indicated in General Conditions. General submittal requirements are indicated in "Submittals" sections. Do not use record documents for construction purposes; protect from deterioration
and loss in a fire-resistant and weather-proof manner. Provide access to record documents for Landscape Architect 's reference during normal working hours.

B. Record Drawings: Maintain a print set (blue or black line) of contract drawings and shop drawings in a clean, undamaged condition, with mark-up of actual installations which vary substantially from the work as originally shown. Indicate on record drawings actual depth of all underground utilities. Mark whichever drawing is not capable of showing "field" condition fully and accurately; however, where shop drawings are used for mark-up, record a cross-reference at corresponding location on working drawings. Mark with red erasable pencil and, where feasible, use other colors to distinguish between variations in separate categories of work. Mark-up new information, which is recognized to be of importance to Owner, but was for some reason not shown on either the contract drawings or shop drawings.

C. Record Specifications: Maintain one copy of specifications, including addenda, change orders and similar modifications issued in printed form during construction, and mark-up variation (of substance) in actual work in comparison with text of specifications and modifications as issued.

1. Give particular attention to substitutions, selection of options, and similar information on work where it is concealed or cannot otherwise be readily discerned at a later date by direct observation. Note related change order numbers where applicable. Organize record drawing sheets into suitable manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on cover of each set. Upon completion of mark up, submit to the Landscape Architect for Owner's record.

2.00 PRODUCTS

(NOT APPLICABLE)

3.00 EXECUTION

3.01 CLOSEOUT PROCEDURES:

General Operating/Maintenance Instructions: Arrange for each installer of work requiring continuing maintenance or operation, to meet with Owner's personnel, at project site, to provide basic instructions needed for proper operation and maintenance of entire work. Include instructions by manufacturer's representatives where installers are not expert in the required procedures. Review maintenance manuals, agreements to maintain, record documentation, tools, spare parts and materials, lubricants, fuels, identification system, control sequences, hazards, cleaning and similar procedures and facilities.

3.02 FINAL CLEANING:

A. General: Special cleaning for specific units of work is specified in sections of Division 2. General cleaning during progress of work is specified in General Conditions and as temporary services in "Temporary Facilities" section of this Division. Provide final cleaning of the work, at time indicated, consisting of cleaning each surface or unit of work to normal "clean" condition expected for a first-class maintenance program. Comply with manufacturers' instructions for cleaning operations. The following are examples, but not by way of limitation, of cleaning levels required:

B. Remove labels which are not required as permanent labels.

C. Clean exposed hard-surfaced finishes. Except as otherwise indicated; avoid disturbance of natural weathering of exterior surfaces. Remove debris and surface dust from limited-access spaces.

D. Clean project site (yard and grounds), including landscape, development areas, of litter and foreign substances. Sweep paved areas to a broom-clean condition; remove stains, spills and other foreign deposits.

E. Removal of Protection: Except as otherwise indicated or requested by Landscape Architect, remove temporary protection devices and facilities which were installed during course of the work to protect previously completed work during remainder of construction period.

F. Compliance: Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from the site and dispose of in a lawful manner.

(End of Section)

GDOT Special Provisions

for

CITY OF RINGGOLD

TRAIL OF TEARS PHASE 2

October 27, 2017

INDEX TO GDOT SPECIAL PROVISIONS

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SUPPLEMENTAL SPECIFICATION

Section 107—Legal Regulations and Responsibility to the Public

Delete Subsection 107.23 and substitute the following:

107.23 Environmental Considerations

A. Construction

Erosion control measures shall be installed, to the greatest practical extent, prior to clearing and grubbing. Particular care shall be exercised along stream buffers, wetlands, open waters and other sensitive areas to ensure that these areas are not adversely affected.

Construction equipment shall not cross streams, rivers, or other waterways except at temporary stream crossing structures approved by the Engineer.

Construction activities within wetland areas are prohibited except for those within the construction limits as shown on the Plans and as specified in Subsection 107.23.E.

All sediment control devices (except sediment basins) installed on a project shall, as a minimum, be cleaned of sediment when one half the capacity, by height, depth or volume, has been reached. Sediment basins shall be cleaned of sediment when one-third the capacity by volume has been reached.

B. Bridge Construction Over Waterways

Construction waste or debris, from bridge construction or demolition, shall be prevented from being allowed to fall or be placed into wetlands, streams, rivers or lakes.

Excavation, dewatering, and cleaning of cofferdams shall be performed in such a manner as to prevent siltation. Pumping from cofferdams to a settling basin or a containment unit will be required if deemed necessary by the Engineer.

Road Design

Operations required within rivers or streams, i.e. jetting or spudding, shall be performed within silt containment areas, cofferdams, silt fence, sediment barriers or other devices to minimize migration of silt off the project.

C. Borrow and Excess Material Pits

Specific written environmental clearance from the Engineer will be required for any sites not included in the Plans as excess material or borrow areas. No work other than testing shall be started at any potential excess material or borrow site not shown on the plans prior to receiving said environmental clearance from the Engineer.

The Engineer will require a written notice from the Contractor requesting environmental clearance studies and written permission from the property owner at least six weeks prior to intended use of the site. The Department will not begin studies on such sites before a Notice to Proceed is issued.

The Engineer will inform the Contractor in writing as to the granting or denial of environmental clearance. If denied, the Contractor may, at no expense to the Department, seek to obtain permits or pursue other remedies that might otherwise render the site(s) acceptable.

Sites included in the Plans have environmental clearance and shall be used only for the purpose(s) specified in the Plans or other contract documents. Should the Contractor wish to expand or utilize said sites for any purpose other than that provided for in the Plans or other contract documents, specific written environmental clearance as noted above shall be obtained.

D. Control of Pollutants

Pollutants or potentially hazardous materials, such as fuels, lubricants, lead paint, chemicals or batteries,

shall be transported, stored, and used in a manner to prevent leakage or spillage into the environment. The Contractor shall also be responsible for proper and legal disposal of all such materials.

Equipment, especially concrete or asphalt trucks, shall not be washed or cleaned-out on the Project except in areas where unused product contaminants can be prevented from entering waterways.

E. Temporary Work in Wetlands Outside of the Construction Limits within the Right-of-Way and Easement Areas

Temporary work in wetlands (that are not delineated with orange barrier fence) will be subject to the following requirements:

1. Temporary work in wetlands shall be accomplished by using temporary structures, timber, concrete, soil with geotextile fabric, or other suitable matting. The area shall not be grubbed.
2. Soil matting shall be protected from erosion in accordance with the Specifications.
3. Whenever temporary work is required in Saltwater Marsh Wetlands, all temporary structures and/or matting shall be removed in their entirety prior to Final Acceptance of the Project. Matted and compressed soils shall be backfilled to their original ground elevation with material meeting the requirements of Section 212 – Granular Embankment.
4. Whenever temporary work is required in Freshwater Wetlands, all temporary structures and/or matting (exclusive of soil matting to be retained in the final roadway section) shall be removed in their entirety prior to Final Acceptance of the Project.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SUPPLEMENTAL SPECIFICATION

Section 108-Prosecution and Progress

Delete Subsection 108.08 and substitute the following:

108.08 Failure or Delay in Completing Work on Time

Time is an essential element of the Contract, and any delay in the prosecution of The Work may inconvenience the public, obstruct traffic, or interfere with business. In addition to the aforementioned inconveniences, any delay in completion of The Work will always increase the cost of engineering. For this reason, it is important that The Work be pressed vigorously to completion. Should the Contractor or, in case of default, the Surety fail to complete The Work within the time stipulated in the Contract or within such extra time that may be allowed, charges shall be assessed against any money due or that may become due the Contractor in accordance with the following schedule:

Schedule of Deductions for Each Day of Overrun in Contract Time

Original Contract Amount		Daily Charges
From More Than	To and Including	Calendar Day, Completion Date or Available Day
$0	$500,000	$84
$500,000	$1,000,000	$151
$1,000,000	$2,000,000	$247
$2,000,000	$5,000,000	$391
$5,000,000	$10,000,000	$713
$10,000,000	$20,000,000	$1191
$20,000,000	$40,000,000	$1869
$40,000,000	——	$5089

For each Calendar Day or Available Day, as specified, that any work shall remain uncompleted after the contract time specified for the completion of the Work required by the Contract, the sum specified in the Contract will be deducted from any money due the Contractor, not as a penalty, but as liquidated damages; provided however, that due account shall be taken of any adjustment of the contract time for completion of the work granted under the provisions of Subsection 108.07.E.

The Department may waive such portions of the liquidated damages as may accrue after the work is in condition for safe and convenient use by the traveling public.

A. Liquidated Damages

The amount of such charges is hereby agreed upon as fixed liquidated damages due the Department after the expiration of the time for completion specified in the Contract. The Contractor and his Surety shall be liable for liquidated damages in excess of the amount due the Contractor on the final payment.

These fixed liquidated damages are not established as a penalty but are calculated and agreed upon in advance by the Department and the Contractor due the uncertainty and impossibility of making a determination as to the actual and consequential damages which are incurred by the Department as a result of the failure on the part of the Contractor to complete The Work on time.

1. **Deduction From Partial Payments:** Liquidated damages, as they accrue, will be deducted from periodic partial payments.
2. **Deduction From Final Payment:** The full amount of liquidated damages will be deducted from final payment to the Contractor and/or his Surety.
3. **No Liquidated Damages Charged for Delay by the Department:** In case of default of the Contract and

the subsequent completion of The Work by the Department as hereinafter provided, the Contractor and his Surety shall be liable for the liquidated damages under the Contract, but no liquidated damages shall be chargeable for any delay in the final completion of The Work by the Department due to any unreasonable action, negligence, omission, or delay of the Department. In any suit for the collection of or involving the assessment of liquidated damages, the reasonableness of the amount shall be presumed. The liquidated damages referred to herein are intended to be and are cumulative and shall be in addition to every other remedy now or hereafter enforceable at law, in equity, by statute, or under the Contract.

B. No Waiver of Department's Rights

Permitting the Contractor to continue and finish The Work or any part of it after the expiration of the time allowed for completion or after any extension of time, shall not operate as a waiver of the rights of the Department under the Contract.

Office of Construction
Revised: July 15, 2008

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SPECIAL PROVISION

Section 161—Control of Soil Erosion and Sedimentation

Add the following:

161.1 General Description

This Work includes using control measures shown on the Plans, ordered by the Engineer, or as required during the life of the Contract to control soil erosion and sedimentation through the use of any of the devices or methods referred to in this Section.

161.1.01 Definitions

Certified Personnel— certified personnel are defined as persons who have successfully completed the Level IA certification course approved by the Georgia Soil and Water Conservation Commission. For Department projects the certified person must also have successfully completed the Department's WECS certification course.

Design Professional as defined in the current GAR100002 NPDES permit.

161.1.02 Related References

A. Standard Specifications

Section 105—Control of Work
Section 106—Control of Materials
Section 107—Legal Regulations and Responsibility to the Public
Section 109—Measurement and Payment
Section 160—Reclamation of Material Pits and Waste Areas
Section 162—Erosion Control Check Dams
Section 163—Miscellaneous Erosion Control Items
Section 166—Restoration or Alteration of Lakes and Ponds
Section 170—Silt Retention Barrier
Section 171—Temporary Silt Fence
Section 205—Roadway Excavation
Section 434—Sand Asphalt Paved Ditches
Section 441—Miscellaneous Concrete
Section 603—Rip Rap
Section 700—Grassing
Section 710—Permanent Soil Reinforcing Mat
Section 715—Bituminous Treated Roving
Section 716—Erosion Control Mats (Blankets)

Erosion control measures contained in the Specifications include:

Erosion Control Measure	Section
Temporary Check Dams	163.3.05.J
Bituminous Treated Mulch	700.3.05.G
Concrete Paved Ditches	441
Bituminous Treated Roving	715

Erosion Control Mats (Blankets) 716
Erosion Control Check Dams 162
Grassing 700
Maintenance of Temporary Erosion Control Devices 165
Permanent Soil Reinforcing Mat 710
Reclamation of Material Pits and Waste Areas 160
Rip Rap 603
Restoration or Alteration of Lakes and Ponds 166
Sand-Asphalt Ditch Paving 434
Sediment Basin 163.3.05.C
Silt Control Gate 163.3.05.A
Silt Retention Barrier 170
Sod 700.3.05.H & 700.3.05.I
Mulch 163
Temporary Grassing 163.3.05.F
Temporary Silt Fence 171
Temporary Slope Drains 163.3.05.B
Triangular Sediment Barrier 720
Silt Filter Bag 719
Organic & Synthetic Material Fiber Blanket 713

B. Referenced Documents

Erosion and Sedimentation Pollution Control Plans (ESPCP)

161.1.03 Submittals

A. Status of Erosion Control Devices

The Worksite Erosion Control Supervisor (WECS) or certified personnel will inspect the installation and maintenance of the Erosion Control Devices according to Subsection 167.3.05.B and the ESPCP.

1. Submit all reports to the Engineer within 24 hours of the inspection. Refer to Subsection 167.3.05.C for report requirements.
2. The Engineer will review the reports and inspect the Project for compliance and concurrence with the submitted reports.
3. The Engineer will notify the WECS or certified personnel of any additional items that should be added to the reports.
4. Items listed in the report requiring maintenance or correction shall be completed within 72 hours.

B. Erosion and Sedimentation Pollution Control Plan

1. Project Plans

An erosion and sedimentation pollution control plan (ESPCP) for the construction of the project will be provided by the Department. The ESPCP will be prepared for the various stages of construction necessary to complete the project.

If the Contractor elects to alter the stage construction from that shown in the plans, it will be the responsibility of the Contractor to have the plans revised and prepared in accordance with the current GAR100002 NPDES permit by a Design Professional to reflect all changes in Staging. This will also include any revisions to erosion and sedimentation control item quantities. If the changes affect the Comprehensive Monitoring Program (CMP), the Contractor will be responsible for any

revisions to the CMP as well. Submit revised plans and quantities to the Engineer for review prior to land disturbing activities.

2. Haul Roads, Borrow Pits, Excess Material Pits, etc.

The Contractor is responsible for preparing erosion and sedimentation control plans for construction access roads and or haul roads borrow pits, excess material pits, etc (inside the Right of Way). Prepare these plans for all stages of construction and include the appropriate items and quantities. Submit these plans to the Engineer for review prior to land disturbing activities. These plans are to be prepared by a Design Professional.

If construction of access roads, haul roads, borrow pits, excess material pits, etc., (inside the Right of Way) encroach within the 25 foot (7.6 m) buffer along the banks of all state waters or within the 50 ft. (15 m) buffer along the banks of any state waters classified as a “trout stream”, a state water buffer variance must be obtained by the Contractor prior to beginning any land disturbing activity in the stream buffer.

3. Erosion Control for Borrow and Excess Material Pits Outside the Right-of-Way

Erosion control for borrow pits and excess material pits outside the right of way is the responsibility of the Contractor. If borrow or excess material pits require coverage under the National Pollutant Discharge Elimination System permit (NPDES) or other permits or variances are required, submit a copy of all documentation required by the permitting agency to the Engineer. All costs associated with complying with local, state, and federal laws and regulations are the responsibility of the Contractor.

4. Culverts and Pipes

The ESPCP does not contain approved methods to construct a stream diversion or stream diversion channel. The Contractor shall prepare a diversion plan utilizing a Design Professional as defined in the current NPDES permit. See Subsection 161.3.05 G for additional information.

5. Temporary Asphalt or Concrete Batch Plants

In addition to the requirements of any applicable specifications, if the Department authorizes the temporary installation and use of any asphalt, concrete or similar batch plants within its right of way, the contractor shall submit an NOI to the Georgia Environmental Protection Division for coverage under the following NPDES permits; The Infrastructure permit for the construction of the plant, and the Industrial permit for the operation of, such a plant. The contractor shall submit the NOIs as both the Owner and the Operator.

161.2 Materials

General Provisions 101 through 150.

161.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

161.3 Construction Requirements

161.3.01 Personnel

A. Duties of the Worksite Erosion Control Supervisor

Before beginning Work, designate a Worksite Erosion Control Supervisor (WECS) to initiate, install, maintain, inspect, and report the condition of all erosion control devices as described in Sections 160 through 171 or in the Contract and ESPCP documents. The designee shall submit their qualifications on the Department provided resume form for consideration and approval. The contractor may utilize additional persons having WECS qualifications to facilitate compliance however, only one WECS shall be designated at a time.

The WECS and alternates shall:

Be an employee of the Prime Contractor.

Have at least one year of experience in erosion and sediment control, including the installation, inspection, maintenance and reporting of BMPs.

Successfully completed the Georgia Soil and Water Conservation Commission Certification Course Level IA and the Department's WECS Certification Course.

Provide phone numbers where the WECS can be located 24 hours a day.

The WECS' duties include the following:

1. Be available or have an approved representative available 24 hours a day and have access to the equipment, personnel, and materials needed to maintain erosion control and flooding control.

2. Inform the Engineer in writing whenever the alternate WECS assumes project responsibilities.

3. Ensure that erosion control deficiencies are corrected within seventy two (72) hours or immediately during emergencies. Deficiencies that interfere with traffic flow, safety or downstream turbidity are to be corrected immediately.

4. During heavy rain, have the construction area patrolled day or night, any day of the week to quickly detect and correct erosion or flooding problems before they interfere with traffic flow, safety, or downstream turbidity.

5. Be on the site within three (3) hours after receiving notification of an emergency prepared to positively respond to the conditions encountered. The Department may handle emergencies without notifying the Contractor. The Department will recover costs for emergency maintenance work according to Subsection 105.15, "Failure to Maintain Roadway or Structures."

6. Maintain and submit for project record, "As-built" Erosion and Sedimentation Control Plans that supplement and graphically depict EC-1 reported additions and deletions of BMPs. The As-Built plans are to be accessed and retained at a Department facility at all times.

7. Ensure that both the WECS and the alternate meet the criteria of this Subsection.

8. The WECS shall maintain a current certification card for the duration of the project. Recertification of the WECS will be required prior to the expiration date shown on the Certification card in order to remain as Certified Personnel and the WECS for the project.

Failure of the WECS or alternate to perform the duties specified in the Contract, or whose performance, has resulted in a citation

being received from a State or Federal Regulatory Agency, e.g. the Georgia Environmental Protection Division, shall result in one

or more of the following;

Suspension of the WECS' certification for a period of not less than 30 days

Removal of the Contractor's project superintendent in accordance with Subsections 105.05 and 108.05 for a period not less than 14 days
Department wide revocation of the WECS certification for a period of 12 months
Removal of the Contractor's project superintendent in accordance with Subsections 105.05 and 108.05

161.3.02 Equipment

General Provisions 101 through 150.

161.3.03 Preparation

General Provisions 101 through 150.

161.3.04 Fabrication

General Provisions 101 through 150.

161.3.05 Construction

Coordinate the temporary and permanent erosion control provisions in this Specification with the permanent erosion control provisions in the Contract to ensure economical, effective, and continuous erosion control throughout the construction and postconstruction
periods.
At all times that land disturbing activity is underway, a person meeting the requirements of, "certified person" by the GSWCC (Level
IA) must be on the project.

A. Control Dust Pollution

The contractor shall keep dust pollution to a minimum during any of the activities performed on the project. It may be necessary to apply water or other BMPs to roadways or other areas reduce pollution.

B. Perform Permanent or Temporary Grassing

Perform permanent grassing, temporary grassing, or mulching on cut and fill slopes weekly (unless a shorter period is required by
Subsection 107.23) during grading operations. When conditions warrant, the Engineer may require more frequent intervals. Under no circumstances shall the grading (height of cut) exceed the height operating range of the grassing equipment. It is extremely important to obtain a cover, whether it is mulch, temporary grass or permanent grass. Adequate mulch is a must. When grading operations or other soil disturbing activities have stopped, perform grassing or erosion control as shown in the Plans, as shown in an approved Plan submitted by the Contractor, or as directed by the Engineer.

C. Seed and Mulch

Refer to Subsection 161.3.05.B, "Perform Permanent or Temporary Grassing".

D. Implement Permanent or Temporary Erosion Control

1. Silt fence shown along the perimeter, e.g. right of way, and sediment containment devices, e.g. sediment basins, shall be installed prior to or concurrently with clearing and grubbing operations.
2. Incorporate permanent erosion control features into the Project at the earliest practicable time, e.g. velocity dissipation, permanent ditch protection.
3. Use temporary erosion control measures to address conditions that develop during construction but were unforeseen during the design stage.
4. Use temporary erosion control measures when installation of permanent erosion control features cannot be accomplished.

The Engineer has the authority to:
Limit the surface area of erodible earth material exposed by clearing and grubbing.
Limit the surface area of erodible earth material exposed by excavation and borrow and fill operations.
Limit the area of excavation, and embankment operations in progress to correspond with the Contractor's ability to keep the finish grading, mulching, seeding, and other permanent erosion control measures current.
Direct the Contractor to provide immediate permanent or temporary erosion control to prevent contamination of adjacent streams or water courses, lakes, ponds, or other areas of water impoundment.
Such Work may include constructing items listed in the table in Subsection 161.1.02.A, "Related References" or other control devices or methods to control erosion.

E. Erodible Area

NOTE: Never allow the surface area of erodible earth material exposed at one time to exceed 17 acres (7 ha) except as approved by the State Construction Engineer.

The maximum of 17 acres (7 ha) of exposed erodible earth applies to the entire Project and to all of its combined operations as a whole, not to the exposed erodible earth of each individual operation.

Upon receipt of a written request from the contractor the State Construction Engineer, or his designee, will review; the request, any justifications and the Project conditions for waiver of the 17 acres (7 ha) limitation.
If the 17 acre limitation is increased by the State Construction Engineer, the WECS shall not be assigned to another project in that
capacity and should remain on site each work day that the exposed acreage exceeds 17 acres.
After installing temporary erosion control devices, e.g., grassing, mulching, stabilizing an area, and having it approved by the Engineer, that area will be released from the 17 acres (7 ha) limit.

F. Perform Grading Operations

Perform the following grading operations:
1. Complete each roadway cut and embankment continuously, unless otherwise specified in the Contract or ordered by the Engineer.
2. Maintain the top of the earthwork in roadway sections throughout the construction stages to allow water to run off to the outer edges. .
3. Provide temporary slope drain facilities with inlets and velocity dissipaters (straw bales, silt fence, aprons, etc.) to carry the runoff water to the bottom of the slopes. Place drains at intervals to handle the accumulated water.
4. Continue temporary erosion control measures until permanent drainage facilities have been constructed, pavement placed, and the grass on planted slopes stabilized to deter erosion.

G. Perform Construction in Rivers and Streams

Perform construction in river and stream beds as follows:
1. Unless otherwise agreed to in writing by the Engineer, restrict construction operations in rivers, streams, and impoundments to:

Areas where channel changes or access for construction are shown on the Plans to construct temporary or permanent structures.
2. If channel changes or diversions are not shown on the Plans, the Contractor shall develop diversion plans prepared in accordance with the current GAR100002 NPDES Infrastructure Construction permit utilizing a design professional as defined within the permit. The Engineer will review prepared diversion plans for content only and accepts no responsibility for design errors or omissions. Amendments will be made part of the project plans by attachment. Include any associated costs in the price bid for the overall contract. Any contract time associated with the submittal or its review and subsequent response will not be considered for an extension of Contract time. All time associated with this subsection shall be considered incidental.
3. If additional access for construction or removal of work bridges, temporary roads/access or work platforms is necessary, and will require additional encroachment upon river or stream banks and bottoms, the contractor shall prepare a plan in accordance with the current GAR100002 NPDES Infrastructure Construction permit utilizing a design professional as defined within the permit. Plans should be submitted at least 12 weeks prior to the date the associated work is expected to begin. If necessary, the plan will be provided to the appropriate regulating authority, e.g. United States Army Corps of Engineers by the Department for consideration and approval. No work that impacts areas beyond what has been shown in the approved plans will be allowed to begin until written approval of the submitted plan has been provided by the Department. Approved plan amendments will be made part of the project plans by attachment. Include any associated costs in the price bid for the overall contract. Any contract time associated with the submittal or its review and subsequent response will not be considered for an extension of Contract time. All time associated with this subsection shall be considered incidental.
4. Clear rivers, streams, and impoundments of the following as soon as conditions permit:
Falsework
Piling that is to be removed
Debris
Other obstructions placed or caused by construction operations
5. Do not ford live streams with construction equipment.
6. Use temporary bridges or other structures that are adequate for a 25-year storm for stream crossings. Include costs in the price bid for the overall contract.
7. Do not operate mechanized equipment in live streams except to construct channel changes or temporary or permanent structures, and to remove temporary structures, unless otherwise approved in writing by the Engineer.

H. State Water Buffers and Environmental Restrictions

1 The WECS shall review the plans and contract documents for environmental restrictions, Environmentally Sensitive Areas (ESA), e.g. buffers, etc prior to performing land disturbing activities.

2. The WECS shall ensure all parties performing land disturbing activities within the project limits are aware of all environmental restrictions.
3. Buffer delineation shall be performed prior to clearing, or any other land disturbing activities. Site conditions may require temporary delineation measures are implemented prior to the installation of orange barrier/safety fencing. The means of temporary delineation shall have the Engineer's prior approval.
4. The WECS shall allow the Engineer to review the buffer delineation prior to performing any land disturbing activities, including but not limited to clearing, grubbing and thinning of vegetation. Any removal and relocation of buffer delineation based upon the Engineer's review will not be measured for separate payment.
5. The WECS shall advise the Engineer of any surface water(s) encountered that are not shown in the plans. The WECS shall prevent land disturbing activities from occurring within surface water buffers until the Engineer provides approval to proceed.

I. General Requirements

Projects that consist of asphalt resurfacing, shoulder reconstruction and/or shoulder widening; schedule and perform the
construction of the project to comply with the following:

After temporary and permanent erosion control devices are installed and the area permanently stabilized (temporary or permanent) and approved by the Engineer, the area may be released from the 1 acre (0.4 ha) limit.
The maximum of 1 acre (0.4 ha) of erodible earth applies to the entire project and to all combined operations, including borrow and excess material operations that are within the right of way, not 1 acre (0.4 ha) of exposed erodible earth for each operation.

NOTE: Never allow the surface area of erodible earth material exposed at one time to exceed 1 acre (0.4 ha).

1. Do not allow the disturbed exposed erodible area to exceed 1 acres (0.4 ha). This 1 acre (0.4 ha) limit includes all disturbed areas relating to the construction of the project including but not limited to slope and shoulder construction.
2. At the end of each working day, permanently stabilize all of the area disturbed by slope and shoulder reconstruction to prevent any contamination of adjacent streams or other watercourses, lakes, ponds or other areas of water impoundment. For purposes of this Specification, the end of the working day is defined as when the construction operations cease. For example, 6:00
a.m. is the end of the working day on a project that allows work only between 9:00 p.m. and 6:00 a.m.)
3. Stabilize the cut and fill slopes and shoulder with permanent or temporary grassing and a Wood Fiber Blanket (Section 713, Type II). Mulching is not allowed. Borrow pits, soil disposal sites and haul roads will not require daily applications of wood fiber
blanket. The application rate for the Wood Fiber Blanket on shoulder reconstruction is the rate specified for Shoulders. For shoulder reconstruction, the ground preparation requirements of Subsection 700.3.05.A.1 are waived. Preparation consists of scarifying the existing shoulders 4 to 6 in (100 to 150 mm) deep and leaving the area in a smooth uniform condition free from stones, lumps, roots or other material.
4. If a sudden rain event occurs that would not allow the Contractor to apply the Type II Wood Fiber Blanket per Section 713, install Wood Fiber Blanket Type I per Section 713 if directed by the Engineer. Wood Fiber Blanket Type I application is for emergency use only.
Install temporary grass or permanent grass according to seasonal limitations and Specifications. When temporary grass is used, use the overseeding method (Subsection 700.3.05.E.4) when planting permanent grass.
3. Remove and dispose of all material excavated for the trench widening operation at an approved soil disposal site by the end of each working day. When shoulder reconstruction is required, this material may be used to reconstruct the graded shoulder after
all asphaltic concrete pavement has been placed.
4. Provide immediate permanent and/or temporary erosion control measures for borrow pits, soil disposal sites and haul roads to prevent any contamination of adjacent streams or other watercourses, lakes, ponds or other areas of water impoundment.
5. Place asphalt in the trench the same day as the excavation occurs. Place asphalt or concrete in driveways and side roads being re-graded the same day as the excavation occurs. Stabilize any disturbed or exposed soil that is not covered with asphalt with a Wood Fiber Blanket (and grass seed). Payment will be made for the Wood Fiber Blanket and grass seed only if the shoulder has been constructed to final dimensions and grade and no further grading will be required.
6. Do not allow the grading (height of cut or fill) to exceed the operating range of the grassing equipment.
7. When grading operations or other soil disturbing activities are suspended, regardless of the reason, promptly perform all necessary permanent stabilization and/or erosion control work.
8. Use temporary erosion control measures to:

To correct conditions that develop during construction but were unforeseen during the design stage.
To use as needed before installing permanent erosion control features.
To temporarily control erosion that develops during normal construction practices but are not associated with permanent control features on the Project.
9. When conditions warrant, such as unfavorable weather (rain event), the Engineer may require more frequent intervals for this work.

161.3.06 Quality Acceptance

Before Final Acceptance of the Work, clean drainage structures within the project limits, both existing and newly constructed, and
ensure that they are functioning properly. Costs to accomplish this work are incidental and shall be included in the overall bid for the
Contract.

161.3.07 Contractor Warranty and Maintenance

Maintain the erosion control features installed to:
Contain erosion within the limits of the right-of-way
Control storm water discharges from disturbed areas
Effectively install and maintain the erosion control features. Ensure these features contain the erosion and sediment within the limits
of the rights of way and control the discharges of storm-water from disturbed areas to meet all local, state, and federal requirements on
water quality.
If a construction Project has separate contractors, the Prime Contractor shall maintain the erosion control features at grading sites as
acceptable to the Engineer until the Contract is accepted. If any erosion control devices are damaged by any contractor either by neglect, by construction methods, or any other reasons, including acts of nature, they shall be repaired within 24 hours by the Prime
Contractor at no cost to the Department.

161.4 Measurement

Control of soil erosion and sedimentation is not measured separately for payment.

161.4.01 Limits

General Provisions 101 through 150.

161.5 Payment

When no pay item is shown in the Contract, the requirements of this Specification and the Erosion Control Plan shall be in full effect.
The cost of complying with these requirements will not be paid for separately, but shall be included in the overall bid submitted with
the exception of inspections performed by qualified personnel which will be included in Section 167.
When listed as a pay item in the Contract, payment will be made at the unit price bid for each particular item.
No payment will be made for erosion control outside the Right-of-Way or construction easements except as provided for by the Plans.

161.5.01 Enforcement and Adjustments

A. Failure to Provide a WECS

If a designated WECS is not maintained or if the Contractor does not comply with this Specification, cease activities except traffic
control and erosion control work. Monies that are due or that may become due also may be withheld according to the Specifications

B. Failure to submit reports

A non-refundable deduction will be taken from the schedule below whenever the WECS fails to submit completed reports required
by Subsection 167.3.05.C in accordance with the provisions of this specification.

C. Failure to Comply with Specifications

If the Contractor fails to comply with any of the requirements of this Specification, all activities shall cease immediately except traffic

control and erosion control related work.
Monies that are currently due or that may become due shall be withheld according to the specifications. In addition, nonrefundable
monies shall be deducted from the contract as shown in the Schedule of Deductions table below. These deductions are in addition to
any actions taken in the above subsections. Deductions assessed for uncorrected deficiencies shall continue until all corrections are
completed to the satisfaction of the Engineer.

D. Receipt of a Consent Order or Notice of Violation, etc

Regulatory enforcement actions will be resolved including at a minimum the following steps;
The Department will perform an internal review of the alleged violations
The Department will then meet with the Contractor to review and further determine responsibilities for the alleged violations
The Department will then arrange to collectively meet with the regulatory agencies to negotiate resolutions and/or settlements. The Department does not waive any rights of the Contractor to resolve such matters however, in the event that regulatory agency communication is addressed jointly to the Department and to the contractor, the Department reserves the right to coordinate all communications, e.g., written correspondence, and to schedule jointly attended meetings with Regulatory agencies such that timely and accurate responses are known to the Department.
Such Orders or Notices may result in the assessment of Deductions from the table below for each day the condition remains noncompliant following an agreed remedy.
Monetary penalties for which the contractor is obligated for as a result of regulatory enforcement may be withheld from future monies due the contractor.

Schedule of Deductions for Each Calendar Day of Erosion Control Deficiencies
Initial Occurrence*
Original Total Contract Amount

From More Than	To and Including	Daily Charge
0	$100,000	$750
$100,000	$1,000,000	$1125
$1,000,000	$5,000,000	$2000
$5,000,000	$15,000,000	$3000
$15,000,000	-	$5000

*Continued non-compliance with the requirements of this specification may result in the doubling of the above tabulated Daily Charge.
Upon written request from the Contractor, the Engineer may allow, limited activities to concurrently proceed once significant portions of the corrective work have been completed. This authorization may be similarly rescinded if in the opinion of the Engineer corrective work is not being diligently pursued.

December 12, 2006
Revised: July 15, 2008

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SPECIAL PROVISION

Section 163—Miscellaneous Erosion Control Items

Delete Section 163 and substitute the following:

163.1 General Description

This work includes constructing and removing:
Silt control gates
Temporary erosion control slope drains shown on the Plans or as directed
Sediment basins
Baled straw sediment barrier and check dams
Other temporary erosion control structures shown on the Plans or directed by the Engineer
This work also includes applying mulch (straw or hay, erosion control compost), and temporary grass.

163.1.01 Related References

A. Standard Specifications

Section 109—Measurement and Payment

Section 161—Control of Soil Erosion and Sedimentation
Section 171—Temporary Silt Fence
Section 500—Concrete Structures
Section 603—Rip Rap
Section 700—Grassing
Section 715—Bituminous Treated Roving
Section 720 – Triangular Silt Barrier
Section 822—Emulsified Asphalt
Section 860—Lumber and Timber
Section 863—Preservative Treatment of Timber Products
Section 890—Seed and Sod
Section 893—Miscellaneous Planting Materials

B. Referenced Documents

AASHTO M252
AASHTO M294

163.1.02 Submittals

Provide written documentation to the Engineer as to the average weight of the bales of mulch.

163.2 Materials

Provide materials shown on the Plans, such as pipe, spillways, wood baffles, and other accessories including an anti-seep collar, when necessary. The materials shall remain the Contractor's property after removal, unless otherwise shown on the Plans.

Materials may be new or used; however, the Engineer shall approve previously used materials before use. Materials shall meet the requirements of the following Specifications:

Material Section
Mulch 893.2.02
Temporary Silt Fence 171
Concrete Aprons and Footings shall be Class A 500
Rip Rap 603
Temporary Grass 700
Bituminous Treated Roving 715
Triangular Silt Barrier 720
Lumber and Timber 860.2.01
Preservative Treatment of Timber Products 863.1
Corrugated Polyethylene Temporary Slope Drain Pipe AASHTO M252 or M294

163.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

163.3 Construction Requirements

163.3.01 Personnel

General Provisions 101 through 150.

163.3.02 Equipment

General Provisions 101 through 150.

163.3.03 Preparation

General Provisions 101 through 150.

163.3.04 Fabrication

General Provisions 101 through 150.

163.3.05 Construction

A. Silt Control Gates

If silt control gates are required or are directed by the Engineer, follow these guidelines to construct them:

1. Clear and grade only that portion of the roadway within the affected drainage area where the drainage structure will be constructed.
2. Construct or install the drainage structure and backfill as required for stability.
3. Install the silt control gate at the inlet of the structure. Use the type indicated on the Plans.

4. Vary the height of the gate as required or as shown on the Plans.
5. Finish grading the roadway in the affected drainage area. Grass and mulch slopes and ditches that will not be paved. Construct the ditch paving required in the affected area.
6. Keep the gate in place until the work in the affected drainage area is complete and the erodible area is stabilized.
7. Remove the Type 1 silt gate assembly by sawing off the wood posts flush with the concrete apron. Leave the concrete apron between the gate and the structure inlet in place. The gate shall remain the property of the Contractor.

B. Temporary Slope Drains

If temporary slope drains are required, conduct the roadway grading operation according to Section 161 and follow these guidelines:
1. Place temporary pipe slope drains with inlets and velocity dissipaters (straw bales, silt fence, or aprons) according to the Plans.
2. Securely anchor the inlet into the slope to provide a watertight connection to the earth berm. Ensure that all connections in the pipe are leak proof.
3. Place temporary slope drains at a spacing of 350 ft (105 m) maximum on a 0% to 2% grade and at a spacing of 200 ft (60m) maximum on steeper grades, or more frequently as directed by the Engineer. Keep the slope drains in place until the permanent grass has grown enough to control erosion.
4. Remove the slope drains and grass the disturbed area with permanent grass. However, the temporary slope drains may remain in place to help establish permanent grass if approved by the Engineer.

C. Sediment Basins

Construct sediment basins according to the Plans at the required location, or as modified by the Engineer.
1. Construct the unit complete as shown, including:
Grading
Drainage
Rip rap
Spillways
Anti-seep collar
Temporary mulching and grassing on internal and external slopes
Accessories to complete the basin
2. When the sediment basin is no longer needed, remove and dispose of the remaining sediment.
3. Remove the sediment basin. Grade to drain and restore the area to blend with the adjacent landscape.
4. Mulch and permanently grass the disturbed areas according to Section 700.

D. Sediment Barrier (baled straw)

Construct sediment barrier (baled straw) according to the Plan details. Use rectangular, standard size baled straw in mechanically produced bales.
The following items may be substituted for sediment barrier (baled straw)
1. Type B Silt Fence.
2. Triangular Silt Barrier.
3. Synthetic Fiber: Use synthetic fiber bales of circular cross section at least 18 in (450 mm) in diameter. Use synthetic bales of 3 ft or 6 ft (0.9 m or 1.8 m) in length that are capable of being

linked together to form a continuous roll of the desired total length. Use bales that are enclosed in a geotextile fabric and that contain a pre-made stake hole for anchoring.
4. Coir: Use coir fiber bales of circular cross section at least 16‖ (400mm) in diameter. Use coir bales of 10 ft, 15 ft, or 20 ft (3 m, 4.5 m, or 6 m) in length. Use coir baled with coir twine netting with 2 in X 2 in (50 mm X 50 mm) openings. Use coir bales with a dry density of at least 7 lb/ft^3 (112 kg/m^3). Anchor in place with 2 in X 4 in (50 mm X 100 mm) wooden wedges with a 6 in (150 mm) nail at the top. Place wedges no more than 36 in (900 mm) apart.
5. Excelsior: Use curled aspen excelsior fiber with barbed edges in circular bales of at least 18 in (450 mm) in diameter and nominally 10 ft (3 m) in length. Use excelsior baled with polyester netting with 1 in X 1 in (25 mm by 25 mm) triangular openings. Use excelsior bales with a dry

density of at least 1.4 lb/ft$_3$ (22 kg/m$_3$). Anchor in place with 1 in (25 mm) diameter wooden stakes driven through the netting at intervals of no more than 2 ft (600 mm).
6. Compost Filter Sock: Use general use compost (see Subsection 893.2.02.A.5.b) in circular bales at least 18 in in diameter. Use compost baled with photo-degradable plastic mesh 3 mils thick with a maximum 0.25 in X 0.25 in (6 mm X 6 mm) openings. Anchor in place with 1 in (25 mm) diameter wooden stakes driven through the netting at intervals of no more than 2 ft (600 mm). The sock shall be dispersed on site when no longer required, as determined by the Engineer. Do not use Compost Filter Socks in areas where the use of fertilizer is restricted.
7. Compost Filter Berm: Use erosion control compost (see Subsection 893.2.02) to construct an uncompacted 1.5 ft to 2 ft (450 mm to 600 mm) high trapezoidal berm which is approximately 2 ft to 3 ft (600 mm to 1 m) wide at the top and minimum 4 ft (1.2 m) wide at the base. Do not use Compost Filter Berms in areas where the use of fertilizer is restricted.
The construction of the compost filter berm includes the following:
a. Keeping the berm in a functional condition.
b. Installing additional berm material when necessary.
c. Removing the berm when no longer required, as determined by the Engineer. At the Engineer's discretion, berm material may be left to decompose naturally, or distributed over the adjacent area.

E. Other Temporary Structures

When special conditions occur during the design stage, the Plans may show other temporary structures for erosion control with required materials and construction methods.

F. Temporary Grass

Use a quick growing species of temporary grass such as rye grass, millet, or a cereal grass suitable to the area and season.
Use temporary grass in the following situations:
When required by the Specifications or directed by the Engineer to control erosion where permanent grassing cannot be planted.
To protect an area for longer than mulch is expected to last (60 calendar days).
Plant temporary grass as follows:
1. Use seeds that conform to Subsection 890.2.01, ―Seed.‖ Perform seeding according to Section 700; except use the minimum ground preparation necessary to provide a seed bed if further grading is required.
2. Prepare areas that require no further grading according to Subsection 700.3.05.A, ―Ground Preparation.‖ Omit the lime unless the area will be planted with permanent grass without further grading. In this case, apply the lime according to Section 700.

3. Apply mixed grade fertilizer at 400 lbs/acre (450 kg/ha). Omit the nitrogen. Mulch (with straw or hay) temporary grass according to Section 700. (Erosion control compost Mulch will not be allowed with grassing.)
4. Before planting permanent grass, thoroughly plow and prepare areas where temporary grass has been planted according to Subsection 700.3.05.A, ―Ground Preparation‖.
5. Apply Polyacrylamide (PAM) to all areas that receive temporary grassing.
6. Apply Pam (powder) before grassing or PAM (emulsion) to the hydroseeding operation.
7. Apply PAM according to manufacturer specifications.
8. Use only anionic PAM.
For projects that consist of shoulder reconstruction and/or shoulder widening refer to Subsection 161.3.05.H for Wood Fiber Blanket requirements.

G. Mulch

When stage construction or other conditions prevent completing a roadway section continuously, apply mulch (straw or hay or erosion control compost) to control erosion. Mulch may be used without temporary grassing for 60 calendar days or less. Areas stabilized with only mulch (straw/hay/compost) shall be planted with temporary grass after 60 calendar days.
Apply mulch as follows:
1. Mulch (Hay or Straw)
a. Uniformly spread the mulch over the designated areas from 2 in to 4 in (50 mm to 100 mm) thick.

b. After spreading the mulch, walk in the mulch by using a tracked vehicle (preferred method), empty sheep foot roller, light discing, or other means that preserves the finished cross section of the prepared areas. The Engineer will approve of the method.
c. Place temporary mulch on slopes as steep as 2:1 by using a tracked vehicle to imbed the mulch into the slope. Where specified, use bituminous treated mulch (straw or hay) according to Subsection 700.3.05.G.1, ―Mulch with Binder‖.
d. When grassing operations begin, leave the mulch inplace and plow the mulch into the soil during seed bed preparation. The mulch will become beneficial plant food for the newly planted grass.
2. Apply mulch (erosion control compost) as follows:
a. Uniformly spread the mulch (erosion control compost) over the designated areas 2 in (50 mm) thick.
b. When rolling is necessary, or directed by the Engineer, use a light corrugated drum roller.
c. When grassing operations begin, leave the mulch in place and plow the mulch into the soil during seed bed preparation. The mulch will become beneficial plant food for the newly planted grass.
d. Plant temporary grass on area stabilized with mulch (erosion control compost) after 60 calendar days.
e. Do not use Erosion Control Compost in areas where the use of fertilizer is restricted.

H. Miscellaneous Erosion Control Not Shown on the Plans

When conditions develop during construction that were unforeseen in the design stage, the Engineer may direct the Contractor to construct temporary devices such as but not limited to:
Bulkheads
Sump holes

Half round pipe for use as ditch liners
U-V resistant plastic sheets to cover critical cut slopes
The Engineer and the Contractor will determine the placement to ensure erosion control in the affected area.

I. Diversion Channels

When constructing a culvert or other drainage structure in a live stream that requires diverting a stream, construct a diversion channel.

J. Temporary Check Dams

Temporary check dams are constructed of the following materials;
Stone plain rip rap according to Section 603 or of sand bags as in Section 603 without Portland cement. (Place plastic filter fabric on ditch section before placing rip rap.)
Fabric (Type C silt fence)
Hay Bales
Temporary check dams shall be constructed according to plan details and shall remain in place until the permanent ditch protection is in place or being installed and the removal is approved by the Engineer.

K. Construction Exits

Locate construction exits at any point where vehicles will be leaving the project onto a public roadway. Install construction exits at the locations shown in the plans and in accordance with plan details.

L. Retrofit

Add the retrofit device to the permanent outlet structure as shown on the Plan details.
When all land disturbing activities that would contribute sediment-laden runoff to the basin are complete, clean the basin of sediment and stabilize the basin area with vegetation.
When the basin is stabilized, remove the retrofit device from the permanent outlet structure of the detention pond.

M. Inlet Sediment Trap

Inlet sediment traps consist of a temporary device placed around a storm drain inlet to trap sediment. An excavated area adjacent to the sediment trap will provide additional sediment storage.
Inlet sediment traps may be constructed of Type C silt fence, plastic frame and filter, hay bales, baffle box, or other filtering materials approved by the Engineer.

Construct inlet sediment traps according to the appropriate specification for the material selected for the trap.
Place inlet sediment traps as shown on the Plans or as directed by the Engineer.

163.3.06 Quality Acceptance

General Provisions 101 through 150.

163.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

163.4 Measurement

A. Silt Control Gates

Silt control gates are measured for payment by the entire structure constructed at each location complete in place and accepted. Silt control gates constructed at the inlet of multiple lines of drainage structures are measured for payment as a single unit.

B. Temporary Slope Drains

Temporary slope drains are measured for payment by the linear foot (meter) of pipe placed. When required, the inlet spillway and outlet apron and/or other dissipation devices are incidental and not measured separately.

C. Sediment Basins

Sediment basins are measured for payment by the entire structure complete, including construction, maintenance, and removal. Measurement also includes:
Earthwork
Drainage
Spillways
Baffles
Rip rap
Final cleaning to remove the basin
Permanent and temporary grassing for sediment basins is measured separately for payment.

D. Diversion Channels

Diversion channels are not measured for payment. Costs for the entire structure complete, including materials, construction (including earthwork), and removal is included in the price bid for the drainage structure or for other Contract items.

E. Temporary Grass

Temporary grass is measured for payment by the acre (hectare). Lime, when required, is measured by the ton (megagram). Mulch and fertilizer are measured separately for payment.

F. Mulch

Mulch (straw or hay, or erosion control compost) is measured for payment by the ton (megagram).

G. Baled Straw Sediment Barrier, Baled Straw Check Dam and Fabric Check Dams

Baled straw sediment barrier, baled straw check dams, and fabric check dams are measured by the linear foot (meter). When the Contractor substitutes a product allowed in Subsection 163.3.05.D for baled straw sediment barrier or when the Engineer directs this substitution, the product will be measured by the linear foot (meter).

H. Rip Rap Check Dams

Rip Rap Check Dams are measured per each which will include all work necessary to construct the check dam including plastic filter fabric placed beneath the rip rap or sand bags.

I. Construction Exits

Construction exits are measured per each which will include all work necessary to construct the exit including the required geotextile fabric placed beneath the aggregate.

J. Retrofit

Retrofit will be measured for payment per each. The construction of the detention pond and permanent outlet structure will be measured separately under the appropriate items.

K. Inlet Sediment Trap

Inlet sediment traps, regardless of the material selected, are measured per each which includes all work

necessary to construct the trap including any incidentals and providing the excavated area for sediment storage.

163.4.01 Limits

General Provisions 101 through 150.

163.5 Payment

A. Silt Control Gates

The specified silt control gates are paid for at the Contract Unit Price per each. Payment is full compensation for:

Furnishing the material and labor

Constructing the concrete apron as shown on the Plans

Excavating and backfilling to place the apron

Removing the gate

B. Temporary Slope Drains

Temporary slope drains are paid for by the linear foot (meter). Payment is full compensation for materials, construction, removal (if required), inlet spillways, velocity dissipaters, and outlet aprons. When temporary drain inlets and pipe slope drains are removed, they remain the Contractor's property and may be reused or removed from the Project as the Contractor desires. Reused pipe or inlets are paid for the same as new pipe or inlets.

C. Sediment Basin

Sediment basins, measured according to Subsection 163.4,C ―Measurement,‖ are paid for by the unit, per each, for the type specified on the Plans. Price and payment are full compensation for work and supervision to construct, and remove the sediment basin, including final clean-up.

D. Diversion Channel

Diversion channels are not paid for separately; they are included in the price bid for the drainage structure or for other Contract Items.

E. Temporary Grass

Temporary grass is paid for by the acre (hectare). Payment is full compensation for all equipment, labor, ground preparation, materials, wood fiber mulch, polyacrylamide, and other incidentals. Lime (when required) is paid for by the ton (megagram). Mulch and fertilizer are paid for separately.

F. Mulch

Mulch is paid for by the ton. Payment is full compensation for all materials, labor, maintenance, equipment and other incidentals.

The weight for payment of straw or hay mulch will be the product of the number of bales used and the average weight per bale as determined on certified scales provided by the contractor or state certified scales. Provide written documentation to the Engineer stating the average weight of the bales.

The weight of erosion control compost mulch will be determined by weighing each loaded vehicle on the required motor truck scale as the material is hauled to the roadway, or by using recorded weights if a digital recording device is used. The contractor may propose other methods of providing the weight of the mulch to Engineer for approval.

G. Baled Straw Sediment barrier, Baled Straw Check Dams and Fabric Check Dams (Type C Silt Fence)

Baled straw sediment barrier, baled straw check dams and fabric check dams (type C silt fence), complete in place and accepted are paid for at the Contract Unit Price bid per linear foot (meter). Payment is full compensation for constructing, and removing (when directed) the baled straw sediment barrier or either check dam.

When the Contractor substitutes any product allowed in Subsection 163.3.05.D for baled straw sediment barrier or when the Engineer directs this substitution, payment is made at the bid price per linear foot (meter) for baled straw sediment barrier.

H. Rip Rap Check Dams

Rip Rap Check Dams are paid for per each. Payment is full compensation for all materials, construction, and removal. Reused stone plain rip rap or sandbags are paid for on the same basis as new items. Filter fabric required under rip rap check dams is included in the price bid for each check dam.

I. Construction Exits

Construction exits are paid for per each. Payment is full compensation for all materials including the required geotextile, construction, and removal.

J. Retrofit

This item is paid for at the Contract Unit Price per each. Payment is full compensation for all work, supervision, materials (including the stone filter), labor and equipment necessary to construct and remove the retrofit device from an existing or proposed detention pond outlet structure.

K. Inlet Sediment Trap

Inlet sediment traps are paid for per each. Payment is full compensation for all materials, construction, and removal

The Items in this Section (except temporary grass and mulch) are made as partial payments as follows: When the item is installed and put into operation the Contractor will be paid 75 percent of the Contract price.

When the Engineer instructs the Contractor that the Item is no longer required and is to remain in place or is removed, whichever applies, the remaining 25 percent will be paid.

Temporary devices may be left in place at the Engineer's discretion at no change in cost. Payment for temporary grass will be made based on the number of acres (hectares) grassed. Mulch will be based on the number of tons (megagrams) used.

Payment is made under:

Item No. 163 Construct and remove silt control gate, type__ Per each
Item No. 163 Construct and remove temporary pipe slope drains__ Per linear foot (meter)
Item No. 163 Construct and remove temporary sediment barrier or baled straw check dam, __
Per linear foot (meter)
Item No. 163 Construct and remove sediment basin type__, Sta. No.___ Per each
Item No. 163 Construct and remove Fabric Check Dam (type C silt fence) Per linear foot (meter)
Item No. 163 Construct and remove Rip Rap Check Dams ,Stone Plain Rip Rap/Sand Bags
Per Each
Item No. 163 Construction exit Per each

Item No. 163 Construct and remove retrofit, Sta. No.____ Per each
Item No. 163 Construct and remove inlet sediment trap Per each
Item No. 163 Temporary grass Per acre (hectare)
Item No. 163 Mulch Per ton (megagram)

163.5.01 Adjustments

General Provisions 101 through 150.

First Use Date: May 19, 2006
Revised: July 15, 2008

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SPECIAL PROVISION

Section 165—Maintenance of Temporary Erosion and Sedimentation Control Devices

Add the following:

165.1 General Description

This work consists of providing maintenance on temporary erosion and sediment control devices, including but not limited to the following:
Silt fence
Sediment basins
Silt control gates
Check dams
Silt retention barriers
It also consists of removing sediment that has accumulated at the temporary erosion and sediment control devices.

165.1.01 Definitions

General Provisions 101 through 150.

165.1.02 Related References

A. Standard Specifications

General Provisions 101 through 150.

B. Referenced Documents

General Provisions 101 through 150.

165.1.03 Submittals

General Provisions 101 through 150

165.2 Materials

General Provisions 101 through 150.

165.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

165.3 Construction Requirements

165.3.01 Personnel

General Provisions 101 through 150.

165.3.02 Equipment

General Provisions 101 through 150.

165.3.03 Preparation

General Provisions 101 through 150.

165.3.04 Fabrication

General Provisions 101 through 150.

165.3.05 Construction

A. General

As a minimum, clean the sediment from all temporary erosion control devices (except sediment basins) installed on the project when one half the capacity, by height, depth or volume has been reached. Clean the sediment from all temporary sediment basins installed on a project when one third the capacity of the storage volume has been filled.
Handle sediment excavated from any erosion or sediment control device in one of the following ways:

Remove sediment from the immediate area and immediately stabilize it to prevent the material from refilling any erosion or sediment control device.
Place and mix it in the roadway embankment, or waste it in an area approved by the Engineer.
Repair or replace at no cost to the Department, any erosion or sediment control devices that are not functioning properly or are damaged due to negligence or abuse.

B. Temporary Silt Fence

Maintenance of Temporary Silt Fence consists of furnishing all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0 % filled). Also included is the removal of sediment accumulations ("filtercake") on the fabric by tapping the fabric on the downstream side.

C. Silt Control Gates

Maintenance of Temporary Silt Control Gates consists of all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled). When applicable, this item will include the removal of sediment accumulations on the fabric by tapping the fabric on the downstream side.

D. Check Dams (all types)

Maintenance of Temporary Erosion Control Check Dams shall consist of all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled). This item also includes the removal of any material deposited in sump holes. When applicable, this item will include the removal of sediment accumulations on the fabric by tapping the fabric on the downstream side, or from the baled straw by similar means.

E. Silt Retention Barrier

Maintenance of Temporary Silt Retention Barrier consists of all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled).

F. Temporary Sediment Basins

Maintenance of Temporary Sediment Basins consists of all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original bottom of the basin. This also includes removing accumulated sediment from the rock filter and restoring the rock filter to its original specified condition and any work necessary to restore all other components to the pre-maintenance conditions.

G. Sediment Barrier (baled straw)

Maintenance of sediment barrier (baled straw) consists of furnishing all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0 % filled). Also included is the removal of sediment accumulations on the bales by tapping.

H. Triangular Silt Barrier

Maintenance of Triangular Silt Barrier consists of all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled).

I. Retrofit:

Maintenance of the retrofit device consists of all labor, tools, materials, equipment and necessary incidentals to remove and properly dispose of accumulated sediment in the permanent detention pond being utilized as a temporary sediment basin. This item also includes any maintenance that is required to ensure the retrofit device is maintained per Plan details and any maintenance of the stone filter to maintain its filtering ability, including cleaning and replacement.

J. Construction Exit:

Maintenance of the construction exit consists of all labor, tools, materials, equipment and incidentals, including additional stone and geotextile fabric as required to prevent the tracking or flow of soil onto public roadways. This includes, scarifying existing stone, cleaning existing stone, or placement of additional stone.
Cleaning of the construction exit by scraping and/or brooming only will not be measured for payment.

K. Inlet Sediment Trap

Maintenance of inlet sediment traps consists of all labor, tools, materials, equipment and necessary incidentals to remove and properly dispose of accumulated sediment in the trap and/or the excavated area adjacent to the trap. It also includes any maintenance that is required to remove sediment accumulations ("filtercake") from the material selected to construct the inlet sediment trap.

165.3.06 Quality Acceptance
General Provisions 101 through 150.
165.3.07 Contractor Warranty and Maintenance
General Provisions 101 through 150.
165.4 Measurement
A. Temporary Silt Fence:
Maintenance of temporary silt fence, Type A, B, or C, is the actual linear feet (meter) of silt fence, measured in place, where sediment is removed.
B. Silt Control Gates:
Maintenance of temporary silt control gates, type I, II, III or IV, as specified on the Plans, is measured as a single unit.
C. Check Dams (All Types):
Maintenance of temporary erosion control check dams as specified on the Plans is the actual linear feet (meter) of baled straw, type c silt fence or rip rap, measured in place, where sediment is removed.
D. Silt Retention Barrier:
Maintenance of temporary silt retention barrier as specified on the Plans, is measured by the linear foot (meter) where sediment is removed.
E. Temporary Sediment Basins:
Maintenance of temporary sediment basins as specified on the Plans, is measured as a single unit.
F. Sediment Barrier (baled straw)
Maintenance of sediment barrier (baled straw), is the actual linear feet (meter) of baled straw measured in place, where sediment is removed.

G. Triangular Silt Barrier:
Maintenance of triangular silt barrier as specified on the plans, is measured by the linear foot (meter) where sediment is removed.
H. Retrofit:
Maintenance of retrofit device at the location specified on the Plans is measured per each.
I. Construction Exit:
Maintenance of construction exit at the location specified on the Plans, or as directed by the Engineer is measured per each.
J. Inlet Sediment Trap
Maintenance of inlet sediment trap at the location specified on the Plans, or as added by the Engineer is measured per each.
165.4.01 Limits
General Provisions 101 through 150.
165.5 Payment
A. Temporary Silt Fence:
Maintenance of temporary silt fence, Type A, B, or C, is paid for at the contract unit price bid per linear foot (meter).
B. Silt Control Gates:
Maintenance of temporary silt control gates, Type I, II, III, or IV as specified on the Plans is paid for at the contract unit price bid per each.
C. Check Dams (All Types):
Maintenance of Check Dams as specified on the Plans is paid for at the contract unit price bid per linear foot (meter).
D. Silt Retention Barrier:
Maintenance of temporary silt retention barrier as specified on the Plans is paid for at the contract unit price bid per linear foot (meter).
E. Temporary Sediment Basins:
Maintenance of temporary sediment basins as specified on the Plans is paid for at the contract unit price bid per each.
F. Sediment Barrier (baled straw):
Maintenance of sediment barrier (baled straw) as specified on the Plans is paid for at the contract unit price bid per linear foot (meter).

G. Triangular Silt Barrier:
Maintenance of triangular silt barrier as specified on the Plans is paid for at the contract unit price bid per linear foot (meter).

H. Retrofit:
Maintenance of the retrofit device at the location specified on the Plans is paid for at the contract unit price bid per each.

I. Construction Exit:
Maintenance of the construction exit at the location specified on the Plans or as added by the Engineer is paid for at the contract unit price per each.

J. Inlet Sediment Trap
Maintenance of the inlet sediment trap at the location specified on the Plans or at the location specified by the Engineer is paid for at the contract unit price per each.

Payment will be made under:

Item No. 165 Maintenance of temporary silt fence Type____ per linear foot (meter)
Item No. 165 Maintenance of silt control gate Type ____ per each
Item No. 165 Maintenance of check dams (all types) per linear foot (meter)
Item No. 165 Maintenance of silt retention barrier per foot (meter)
Item No. 165 Maintenance of temporary sediment basin, Sta. No. ____ per each
Item No. 165 Maintenance of sediment barrier (baled straw) per linear foot (meter)
Item No. 165 Maintenance of triangular silt barrier per linear foot (meter)
Item No. 165 Maintenance of retrofit, Sta. No.____ per each
Item No. 165 Maintenance of construction exit per each
Item No. 165 Maintenance of inlet sediment trap per each

165.5.01 Adjustments

General Provisions 101 through 150.

Revised: July 15, 2008

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SPECIAL PROVISION

Section 167—Water Quality Monitoring

Add the following:

167.1 General Description

This Specification establishes the Contractor's responsibility to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) Infrastructure Permit No. GAR 100002 as it pertains to Part IV. Erosion, Sedimentation and Pollution Control Plan.

167.1.01 Definitions

Certified Personnel— certified personnel are defined as persons who have successfully completed the appropriate certification course approved by the Georgia Soil and Water Conservation Commission. For Department projects the certified person must also have successfully completed the Department's WECS certification course.

167.1.02 Related References

A. Standard Specifications

Section 161—Control of Soil Erosion and Sedimentation

B. Referenced Documents

NPDES Infrastructure Permit No. GAR 100002, Part IV
GDOT WECS seminar.
Environmental Protection Divisions Rules and Regulations (Chapter 391-3-26)
Georgia Soil and Water Conservation Commission Certification Level IA course.
OCGA 12-7

167.1.03 Submittals

General Provisions 101 through 150

167.2 Materials

General Provisions 101 through 150.

167.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

167.3 Construction Requirements

167.3.01 Personnel
Use certified personnel to perform all monitoring, sampling, inspections, and rainfall data collection.

Use the Contractor designated WECS or select a prequalified consultant from the Qualified Consultant List (QCL) to perform water quality monitoring.
Ensure that monitoring consultants' employees who perform monitoring, sampling, inspections, and rainfall data collection are GASWCC Certified.

167.3.02 Equipment
Provide equipment necessary to complete the Work or as directed.

167.3.03 Preparation
General Provisions 101 through 150.

167.3.04 Fabrication
General Provisions 101 through 150.

167.3.05 Construction
A. General
Perform inspections, rainfall data collection, testing of samples, and reporting the test results on the project according to the requirements in Part IV of the NPDES Infrastructure permit and this Specification.
Take samples manually or with the use of automatic samplers, according to the permit. Analyze all according to the permit, regardless of the method used to collect the samples.
If samples are analyzed in the field using portable turbidemeters, the monitoring results shall state that they are being used and a digital readout of NTUs is what is provided.
Submit bench sheets, work sheets, etc., when using portable turbidemeters. There are no exceptions to this requirement.
Perform required inspections and submit all reports required by this Specification within the time frames specified. Failure to perform the inspections within the time specified will result in the cessation of all construction activities with the exception of traffic control and erosion control. Failure to submit the required reports within the times specified will result in non-refundable deductions as specified in Subsection 161.5.01.B.
B. Inspections
The Department will provide one copy of required inspection forms for use and duplication. Inspection forms may change during the contract to reflect regulatory agency needs or the need of the Department. Any costs associated with the change of inspection forms shall be considered incidental. Alternate formats of the provided forms maybe created, used and submitted by the Contractor provided the required content and/or data fields and verbatim certification statements from the Department's current forms are included.
The Engineer shall inspect the installation and condition of each erosion control device required by the erosion control plan within seven days after initial installation. This inspection is performed for each stage of construction when new devices are installed. The WECS shall ensure all installation deficiencies reported by the Engineer are corrected within two business days.
Ensure that the inspections of the areas listed below are conducted by certified personnel and at the frequencies listed. Document all inspections on the appropriate form provided by the Department.
1. Daily:
a. Petroleum product storage, usage and handling areas
b. All locations where vehicles enter/exit the site
Continue these inspections until all entry and exit sites are stabilized and fuel is not stored or transferred on the site. Utilize the Daily inspection form.
2. Weekly and after Rainfall Events:
Conduct inspections on these areas every seven calendar days and within twenty-four hours after the end of a rainfall event that is 0.5 in (13 mm) or greater:
a. Disturbed areas not permanently stabilized
b. Material storage areas

c. Structural control measures, Best Management Practices (BMPs)
d. Water quality monitoring locations and equipment
Continue these inspections until all BMPs have been removed. Utilize the EC-1 Form.
3. Monthly:
Once per month, inspect all areas where final stabilization has been completed. Look for evidence of sediments or pollutants entering the drainage system and or receiving waters. Inspect all permanent erosion control devices that remain in place to verify the maintenance status and that the devices are functioning properly.
Continue these inspections until the Notice of Termination is submitted. Utilize the Monthly inspection form.

C. Reports:

1. Inspection Reports:
Summarize the results of inspections noted above in writing on the appropriate Daily, Weekly, Monthly or EC-1 form provided by the Department. Include the following information:
Date(s) of inspection
Name of personnel performing inspection
Status of devices
Observations
Action taken
Signature of personnel performing the inspection
Any incidents of non-compliance
The inspection form certification sheet shall be signed by the project WECS and the inspector performing inspections on behalf of the WECS (if not the same person).
Submit all inspection reports to the Engineer within twenty-four hours of the inspection.
The Engineer will review the submitted reports and inspect the project to determine their accuracy.
The Engineer will notify the certified personnel of any additional items that should be added to the inspection report.
Correct any items listed in the inspection report requiring routine maintenance within 72 (seventy –two) hours of notification.
Assume responsibility for all costs associated with additional sampling as specified in Part IV.D.6.d.3.(c) of the NPDES GAR 100002 permit if either of these conditions arise:
BMPs shown in the Plans are not properly installed and maintained, or
BMPs designed by the Contractor are not properly designed, installed and maintained.
2. Monitoring Reports
a. Report Requirements
Include in all reports, the following certification statement, signed by the WECS or consultant providing monitoring on the project:
―I certify under penalty of law that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that certified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.‖

When a rainfall event requires a sample to be taken, submit a report of the monitoring results to the Engineer within seven working days of the date the sample was obtained. Include the following information:
1) Date of sampling
2) Rainfall amount on sample date (sample date only)
3) NTU of sample & analysis method
4) Location where sample was taken (station number, etc.)
5) Receiving water or outfall sample

6) Project number and county
7) Whether the sample was taken by automatic sampler or manually (grab sample)
b. Report Requirements with No Qualifying Rainfall Events
In the event that a qualifying rainfall event does not occur prior to the submittal of the NOT (Notice of Termination), submit a report that states ―No qualifying rainfall event occurred and no samples were taken.‖
c. Test Results
Provide monitoring test results to the Engineer within 48 hours of the samples being analyzed. This notification may be verbal or written. This notification does not replace the requirement to submit the formal monitoring summary to the Engineer within 7 working days of the samples being collected.
3. Rainfall Data Reports
Record the measurement of rainfall once each twenty-four hour period. Measure rainfall data at the active phase of construction on the site.
Project rain gauges and those used to trigger the automatic samplers are to be emptied after every rainfall event. This will prevent a cumulative effect and prevent automatic samplers from taking samples even though the rainfall event was not a qualifying event.
The daily rainfall data supplied by the WECS to the Engineer will be the official rainfall data for the project.

167.3.06 Quality Acceptance

General Provisions 101 through 150.

167.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

167.4 Measurement

Water Quality Inspections in accordance with the inspection and reports sub-sections will be measured for payment by the month up to the time the Contract Time expires. Required inspections and reports after Contract Time has expired will not be measured for payment.
Water Quality Monitoring and Sampling are measured per each. When the monitoring location is a receiving water, the upstream and downstream samples constitute one sample. When the monitoring location is an outfall, a single outfall sample constitutes one sample.

167.4.01 Limits

General Provisions 101 through 150. Submit the monitoring summary report to the Engineer within 7 working days

167.5 Payment

Payment for Water Quality Monitoring and Sampling will be made as follows:
Water Quality Monitoring and Sampling per each is full compensation for meeting the requirements of the monitoring sections of the NPDES permit and this Specification, obtaining samples, analyzing samples, any and all necessary incidentals, and providing results of turbidity tests to the Engineer, within the time frame required by the NPDES Infrastructure permit, and this Specification.
This item is based on the rainfall events that require sampling as described in Part IV.D.5 of the permit. The Department will not pay for samples taken and analyzed for rainfall events that are not qualifying events as compared to the daily rainfall data supplied by the WECS.
Water Quality Inspections will be paid at the Contract Price per month. This is full compensation for performing the requirements of the inspection section of the NPDES permit and this Specification, any and all necessary incidentals, and providing results of inspections to the Engineer, within the time frame required by the NPDES Infrastructure permit, and this Specification.
Payment will be made under:
Item No. 167 Water quality inspections Per month
Water Quality Monitoring and Sampling will be paid per each.
Payment will be made under:
Item No. 167 Water quality monitoring and sampling Per each

167.5.01 Adjustments

General Provisions 101 through 150.

Revised December 10, 2007

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SPECIAL PROVISION

Section 170—Silt Retention Barrier

Delete Subsection 170.3.05 and substitute the following:

170.3.05 Construction

Install a silt retention barrier as follows: Barriers shall be either staked or floating depending upon current, tides, water depth, and other variables, or as shown in the plans and contract.

A. Floating Silt Retention Barrier

1. Confine dredged materials to ponding areas or settlement basins using standpipes or weirs.
2. Place the barrier approximately 25 ft (7.5 m) outside the affected construction area, and at a depth within 5 ft (1.5 m) of the bottom.
3. If the body of water has a significant current, place the barrier parallel to the water flow.
4. Vary the dimensions and methods to suit the conditions and to meet the requirements of other local and State water control agencies to ensure that silt dispersion is effectively controlled.

5. Provide a fabric that is weighted to prevent the bottom from floating.

B. Staked Silt Retention Barrier

1. Where a staked barrier is used to protect a stream or inundated area, ensure the fabric:

a. Extends to the bottom of the stream or inundated area and is weighted to prevent it from floating

b. Is not trenched in at the bottom

c. Extends 1 foot (300 mm) above normal water

2. Posts:

a. Options: 2 inch(50 mm) x 4 inch (100 mm) wood; or 2 ½ inch (62.5 mm min. diameter) wood; or steel at a minimum of 1.33 pounds per foot (1.980 kg/m)

b. space posts at a maximum spacing of 4 feet (1.2 m)

c. posts are minimum of 5 feet (1.5 m) in length

d. posts extend a minimum of 18 inches (450 mm) into the soil

First Use Date: August 22, 2008

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SPECIAL PROVISION

Section 171—Silt Fence

Delete Section 171 and substitute the following:

171.1 General Description

This work includes furnishing, installing, and removing a water permeable filter fabric fence to remove suspended particles from drainage water.

171.1.01 Definitions

General Provisions 101 through 150.

171.1.02 Related References

A. Standard Specifications

Section 163—Miscellaneous Erosion Control Items
Section 700—Grassing
Section 862—Wood Posts and Bracing
Section 881—Fabrics
Section 894—Fencing

B. Referenced Documents

ASTM D 3786
ASTM D 4355
ASTM D 4632
ASTM D 4751
GDT 87
QPL 36

171.1.03 Submittals

General Provisions 101 through 150.

171.2 Materials

Materials shall meet the requirements of the following Specifications:

Material	Section
Filter Fabrics	881
Fencing	894
Wood Posts and Bracing	862

Conditions during Project construction will affect the quantity of the silt fence to be installed.
The Engineer may increase, decrease, or eliminate the quantity at his or her direction. Variations in quantity are not changes in details of construction or in the character of the work.
For Type A, B, and C fences, use fabric as specified in Subsection 881.2.07, "Silt Fence Filter Fabric."

171.2.01 Delivery, Storage, and Handling

During shipment and storage, wrap the fabric in a heavy-duty covering that will protect the cloth from sunlight, mud, dust, dirt, and debris. Do not expose the fabric to temperatures greater than 140 °F (60 °C).
When installed, the Engineer will reject the fabric if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

171.3 Construction Requirements

171.3.01 Personnel

General Provisions 101 through 150.

171.3.02 Equipment

General Provisions 101 through 150.

171.3.03 Preparation

General Provisions 101 through 150.

171.3.04 Fabrication

General Provisions 101 through 150.

171.3.05 Construction

Install the silt fence according to this Specification, as shown on the Plans, or as directed by the Engineer as; perimeter, ditch check or similar protection.

A. Install Silt Fence

Install silt fence by either of the following methods:
1. Excavated Trench Method
a. Excavate a trench 4 to 6 in (100 to 150 mm) deep using equipment such as a trenching machine or motor grader. If equipment cannot be operated on the site, excavate the trench by hand.
2. Soil Slicing Method
a. Create a mechanical slice in the soil 8 to 12 in (200 to 300 mm) deep to receive the silt fence. Ensure that the width of the slice is not more than 3 in (75 mm). Mechanically insert the silt fence fabric into the slice in a simultaneous operation with the slicing that ensures consistent depth and placement.
Install the first post at the center of the low point (if applicable). Space the remaining posts a maximum of 6 ft (1.8 m) apart for Types A and B fence and 4 ft (1.2 m) apart for Type C fence.

Bury the posts at least 18 in (450 mm) into the ground. If this depth cannot be attained, secure the posts enough to prevent the fence from overturning from sediment loading.
Attach the filter fabric to the post using wire, cord, staples, nails, pockets, or other acceptable means.
a. Staples and Nails (Wood Posts): Evenly space staples or nails with at least five per post for Type A fence and four per post for Type B fence.
b. Pockets: If using pockets and they are not closed at the top, attach the fabric to a wood post using at least one additional staple or nail, or to a steel post using wire. Ensure that the additional attachment is within the top 6 in (150 mm) of the fabric.

Install the filter fabric so that 6 to 8 in (150 to 200 mm) of fabric is left at the bottom to be buried. Provide a minimum overlap of 18 in (450 mm) at all splice joints.
For Type C fence:
1. Woven Wire Supported
a. Steel Post: Use wire to attach the fabric to the top of the woven wire support fence at the midpoint between posts. Also, use wire to attach the fabric to the post.
2. Polypropylene Mesh Supported
a. Wood Post: Use at least six staples per post. Use two staples in a crisscross or parallel pattern to secure the top portion of the fence. Evenly space the remaining staples down the post.
b. Steel Post: Use wire to attach the fabric and polypropylene mesh to the post.
Install the fabric in the trench so that 4 to 6 in (100 to 150 mm) of fabric is against the side of the trench with 2 to 4 in (50 to 100 mm) of fabric across the bottom in the upstream direction.
Backfill and compact the trench to ensure that flow cannot pass under the barrier. When the slice method is used, compact the soil disturbed by the slice on the upstream side of the silt fence first, and then compact the downstream side.
When installing a silt fence across a waterway that produces significant runoff, place a settling basin in front of the fence to handle the sediment load, if required. Construct a suitable sump hole or storage area according to Section 163.

B. Install silt fence ditch checks

Temporary Silt Fence Ditch Checks
Temporary silt fence ditch checks shall be constructed of the material type selected and shown on the approved erosion and sediment control plan. Item installation shall be constructed and placed according to approved Plan details. Temporary ditch checks shall remain in place until the permanent ditch protection is in place or being installed and the removal is approved by the Engineer.

C. Remove the Silt Fence

Keep all silt fence in place unless or until the Engineer directs it to be removed. A removed silt fence may be used at other locations if the Engineer approves of its condition.
After removing the silt fence, dress the area to natural ground, grass and mulch the area according to Section 700.
The silt fence shall remain until the Project is accepted or until the fence is removed. Also, remove and dispose of the silt accumulations at the silt fence.
Remove and replace any deteriorated filter fabric that reduces the effectiveness of the silt fence.
Repair or replace any undermined silt fence at no additional cost to the Department.

171.3.06 Quality Acceptance

Approved silt fence is listed in QPL 36. Approved fabrics must consistently exceed the minimum requirements of this Specification as verified by the Office of Materials and Research. The Office of Materials and Research will remove fabric that fails to meet the minimum requirements of this specification from the QPL until the products' acceptability has been reestablished to the Department's satisfaction.
At the time of installation, the Engineer will reject the fabric if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

171.3.07 Contractor Warranty

The silt fence shall remain until the Project is accepted or until the fence is removed. Also, remove and dispose of the silt accumulations at the silt fence.
Remove and replace any deteriorated filter fabric that reduces the effectiveness of the silt fence.
Repair or replace any undermined silt fence at no additional cost to the Department.

171.4 Measurement

The quantity of silt fence, silt fence ditch checks to be paid for is the actual number of linear feet (meters) of silt fence, measured in place from end post to end post of each separate installation. The silt fence must be complete and accepted.

171.4.01 Limits

General Provisions 101 through 150.

171.5 Payment

Silt fence Type A, B, or C measured as defined in Subsection 171.4, "Measurement," is paid for at the Contract Unit Price bid per linear foot (meter).

Payment is full compensation for the following:

Furnishing materials

Erecting the fence

Dressing and grassing, when required

Removing the fence, when required

Payment for this Item is made as follows:

Seventy-five percent of the Contract Price bid per linear foot (meter) is paid when each fence is complete in place.

Twenty-five percent is paid at removal or acceptance.

If the silt fence must be repaired or removed, as the result of neglect or damage, perform the work at no additional cost to the Department.

Payment will be made under:

Item No. 171 Silt fence, type__ Per linear foot (meter)

171.5.01 Adjustments

General Provisions 101 through 150.

Office of Materials and Research

ALL TRAIL CONCRETE CLASS 3, 3000 PSI

Section 439—Portland Cement Concrete Pavement 5 IN (Special)

439.1 General Description

This work includes constructing pavement composed of Portland cement concrete, with or without reinforcement as specified, on a prepared subgrade or subbase course.

Follow the requirements of these Specifications and conform with the lines, grades, thicknesses, and typical cross-sections shown on the Plans or established by the Engineer.

439.1.01 Definitions

General Provisions 101 through 150.

439.1.02 Related References

A. Standard Specifications

Section 152—Field Laboratory Building

Section 430—Portland Cement Concrete Pavement

Section 431—Grind Concrete Pavement

Section 461—Sealing Roadway and Bridge Joints and Cracks

Section 500—Concrete Structures

Section 800—Coarse Aggregate

Section 801—Fine Aggregate

Section 830—Portland Cement

Section 831—Admixtures

Section 832—Curing Agents

Section 833—Joint Fillers and Sealers

Section 853—Reinforcement and Tensioning Steel

Section 880—Water

Section 886—Epoxy Resin Adhesives

B. Referenced Documents

AASHTO T 126

AASHTO T 22

439.1.02

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AASHTO T 23

ASTM C 94, Requirements for Uniformity

GDT 26

GDT 27

GDT 28

GDT 32

GDT 72

GDT 78

SOP 34

439.1.03 Submittals

A. Profilograph Certification

Before paving, ensure that the profilograph and operator are certified by the Office of Materials and Research in accordance with Standard Operating Procedure No. 34, Certification of Contractor Personnel and Equipment for Smoothness Testing of Portland Cement Concrete Pavement with the Rainhart Profilograph. Certification includes a mechanical check of the profilograph functions and a written examination by the operator.

Request certification in writing to the Office of Materials and Research at least two weeks before it is needed.

B. Report Form

Refer to Subsection 439.3.06.L, “Smoothness Testing” for report form and submittal requirements**.**

C. Concrete Design

Submit for approval a concrete design prepared by a testing laboratory approved by the Office of Materials and Research. The Contractor will transmit the design to the Engineer for approval at least 35 days before use.

Or, submit for approval concrete mix proportions with commonly used materials without preparation by a laboratory. The Office of Materials and Research may approve proportions based upon the past performance of the material combination.

439.2 Materials

Ensure that materials meet the requirements of the following Specifications:

Material Section

Portland cement 830.2.01

Portland Pozzolan cement 830.2.03

Water 880.2.01

Fine Aggregate, Size No. 10 801.2.02

Coarse Aggregate, Class A or B Crushed Stone or Gravel, Sizes as Specified 800.2.01

Steel Bars for Reinforcement 853.2.01

Steel Wire for Concrete Reinforcement 853.2.06

Welded Steel Wire Fabric for Concrete Reinforcement 853.2.07

Dowel Bars and Bar Coatings 853.2.08

Curing Agents 832

Air Entraining Admixtures 831.2.01

Fly Ash and Slag 831.2.03

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Joint Fillers and Sealers 833

Low Modulus Silicone Sealant for Roadway Construction Joints 833.2.06

Epoxy Adhesive for Repairing Cracks 886.2.01

Chemical Admixtures 831.2.02

A. Fly Ash

Fly ash may be used as a concrete additive to promote workability and plasticity. Use it as a partial replacement for

Portland cement in concrete, but follow these limits:

1. Do not replace the cement quantity more than 15 percent by weight.

2. Replace cement with fly ash at the rate of 1.25 to 2.0 lbs (1.25 to 2.0 kg) of fly ash to 1 lb (1.0 kg) of cement.

3. Ensure that the fly ash mix conforms to Subsection 430.3.06, “Quality Acceptance.”

4. Do not use Type IP cement in fly ash mixes.

B. Granulated Iron Blast-Furnace Slag

If high early strengths are not desired, use granulated slag as a partial replacement for Portland cement in concrete.

Follow these limits:

1. Replace the quantity of cement 50 percent or less by weight if the 5-day forecast of the National Weather Service

expects temperatures higher than 60 °F (15 °C).

a. If the 5-day expected low temperature is less than 60 °F (15 °C) but not less than 40 °F (4 °C), replace the quantity of cement 30 percent or less by weight.

b. If the 5-day expected low temperature is less than 40 °F (4 °C); do not use granulated slag.

2. Replace cement with slag at the rate of 1 lb (1.0 kg) of slag to 1 lb (1.0 kg) of cement.

3. Ensure that the granulated slag mix conforms to Subsection 430.3.06, “Quality Acceptance”.

4. Do not use Type IP cement or fly ash in slag mixes.

C. Composition of Concrete

Design the concrete mix to conform to the following requirements:

1. Coarse Aggregate

Use coarse aggregate size No. 467, 67, or 57 for plain Portland Cement concrete pavement.

Use size No. 67 or 57 coarse aggregate for continuous reinforced concrete pavement.

Separate size No. 467 or 456 in individual stockpiles of size No. 4 and size No. 67. Blend according to approved mix proportions.

2. Fine Aggregate

Use fine aggregate that meets the requirements for size No. 10.

When using two sizes or sources of fine aggregate to produce the proper gradation, blend according to the approved design proportions.

439.2.01 Delivery, Storage, and Handling

Store fine aggregate from different sources in different stockpiles.

439.3 Construction Requirements

439.3.01 Personnel

A. Certified Operator

Before paving, have the Office of Materials and Research certify a profilograph equipment operator. Certification includes a written examination by the operator.

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439.3.02 Equipment

A. Equipment Requirements

Provide equipment and tools to perform the work. Provide equipment that allows the paver to operate at a constant production rate and minimizes starting and stopping. The Engineer may limit the production rate or batch size if equipment does not keep pace with the other operations or causes poor workmanship.

B. Ramp Screeds and Hand Finishing Tools

Ramp screeds and hand finishing tools may be used instead of conventional mainline paving equipment.

C. Scales

Before use, the Engineer will inspect and approve the scales to weigh concrete materials and the devices to measure water. Tolerances are ± 1.0 percent throughout the operating range. Measure admixtures to ± 3.0 percent.

D. Protective Equipment

Provide materials to protect the concrete edges and surface against rain, including:

· Standard metal forms or wood planks to protect the pavement edges

· Covering material such as burlap or cotton mats, curing paper, or plastic sheeting material to protect the pavement surface

E. Auxiliary Vibrator

Keep one auxiliary vibrator available in case of mechanical malfunctions.

F. Texturing Equipment

Ensure that the tines on the equipment:

· Are the same size and length and are rectangular shaped

· Have approximately 0.5 in (13 mm) of space between them

· Are between 1/16 in and 1/8 in (2 mm and 3 mm) wide

439.3.03 Preparation

A. Prepare the Roadbed

Prepare the roadbed as required by the Plans and Specifications before placing concrete pavement.

B. Observe Condition of Subgrade and Subbase

Check the subgrade and subbase as follows:

1. Prepare the full width of the subgrade and subbase according to the Plans and Specifications.

2. Ensure that the surface immediately under the concrete pavement allows proper pavement thickness and yield.

3. Trim high areas to the proper elevation.

4. Ensure that the subbase can support paving equipment without rutting or bogging.

439.3.04 Fabrication

General Provisions 101 through 150.

439.3.05 Construction

A. Set Forms

Set the forms as follows:

1. Compact the foundation under the forms true to grade. Set the form so that it firmly contacts the foundation for the entire length at the specified grade.

2. Prevent the forms from settling or springing under the finishing machine.

3. Clean and oil the forms before placing the concrete.

B. Place Concrete

After depositing the concrete on the grade, avoid rehandling it. Unload and place it as follows:

1. Unload the concrete into an approved spreading device and mechanically spread it on the grade.

2. Place the concrete continuously between transverse joints without using intermediate bulkheads.

3. Perform any necessary hand spreading of concrete with shovels, not rakes.

NOTE: Do not allow personnel to walk in freshly mixed concrete with shoes coated with dirt or other materials.

4. Thoroughly consolidate the concrete on both sides of joint assemblies.

5. Ensure that vibration does not cause puddling or grout accumulation on the surface.

For construction or expansion joints, do not use grout that accumulates ahead of the paver.

6. Deposit concrete near the formed joints. Do not dump or discharge concrete on a joint assembly unless the concrete is centered on the joint assembly.

7. Keep reinforcing steel free of dirt, oil, paint, mill scale, and loose or thick rust that could impair the bond of the steel to the concrete.

C. Consolidate and Finish

Ensure that the sequence of operations is continuous from placement to final finish.

1. Consolidation

Perform vibration for the full width and depth of the pavement as follows:

a. Do not allow the vibrators to misalign load transfer devices or contact forms or the foundation.

b. Ensure that the operating frequency is within these ranges.

· Use spud vibrators with an operating frequency of at least 7,000 vibrations per minute.

· Use tube vibrators with an operating frequency of at least 5,000 vibrations per minute.

· Use surface pan vibrators with an operating frequency of at least 3,500 vibrations per minute.

c. Use hand-held vibrators if needed.

Ensure that the operating frequency is at least 4,500 vibrations per minute. The intensity shall be sufficient to affect the mass of concrete having a 1 in (25 mm) slump through a radius of at least 18 in (450 mm).

d. Obtain uniform consolidation and density throughout the pavement.

If the pavement is not uniform, stop the operation and provide methods or equipment that will produce pavement that conforms to the Specifications.

e. Keep a standby vibratory unit available in case a primary unit malfunctions.

2. Finishing

After striking off and consolidating the concrete, follow these steps:

a. The concrete may be smoothed and trued using a hand float.

b. Ensure that the surface within 6 in (150 mm) of the pavement edge shows no more than a ¼ in (6 mm) deviation in 10 ft (3 m) when tested with a 10 ft (3 m) straightedge in both transverse and longitudinal directions.

c. Ensure that mainline riding surface produces a profile index value of less than 7 in/ mile (100 mm/km) on each travel lane.

D. Protection from Rain

Protect the unhardened concrete from rain. See Subsection 439.3.02.D, “Protective Equipment.”

When rain is imminent, stop paving operations and place forms against the sides of the pavement. Cover the surface of the unhardened concrete with the protective covering.

E. Remove Forms

Remove forms from in-place concrete after it has set for at least 12 hours, unless otherwise provided.

1. Remove forms carefully to avoid damaging the pavement.

2. After removing the forms, immediately cure the sides of the slab using the same method used to cure the pavement surface.

3. Remove and replace major honeycombed areas.

F. Work at Night

Provide adequate lighting for work performed at night. If lighting will not be provided at night, stop the concreting operation in time to finish and saw during daylight hours.

G. Provide Joints

Ensure that joints are designed, configured, and located as shown on the Plans or required by the Specifications.

1. At the Engineer's discretion, remove and replace plain concrete pavement that cracks during construction with no additional cost to the Department.

2. When chipping out random cracks for sealing, use nonrigid epoxy that meets Subsection 886.2.01 on cracks that are not under expansion-contraction influence.

3. Seal continuous cracks under movement with sealant that meets Subsection 833.2.06.

4. When removing and replacing a pavement section, replace an area at least 6 ft (1.8 m) long and the full width of the lane.

a. Saw to vertical face the sections to be removed and replace the concrete as a construction joint with dowels.

b. Use deformed bars as dowels in the saw-cut construction joint. Use the size specified for contraction joints in the Plans.

5. Thoroughly clean the drilled holes of contaminants and set the dowels into the hardened concrete face of the existing pavement with a Type VIII epoxy bonding compound. See Section 886 for epoxy bonding compound requirements.

6. For contraction joints, undamaged and properly positioned dowels may be used in existing construction or slab replacement areas. Coat the protruding dowel portions with a thin film of heavy grease.

7. When both sides of an existing construction or contraction joint require slab replacements, slabs may be replaced continuously from saw-cut construction joint to saw-cut construction joint. Use dowels specified for contraction joints.

8. Before placing concrete, uniformly apply a thin coat of heavy grease to epoxy-coated dowels.

9. When placing slabs continuously across transverse contraction joint locations, use saw-cuts to provide planes of weakness according to the requirements of this Specification and the GDOT construction standard for contraction joints.

10. Seal the joints according to the Plans.

H. Determine Types of Joints

1. Longitudinal Joints

Longitudinal joints shall contain unpainted and uncoated deformed steel bars that are the size and length specified on the Plans.

Place the bars perpendicular to the joint using a mechanical device, or rigidly secure the bars in place with supports.

2. Longitudinal Formed Joints

Construct longitudinal formed joints while the concrete is in a plastic state.

Use methods and equipment that locates the joint reinforcement properly without disrupting it during construction.

3. Longitudinal Sawed Joints

Cut longitudinal sawed joints with a mechanical saw within three days after the concrete is placed and before traffic or equipment enters the pavement.

4. Transverse Joints

Transverse joints consist of construction joints, contraction joints, or expansion joints constructed at required locations.

a. Construct transverse joints in partial width or adjoining lanes to abut the same joint of adjacent lanes unless otherwise specified on the Plans.

b. Ensure that transverse joints in plain Portland Cement concrete requiring load transfer devices contain either plastic-coated or epoxy-coated dowels.

c. Before placing concrete, secure dowel bars in place with supporting assemblies.

d. Secure the assemblies in position on the subbase to keep the dowels from moving during concrete placement.

e. Place dowel bars to a vertical and horizontal tolerance of ± 1 in (± 25 mm) of the Plan position. Do not misalign the dowel bar more than 3/8 in per foot (10 mm per 300 mm) in the horizontal or vertical plane.

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f. Remove and replace dowel assemblies displaced from the Plan position more than the tolerances in Subsection 430.3.05.J, “Provide Joints.”

g. When using epoxy-coated dowels, coat the entire surface with a thin film of heavy waterproof grease.

h. Ensure accurate positioning of transverse sawed joints by marking the position of dowel bar assembly locations.

5. Construction Joints

Construct transverse construction joints when interrupting concreting operations for more than one hour.

NOTE: Do not construct transverse construction joints within 10 ft (3 m) of an expansion joint, contraction joint, or transverse plane of weakness.

a. Move an unanticipated construction joint back to the last Plan joint and remove and dispose of excess concrete.

b. Form construction joints by securing in place a removable bulkhead or header board.

1) Place the board so that it conforms to the full cross section of the pavement. Secure it flush with the subbase and parallel to the normal transverse joints.

2) Slot or drill the board to allow placement of reinforcement as required by the Plans.

NOTE: Do not use the roll of laitance and grout that forms in front of the paver adjacent to transverse construction joints.

c. Consolidate to full width and depth concrete adjacent to transverse construction joints with mechanical handtype spud vibrators. Keep one auxiliary vibrator available in case of mechanical malfunctions.

d. Before applying the final finish to the concrete, stringline and correct variations of the concrete surface within 30 ft (9 m) on either side of the transverse construction joints. Provide equipment and tools such as:

· Work bridges

· Personnel

· String lines

· Straightedges

· Lighting

e. While the concrete is in a plastic condition, stringline the surface longitudinally and correct surface deviations greater than 1/8 in. in 15 ft (3 mm in 4.6 m) in any direction.

f. When using Plain Portland cement concrete pavement, place dowel bars in construction joints. Cast half the length of each dowel bar in the concrete during each phase of joint construction.

g. After the concrete has hardened, dismantle the bulkhead supporting the dowels. Do not disturb the dowels.

h. When using epoxy coated dowels, coat the protruding half of each dowel bar with a thin film of heavy waterproof grease before resuming joint construction. Grease coating is not required on plastic coated dowels.

6. Contraction Joints

Create planes of weakness in plain Portland cement concrete pavement by cutting joints in the pavement surface. Create the planes according to the Plans and as follows:

a. Saw transverse contraction joints before the pavement cracks. Begin sawing when the concrete has hardened enough to prevent surface raveling, usually 4 hours after placement but no more than 24 hours.

b. Continue sawing day and night regardless of weather conditions.

7. Expansion Joints

Transverse expansion joints are required at locations shown on the Plans.

a. Form expansion joints by securing a removable bulkhead that conforms to the full cross section of the pavement. Use bulkheads that can construct a vertical expansion wall without offsets, indentations, or burrs.

b. Use expansion joint filler required by the Plans.

c. Furnish and install preformed joint filler in lengths equal to the pavement width or the width of one lane. Do not use damaged or repaired joint fillers.

d. Position the expansion joint filler vertically in the joint and at the proper grade. Use an installing bar or other device to secure the expansion joint filler at the proper grade and alignment.

I. Seal the Joints

Clean and seal the joints according to Section 461 and the Plans.

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Immediately after completing the curing period, fill in the joints with joint sealing material before opening the pavement to traffic.

J. Cure the Concrete

Immediately after finishing the concrete, cure the entire surface when the concrete will not mar. Use one or more of these methods:

1. Impervious Membrane Method

To use this method:

a. Spray the entire surface of the pavement with white pigmented curing compound immediately after finishing the surface and before the concrete has set.

If the pavement is cured initially with cotton mats, burlap, or cotton fabric, apply the compound after removing the mats.

NOTE: Do not apply curing compound during rain.

b. Use mechanical sprayers to apply curing compound under pressure at a minimum rate of 1 gal per 150 ft² (1 L

per 3.5 m²).

Use fully atomizing spraying equipment that is equipped with a tank agitator.

c. Thoroughly mix the curing compound immediately before use.

d. During application, use a mechanical device to stir the compound continuously.

e. If required, use a hand sprayer to spray odd widths, odd shapes, and concrete surfaces exposed by removing forms.

f. Do not apply curing compound to the inside faces of joints to be sealed.

g. If the membrane film becomes damaged within the curing period, repair the damaged portions immediately with additional compound.

2. White Polyethylene Sheeting

To use this method:

a. Cover the top surface and sides of the pavement with polyethylene sheeting. Lap the units at least 18 in (450 mm).

b. Place the sheeting and weigh it down so that it contacts the surface.

c. Extend the sheeting beyond the edges of the slab at least twice the thickness of the pavement.

d. Unless otherwise specified, maintain the covering in place for 72 hours after placing the concrete.

3. Burlap, Cotton Fabric, or Other Methods

Contractors may cure the pavement surface with burlap, cotton fabrics, or other materials if the section remains wet for the duration specified by the Engineer.

4. Cold Weather Curing

To use this method:

a. Remove and replace concrete that freezes before the initial set time at no additional cost to the Department.

b. Use polyethylene or canvas to protect concrete that has set but is exposed to freezing temperatures within 24 hours of placement. Ensure that the internal concrete temperature is above freezing for at least 24 hours after placing the concrete.

c. Obtain approval from the Engineer to use other protection methods such as hay, straw, or grass, or to change the duration of the protection.

K. Open Pavement to Traffic

Wait to open the pavement slab to traffic, except for joint sawing vehicles, until the concrete is 14 days old unless

representative compressive tests show that the slab has a compressive strength of 2,500 psi (15 MPa).

Prevent pavement slab stress by constructing a ramp of compacted earth or other material to move on and off the pavement. Do not allow equipment that exceeds legal load limits on the pavement.

Protect the pavement against traffic from the public, employees, and agents.

1. Erect and maintain barricades. Employ watchmen to block traffic from the newly constructed pavement for the period required in this Specification.

2. Arrange the barriers away from public traffic on lanes remaining open.

3. Maintain signs that clearly indicate the lanes open to public traffic.

4. If traffic must go across the pavement, construct crossings satisfactory to the Engineer to bridge over the concrete. Construct the crossing without additional compensation.

5. Repair or replace pavement damaged by traffic or other causes before Final Acceptance without additional compensation. Make repairs to the Engineer's satisfaction.

439.3.06 Quality Acceptance

The typical section sheet in the Plans specifies concrete classifications for specific uses.

This Specification establishes minimum requirements for these concrete classifications for concrete design approval, concrete mix design proportions, batching control responsibilities, and acceptance of hardened concrete based upon compressive strength development.

Produce Portland cement concrete by combining proportions of approved materials in batches according to the construction methods specified in this Specification.

Mix concrete produced in a stationary central mix plant for at least 60 seconds after the materials enter the drum. Mix time may be reduced if the representative tests show that the concrete meets requirements of ASTM C 94, Requirements for Uniformity. Never mix less than 50 seconds.

A. Transit Mixed Concrete

Ensure that transit mixed concrete meets the requirements of Subsection 500.3.04.E.3, "Transit-Mixed Concrete."

B. Mix Design Criteria

Proportion concrete mix designs using the following requirements:

Minimum Cement per Cubic Yard Concrete(CWT)

Maximum Water-Cement Ratio (lbs/lb) Design Air Content Range(%)

Minimum Compressive Strength at 28 Days (psi)

Class 3 5.64 0.53 4.0 to 5.5 3	000
Class HES 6.58 0.47 4.0 to 5.5 3	500

Minimum Cement per Cubic Meter Concrete (kg)

Maximum Water-Cement Ratio (kg/kg) Design Air Content Range (%)

Minimum Compressive Strength at 28 Days (MPa)

Class 3 335 0.53 4.0 to 5.5 20
Class HES 390 0.47 4.0 to 5.5 25

C. Compressive Strength

Prepare and test at least 6 cylinders according to AASHTO T 126 and T 22 to ensure that the demonstrated laboratory compressive strength at 28 days for Class 3 concrete is at least 4,000 psi (30 MPa), and the minimum laboratory compressive strength for Class HES concrete is 3,000 psi (20 MPa) at 72 hours.

D. Field Adjustments on Concrete Mixes

Determine the aggregate surface moisture and apply free moisture corrections to the approved mix design. The Engineer will verify that the corrections are made properly.

Adjustment may be made to the approved proportions of the fine and coarse aggregate and water provided:

· The cement factor is not decreased.

· The water-cement ratio is not increased.

· Adjustments produce concrete proportions according to this Specification.

· The Engineer is notified before use.

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E. Concrete Mix Tolerances

Ensure that concrete consistency and air content is maintained within the following limits:

1. Consistency

Immediately before placement, use GDT 27 to determine concrete slump. Do not use concrete for Portland cement concrete pavement with a slump value greater than 3.5 in (90 mm).

2. Air Content

Immediately before placement, use GDT 26, GDT 28, or GDT 32 to determine the air content of the concrete.

Concrete will not be accepted that has an air content outside of the following limits:

Lower acceptance limit 3.0%

Upper acceptance limit 6.5%

F. Concrete Strength Acceptance

1. Class 3

Portland cement concrete pavement strength will be accepted based on compressive strength development at 28 days. The compressive strength value shall be at least 3,000 psi (20 MPa).

a. Fabricate and cure specimens for field acceptance according to AASHTO T 23.

b. After curing, the OMR will test the cylinders according to AASHTO T 22. The test frequency is outlined in the Department's Sampling and Testing information.

2. Class HES

High early concrete strength pavement may be accepted based on compressive strength development at 72 hours. The compressive strength value shall be at least 3,000 psi (20 MPa).

When concrete is defective based on the 72-hour strength test and the concrete is retained for acceptability judgment, acceptance will be based on test results conducted at 28 days. The acceptance strength value shall be at least 3,500 psi (25 MPa).

a. Cure specimens fabricated for 72-hour strength for 72 hours under conditions that are similar to those under which the pavement will be cured.

b. Cure specimens fabricated for 28-day evaluation per AASHTO T 23.

c. Test all specimens per AASHTO T 22.

G. Depth Measurement

The Engineer will designate pavement areas to be examined for depth measurement compliance with the Plan and Specifications.

Remove and replace areas deficient more than 1/4 in (6 mm). The Engineer may require a reduction in payment. Correct deficiencies in slab depth as directed by the Engineer.

H. Final Finish

Ensure that the final finish produces a pavement surface that is true to grade, uniform, and free of irregular, rough, or porous areas.

Produce the final surface finish using mechanical or hand-operated equipment to groove the plastic concrete. Use texturing equipment with rectangular-shaped spring steel tines.

I. Texture Depth Testing

Test the pavement surface to determine the texture depth by using GDT 72 at locations selected by the Engineer. Transversely saw-groove areas that have a surface texture depth less than 0.02 in (0.5 mm). Ensure that the areas meet the average depth requirement of 0.04 in (0.9 mm) or greater. Saw-groove the areas to meet these dimensions:

· Width—1/8 in (3 mm)

· Depth—3/16 in (5 mm)

· Spacing—3/4 in center-to-center (19 mm)

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J. Smoothness Profile

Include in the Contract Unit Bid Price the cost to furnish and operate a Rainhart (Model 860) Profilograph to measure pavement profile deviations.

Measure and correct pavement profile deviations as follows:

1. Ensure that the mainline riding surface produces a profile index value no greater than 7 in/mile (100 mm/ km) on each travel lane. Conduct tests according to GDT 78.

Determine a profile index value for each tracing in each ¼ mile (0.5 km) segment.

2. Correct individual bumps or depressions that exceed the blanking band by more than 0.2 in (5 mm) at no additional expense to the Department.

3. Suspend paving operations if a profile index value exceeds 7 in/mile (100 mm/km) per lane for any segment. Take corrective action approved by the Engineer.

4. Test ramps, acceleration lanes, and deceleration lanes using GDT 78 to ensure that the average profile index value does not exceed 12 in/mile (200 mm/km) for the entire section length.

5. Correct individual bumps or depressions that exceed 0.2 in (5 mm) from the blanking band at no additional expense to the Department.

6. Take pavement profiles 4 ft (1.2 m) from and parallel to the new pavement edges for pavements greater than 16 ft (4.8 m) wide and up to 24 ft (7.2 m) wide. Test pavement 6 to 16 ft (1.8 to 4.8 m) wide parallel to and at the center line of the pavement section.

7. Begin the 0.25 mile (0.5 km) record segments at the first day's placement and continue until project completion, except as noted in this Specification.

Combine pavement sections less than 650 ft (200 m) approaching a bridge with the previous 0.25 mile (0.5 km) segment to determine the profile index.

8. Calculate as separate record segment sections 650 ft (200 m) or greater approaching a bridge and sections at Project limits.

9. Determine a separate profile index value according to GDT 78 for the 100 ft (30 m) of roadway approaching each end of a bridge, up to and including the joint with the approach slab.

Average the profile index from the right and left wheelpaths for each 100 ft (30 m) segment for each lane for each approach. Ensure that the average profile index value is no greater than 30 in/mile (500 mm/ km).

10. Notify the Engineer before profile testing. The Engineer will verify the results by randomly selecting at least 1 out of every 10 consecutive record segment profiles to compute the profile index and to compare with Contractor results.

K. Pavement Tolerances

For Projects that include weigh-in-motion truck scales, follow these pavement tolerances:

1. Ensure that the Rainhart Profilograph readings do not exceed 5 in/mile (80 mm/km) in the 600 ft (180 m) approach to the scales and the 200 ft (60 m) beyond the scales.

2. Ensure that the rolling straightedge measurements show no deviation greater than 1/16 in (2 mm) within 10 ft (3 m).

L. Smoothness Testing

Perform smoothness testing as follows:

1. Perform and evaluate profiles from the first day of placement before continuing paving.

When the test run is complete and evaluated, the Engineer may require equipment adjustments to improve smoothness before paving continues.

2. Complete the report form furnished by the Engineer, and attach it to each day's profilograph tracings. Include the following information in each trace:

· Project number

· Beginning and ending station numbers

· 500 ft (150 m) paving stations

· Traffic direction

· Lane number

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· Date paved and tested

· Construction joint locations

3. Have the certified profilograph operator obtain and evaluate traces to be submitted to the Engineer. Provide results no later than the end of the second work day following placement.

4. For mainline pavement, correct 0.25 mile (0.5 km) segments that do not meet the profile index requirement by using one of these methods:

a. Grind the entire lane surface of the 0.25 mile (0.5 km) segment to a profile index value no greater than 7 in/mile (100 mm/km). Use equipment that meets the requirements in Section 431.

b. Grind roughness in small segment areas no more than 50 ft (15 m) of full lane width to produce a profile index value no greater than 7 in/mile (100 mm/km).

If more than 50 ft (15 m) of grinding is required, grind the complete 0.25 mile (0.5 km) segment according to Method a, above.

5. Correct ramps and acceleration and deceleration lanes that do not meet the profile index requirement to a profile index no greater than 12 in/mile (200 mm/km). Prevent individual bumps from exceeding 0.2 in (5 mm) from the blanking band. Use equipment specified in Section 431.

6. Correct 100 ft (30 m) bridge approach sections that do not meet the profile index requirement.

a. Grind according to Section 431.

b. Use a bump grinder to correct bumps with a baseline of 5 ft (1.5 m) or less.

c. Grind the full lane width even when grinding individual bumps.

d. Retest pavement segments containing corrective slab replacements for Final Acceptance.

7. Correct segments that do not meet the profile index criteria of this Specification at no additional expense to the Department. Retest segments after correction with the Rainhart Profilograph as specified.

8. The Engineer may conduct profilograph tests at any time to verify Contractor results. The Department may test record segments if the Engineer determines that the Contractor test results are inaccurate. If this occurs, see Subsection 439.5.01, “Adjustments.”

M. Acceptance

Pavement smoothness will accepted when:

· The Engineer determines that the work was satisfactorily performed according to the Specifications.

· The completed pavement, including corrective Work, meets the applicable profile index value requirements.

439.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

439.4 Measurement

Portland cement concrete pavement (special) complete, in-place and accepted, is measured by the square yard (meter).

439.4.01 Limits

General Provisions 101 through 150.

439.5 Payment

Concrete pavement completed and accepted will be paid for at the full Contract Unit Price per square yard (meter).

Payment is full compensation for furnishing and placing materials, reinforcements, dowels, joint materials, supplies, and incidentals to complete the work.

Payment will be made under:

Item No. 439 Plain Portland cement concrete pavement, Class 3 Concrete 5 IN thick (cy)

GEORGIA DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SUPPLEMENTAL SPECIFICATION

Section 441—Miscellaneous Concrete

Delete Subsection 441.3 and substitute the following:

441.3 Construction Requirements

441.3.01 Personnel

General Provisions 101 through 150.

441.3.02 Equipment

A. Forms

Forms are subject to the Engineer's approval. Use forms that are:
Wood or metal that is readily available
Straight and oiled before each use
Use metal divider plates and templates.
Use the slip form placement method when applicable. If the slip form method does not produce a product with the proper quality, shape, grade, or alignment, the Engineer may require using fixed forms.

B. Weep Holes

Provide weep hole drain pockets filled with coarse aggregate to use with weep hole drain pipe or formed openings according to the Plan details.

441.3.03 Preparation

Before placing the concrete, excavate for toe walls, edge walls, and weep hole drain pockets; place coarse aggregate in weep hole drain pockets; and grade, finish, and compact the subgrade surface. Use mechanical tamps for compaction if necessary.

441.3.04 Fabrication

General Provisions 101 through 150.

441.3.05 Construction

A. Extent and Thickness of Pavement

See the Plans to determine the areas to be paved and the dimensions.
Thicknesses are subject to a minus tolerance of 0.5 in (13 mm). Do not perform overlay pours.

B. Preparation of Subgrade

Finish the subgrade for miscellaneous concrete to the line and grade on the Plans and the following:

1. Compact the subgrade to the same degree as the roadway on which it is placed. Compact the subgrade according to Section 209.
2. If a Contract involves a Roadway and a Bridge Contractor, the Roadway Contractor shall complete the grading for the slope paving.
The Bridge Contractor shall complete final grading, compacting, dressing, placing, and maintenance to the structures until completion.
3. When placing paving on the front slopes of ditches and shoulders, place any required special materials during the roadway construction.
4. Do not excavate for velocity dissipators, spillways, and slope drains below the foundation elevation. Do not excavate wider than necessary to provide working space or to remove soft, unsuitable material. Backfill with selected material.
5. When fitting spillways to concrete pavement, set the specified dowel bars into the pavement when it is laid. Use metal parting strips to hold the ends of dowels bent into the grooves.

C. Concrete

1. Mixing

Mix Class B concrete as specified in Section 500 with the following exceptions:

a. Use of small capacity job-site batchers and one-bag mixers is allowed. The rate of concrete placement in Subsection 500.3.05.P, "Meet the Minimum Placement Rates" is waived for miscellaneous concrete.

b. Proportion concrete ingredients volumetrically if the Engineer has approved equipment calibration and operation and the operator is certified by the Office of Materials and Research.

2. Placing and Finishing

Place and finish concrete as follows:

a. Deposit concrete within forms or against other pavements on a compacted and wetted subgrade to the depth to produce the specified thickness.

NOTE: Do not place concrete on a muddy or frozen surface.

b. Vibrate the headwalls.

c. Strike off the concrete to a plane surface and finish it with a Type IV or Type V finish as defined in Subsection 500.3.05.AB, "Finish Concrete" and complete the following:

1) **Concrete Slope Paving.** Give a final finish with a stiff-bristle broom. With the Engineer's approval, mechanically convey the concrete to the forms.

2) **Concrete Sidewalks.** Give a Type V finish unless otherwise noted on the Plans. Test the surface with a 10 ft (3 m) straightedge laid parallel to the center line. Eliminate irregularities greater than 0.25 in (6 mm) per 10 ft (3 m) while the concrete is still plastic.

Ensure that concrete sidewalk constructed as curb cut (wheelchair) ramps has a rough or textured finish.

3) **Concrete Paved Ditches.** Ensure that the surface of the bottom and sides of paved ditches are uniform and true to grade and cross section.

Ensure that straight-grade tangents do not deviate more than 1 in (25 mm) within 10 ft (3 m) when tested with a 10 ft (3 m) straightedge. Do not allow deviation if it reduces the ditch paving thickness, causes water to pond, or alters the direction of flow.

Finish the ditch paving by floating with wood or metal floats to bring mortar to the surface to cover the coarse aggregate.

Use reinforcing that conforms to Plan details if required.

4) **Concrete Curbs, Gutters, and Median.** Finish according to Subsection 441.3.05.C.2, "Placing and Finishing." Remove face forms as soon as possible and finish the exposed surfaces with a wood float.

Use a straightedge to test the edge of the gutter and top of the curb and median to conform to the requirements for the adjacent pavement. Irregularities shall not exceed 0.25 in (6 mm) in 10 ft (3 m).

Place the curb and gutter using a machine as long as the results are satisfactory.

5) **Curb Cut Wheel chair Ramps.** Construct a Type A, B, C, or D ramp according to the Special Details in the Plans. Tie ramps into adjacent paved or unpaved sidewalk and use a rough or textured finish.

3. Joints

Follow these procedures to construct joints on slopes, ditches, sidewalks, and curbs, gutters, and medians.

a. Slope Paving

Place paving on slopes in horizontal or vertical courses, but not a mixture of both.

1) Construct horizontal courses approximately level and at least 3 ft (1m) but no more than 6 ft (1.8 m) wide measured along the slope.

When needed, construct trapezoidal courses at the top and bottom to accommodate sloping berm and ditch line conditions.
2) Edge the paving at construction joints between courses with a 0.25 in (6 mm) radius tool.
3) Provide vertical contraction or construction joints spaced along the horizontal course at right angles to the horizontal construction joints at approximately 40 ft (12 m) intervals, in line not staggered.
No other vertical lines will be required in horizontal courses.
When using vertical contraction joints, cut them with a tool one-third the depth of the paving during the finishing operation. Edge the contraction joints the same as construction joints.

Vertical courses approximately equal and at least 3 ft (1 m) but no more than 5 ft (1.5 m) wide across the plane of the slope. The desired width is 4 ft (1.2 m). Horizontal lines are not required in vertical courses.
Separate slope paving from the masonry of structures, sidewalks, curbs, and rigid-type roadway pavements of preformed joint filler that are 0.5 in (13 mm) thick.
b. Concrete Paved Ditches
Form joints in concrete paved ditches as follows:
1) Space contraction joints at 30 ft (9 m) intervals.
2) Place expansion joints only where the paved ditch joins the roadway pavement or some other structure.
3) Do not use joint sealers for expansion or contraction joints.
c. Concrete Sidewalk
Form transverse contraction joints using a tool designed to form a groove one-third the depth of the sidewalk at intervals shown on the Plans.
Where sidewalks abut the curb and gutter, ensure that alternate joints coincide. Round the edges with a 0.25 in (6 mm) edger. Make expansion joints according to the materials, dimensions, and locations specified on the Plans.
d. Concrete Curbs, Gutters, and Medians
Form contraction joints or expansion joints on curbs, gutters, and medians.
1) **Contraction Joints.** Ensure that joints in curb, gutters, and medians are spaced the same as the joints in paving. Form joints by using metal divider plates or sawing them as in Section 430.
Form joints at least one-fifth but not greater than one-fourth the depth of the concrete. Except for sawed joints, finish the joints with a 0.25 in (6 mm) edging tool.
For curbs, gutters, and medians adjacent to pavement other than concrete, contraction joints shall be as follows:
For header curb and combination curb and gutter, install contraction joints spaced no more than 20 ft (6 m) apart.
For gutter median, install a contraction joints spaced no more than 20 ft (6 m) apart.
2) **Expansion Joints.** Form expansion joints according to the Plan details or as directed. Ensure that they coincide with the expansion joints in the adjoining pavement or gutter.
Cut the joint fillers to the same cross section as the construction. Trim flush the material that protrudes after the concrete is finished.
When miscellaneous concrete items are not adjacent to concrete construction, provide expansion joints at an interval of at least 500 ft (150 m).
e. Curb Cut Wheelchair Ramps
Locate and form expansion joints for curb cut wheelchair ramps according to the Special Details in the Plans for ramp Type A, B, C, or D.
4. Curing

Use curing methods specified in Subsection 430.3.05.L, "Cure the Concrete." Ensure that the membrane curing compound is Type 2, if used. Pack honeycombed areas immediately after removing the forms.

D. Backfilling

Backfill the areas as soon as possible without damaging the work.

E. Clean-Up

When concrete work is complete, clean each surface. Protect the work from stains or other damage until Final Acceptance.

441.3.06 Quality Acceptance

General Provisions 101 through 150.

441.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

First Use Date: July 18, 2008
Date: May 7, 2008

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SPECIAL PROVISION

Section_-500 Concrete Structures

Delete Subsection 500.3.05.T.9.c and substitute the following:

c. After belting, dragging, or brooming and when shown on the Plans, groove the bridge deck and approach slabs perpendicular to the center line as follows:

1) Do not begin grooving until the bridge deck is cured according to Subsection 500.3.05.Z, "Cure Concrete".

2) If necessary, groove in conjunction with planing required to make the surface corrections specified in Subsection 500.3.06.D, "Bridge Deck Surface Check". Wait until the concrete is hard enough to support the equipment without distorting.

3) Cut Grooves into the hardened concrete using a mechanical saw device capable of producing grooves 0.125 in (3 mm) wide, 0.125 in (3 mm) deep, and 0.5 in (13 mm) apart, center-to-center.

4) Extend the grooves across the slab to within 1 ft (300 mm) of the gutter lines.

Office of Materials and Research

December 4, 2009

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SPECIAL PROVISION

Section 652—Painting Traffic Stripe

Delete Subsection 652.1 and substitute the following:

652.1 General Description

This work includes furnishing and applying reflectorized traffic line paint according to the Plans and these Specifications.

This Item also includes applying words and symbols according to Plan details, Specifications, and the current Manual on Uniform Traffic Control Devices.

652.1.01 Definitions

Painted Stripes: Solid or broken (skip) lines. The location and color are designated on the Plans.

Skip Traffic Stripes: Painted segments between unpainted gaps as specified on the Plans. The location and color are designated on the Plans.

652.1.02 Related References

A. Standard Specifications

Section 656—Removal of Pavement Markings

EPA Method 3052

EPA Method 601B

B. Referenced Documents

QPL 46

AASHTO M 247

652.1.03 Submittals

General Provisions 101 through 150.

Delete Subsection 652.2 and substitute the following:

652.2 Materials

Ensure that materials for painting traffic stripe, words, and symbols meet the following

requirements:

Material Section

Traffic Line Paint 5A and 5B 870.2.02.A.2 and 870.2.02.A.3
Glass Beads for Use in Luminous Traffic Lines *AASHTO M 247 Type 1, 2, or 3

*In addition, meet the following requirements for glass beads:

- Maximum quantity of angular particles is less than 1% by weight
- Maximum quantity of particles with milkiness, scoring, or scratching is less than 2% by weight
- Glass beads do not impart any noticeable hue to the paint film
- Glass beads do not contain greater than 200 ppm total arsenic, antimony, or lead when tested according to US EPA Methods 3052 and 601B.
- Glass beads conforming to the following alternate gradation may be used provided that all other requirements of AASHTO M 247 and this Specification are met.

Alternate Gradation
Sieve Size Percent Passing
No. 16 (1.190 mm) 99 - 100
No. 20 (0.850 mm) 75 - 95
No. 30 (0.600 mm) 55 – 85

No. 50 (0.300 mm) 10 – 35
No. 100 (0.150 mm) 0 - 5

652.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

Office of Materials and Research

Date: November 1, 2002
First Use Date January 1, 2003
Revised December 30, 2002
Revised August 4, 2003
Revised April 27, 2004
First Use Date June 1, 2004
Revised October 31, 2005
Revised October 23, 2008

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SPECIAL PROVISION

Section 700—Grassing

Delete Section 700 and substitute the following:

700.1 General Description

This work includes preparing the ground, furnishing, planting, seeding, fertilizing, sodding, and mulching disturbed areas within the Right-of-Way limits and easement areas adjacent to the right-of-way as shown on the Plans except as designated by the Engineer to remain natural.

700.1.01 Definitions

General Provisions 101 through 150.

700.1.02 Related References

A. Standard Specifications

Section 160—Reclamation of Material Pits and Waste Areas
Section 163—Miscellaneous Erosion Control Items
Section 718—Wood Fiber
Section 822—Emulsified Asphalt
Section 882—Lime
Section 890—Seed and Sod
Section 891—Fertilizers

Section 893—Miscellaneous Planting Materials
Section 895—Polyacrylamide

B. Referenced Documents

QPL 33
QPL 84

700.1.03 Submittals

Submit manufacturer's product expiration date along with written instructions to ensure proper application, safety, storage, and handling of Polyacrylamide products used in The Work.

700.2 Materials

Use materials that meet the requirements of the following Specifications:

Material	Section
Wood Fiber Mulch	718.2
Emulsified Asphalt	822
Agricultural Lime	882.2.01
Liquid Lime	882.2.01
Seed	890.2.01
Sod	890.2.02
Fertilizer	891.2.01
Plant Topsoil	893.2.01
Mulch	893.2.02
Inoculants	893.2.04
Tackifiers	QPL 33
Anionic Polyacrylamide	QPL 84 & Section 895

A. Seeds

Whenever seeds are specified by their common names, use the strains indicated by their botanical names.

B. Water

Obtain the water for grassing from an approved source. Use water free of harmful chemicals, acids, alkalies, and other substances that may harm plant growth or emit odors. Do not use salt or brackish water.

C. Asphalt

Secure the mulch with asphalt made of a homogenous emulsification of a refined petroleum. Ensure that the asphalt can be sprayed on with or without diluting with water.

Use suitable asphalt free of petroleum solvents or other diluting agents that may harm plant growth. Use asphalt according to Section 822 or Section 824, "slow setting". Do not use asphalt that separates after freezing or from any other cause.

D. Fertilizer Mixed Grade

Select fertilizer mixed grade such as 10-10-10, 6-12-12, 5-10-15, or other analysis within the following limits:
Nitrogen 5 to 10 percent
Phosphorus 10 to 15 percent
Potassium 10 to 15 percent

If using mixed grade fertilizer for hydroseeding, ensure that it has the following analysis:
Nitrogen 5 to 19 percent
Phosphorus 10 to 19 percent
Potassium 10 to 19 percent

E. Mulch

Use straw or hay mulch according to Subsection 700.3.05.G.

Use wood fiber mulch in hydroseeding according to Subsection 700.3.05.F.1.

700.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

700.3 Construction Requirements

700.3.01 Personnel

General Provisions 101 through 150.

700.3.02 Equipment

Use grassing equipment able to produce the required results.

Never allow the grading (height of cut) to exceed the grassing equipment's operating range.

A. Blower Equipment

When using blower equipment to apply bituminous treated mulch in a single operation, place two or more jets or spray nozzles at or near the end of the discharge spout to eject a uniform coat of mulch.

B. Mulch Material Equipment

Use mulching equipment that uniformly cuts the specified materials into the soil to the required control depth.

C. Rollers

Use at least 12 in (300 mm) diameter rollers with corrugated or notched surfaces. Do not use smooth surface rollers.

D. Hydroseeding Equipment

For hydroseeding equipment, see Subsection 700.3.05.F.

700.3.03 Preparation

General Provisions 101 through 150.

700.3.04 Fabrication

General Provisions 101 through 150.

700.3.05 Construction

Follow the planting zones, planting dates, types of seed, seed mixtures, and application rates described throughout this Section. The Engineer has the authority to alter the planting dates as set forth by a period of 2 weeks. This 2-week period may be applied to either the beginning of the specified planting and/or to the end of the end of the specified planting season.

In general:

Obtain the Engineer's approval before changing the ground cover type.

Do not use annual rye grass seeds with permanent grassing.

Follow the planting zones indicated on the Georgia State Planting Zone Map, below.

Sod may be installed throughout the year, weather permitting.

For permanent grassing, apply the combined amounts of all seeds for each time period within each planting zone and roadway location listed in the Seeding Table, below. Do not exceed the amounts of specified seed.

PLANT THESE COMBINATIONS ON BACK SLOPES, FILL SLOPES AND AREAS WHICH WILL NOT BE SUBJECT TO FREQUENT MOWING, SLOPES STEEPER THAN 3:1.
REQUIRED
PERMANENT
GRASSING
1,2 MARCH 1 – AUGUST,31

INTERSTATE
LESPEDEZA
1,2 SEPT 1 – FEBRUARY 28

3,4 APRIL 1 – 0CT0BER 31 10

INTERSTATE
LESPEDEZA
3,4 NOV 1 – MARCH 31

A. Ground Preparation

Prepare the ground by plowing under any temporary grass areas and preparing the soil as follows:

1. Slopes 3:1 or Flatter

On slopes 3:1 or flatter, plow shoulders and embankment slopes to between 4 in and 6 in (100 mm and 150 mm) deep.

Plow front and back slopes in cuts to no less than 6 in (150 mm) deep. After plowing, thoroughly disk the area until pulverized to the plowed depth.

2. Slopes Steeper Than 3:1

Serrate slopes steeper than 3:1 according to Plan details when required.

On embankment slopes and cut slopes not requiring serration (sufficient as determined by the Engineer), prepare the ground to develop an adequate seed bed using any of the following methods as directed by the Engineer:
Plow to a depth whatever depth is practicable.
Use a spiked chain.
Walk with a cleated track dozer.

Scarify.
Disking cut slopes and fill slopes is not required.
3. All Slopes
a. Obstructions
Remove boulders, stumps, large roots, large clods, and other objects that interfere with grassing or may slide into the ditch.
b. Topsoil
Spread topsoil stockpiled during grading evenly over cut and fill slopes after preparing the ground.
Push topsoil from the top over serrated slopes. Do not operate equipment on the face of completed serrated cuts.

B. Grassing Adjacent to Existing Lawns

When grassing areas adjacent to residential or commercial lawns, the Engineer shall change the plant material to match the type of grass growing on the adjacent lawn. The Contract Unit Price will not be modified for this substitution.
If the Engineer believes bituminous treated mulch would harm other portions of the work, bituminous treated mulch may be substituted with 1,500 lbs/acre (1680 kg/ha) of wood fiber mulch with tackifier.

C. Temporary Grassing

Apply temporary grassing according to Subsection 163.3.05.F. Determine lime requirements by a laboratory soil test.
In March or April of the year following planting and as soon as the weather is suitable, replace all areas of temporary grass with permanent grass by plowing or overseeding using the no-till method. If the no-till method is used, ensure that temporary grass is less than 3 inches in height (this may be achieved by mowing). Additional mulch will be required only if the temporary grass does not provide adequate mulch to meet the requirements of Subsection 700.3.05.G, "Mulching."
Temporary grass, when required, will be paid for according to Section 163.
Projects that consist of asphalt resurfacing with shoulder reconstruction and/or shoulder widening: Type II Wood Fiber Blanket is used to stabilize disturbed areas, no till seeding will be used when permanent grassing is applied and the areas will not be re-disturbed.

D. Applying Agricultural Lime and Fertilizer Mixed Grade

Apply and mix lime and fertilizer as follows:
1. Agricultural Lime
Uniformly spread agricultural lime on the ground at the approximate rate determined by the laboratory soil test.
A. Liquid Lime (Flowable Dolomitic Lime) may be applied during the hydroseeding operation at the rate of 2.5 gallons (of Liquid Lime concentrate) per acre (23.75 liters per hectare). This provides the equivalent of 1 ton per acre (2.25 mg per hectare) of agricultural lime. The remainder of lime specified by the soil test is applied as agricultural lime and uniformly spread over the surface of the ground.
B. Agricultural Lime may be used as filler material in mixed grade fertilizer in lieu of inert material. The use of agricultural lime as filler material is to be shown on the fertilizer bag or invoice from the supplier. Do not deduct any amount of fertilizer when lime is used as filler.
2. Fertilizer Mixed Grade
Uniformly spread the fertilizer selected according to Subsection 700.2.D over the ground at approximately 1,200 lbs/acre (1350 kg/ha).
If using a higher analysis fertilizer with hydroseeding, apply it at the same rate per acre (hectare) as the standard fertilizer.
3. Mixing

Before proceeding, uniformly work the lime and fertilizer into the top 4 in (100 mm) of soil using harrows, rotary tillers, or other equipment acceptable to the Engineer.
On cut slopes steeper than 3:1, other than serrated slopes, reduce the mixing depth to the maximum practical depth as determined by the Engineer.
Omit mixing on serrated slopes.

E. Seeding

Following is a list of both common names and botanical names for approved seed types. Whenever seeds are specified by the common names, the strains indicated by their botanical name apply.

Common Name Botanical Name

Annual Ryegrass Lolium multiflorum
*Bermuda Grass, Common Hulled and Unhulled Cynodon dactylon
**Lespedeza Virgata Lespedeza Ambro Virgata
**Lespedeza Sericea Lespedeza cuneta, Var. Sericea
**Lespedeza Serala Lespedeza cuneta, Var. Serala
**Lespedeza Interstate Lespedeza cuneta, Var. Interstate
**Lespedeza Korean Lespedeza stipulacea Maxim
Pensacola Bahiagrass Paspalum notatum, var. Pensacola
Tall Fescue Festuca arundinacea
Weeping Love Grass Eragrostis curvula
*Do not use Giant Bermuda Seed (Cynodon species) including NK-37.
**Requires inoculation.

Prepare seed and sow as follows:
1. Inoculation of Seed
Inoculate each kind of leguminous seed separately with the appropriate commercial culture according to the manufacturer's instructions for the culture.
When hydroseeding, double the inoculation rate.
Protect inoculated seed from the sun and plant it the same day it is inoculated.
2. Sowing
Weather permitting, sow seed within 24 hours after preparing the seed bed and applying the fertilizer and lime.
Sow seed uniformly at the rates specified in the Seeding Table. Use approved mechanical seed drills, rotary hand seeders, hydraulic equipment, or other equipment to uniformly apply the seed. Do not distribute by hand.
To distribute the seeds evenly sow seed types separately, except for similarly sized and weighted seeds. They may be mixed and sown together.
3. Rolling
Roll seeded areas before applying mulch, except on steep slopes where rollers cannot operate satisfactorily. On slopes inaccessible to compaction equipment, cover the seeds by dragging spiked chains over them or by using other methods.
Do not sow during windy weather, when the prepared surface is crusted, or when the ground is frozen, wet, or otherwise non-tillable.
4. Overseeding

Temporary grass areas that were prepared in accordance with Subsection 700.3.05.A, may be overseeded using the no-till method. The no-till method is defined by planting permanent grass seeds using a drill-type seeder over existing temporary grass without plowing or tilling soil and in accordance with Subsection 700.3.05.C.

F. Hydroseeding

Hydroseeding may be used on any grassing area. Under this method, spread the seed, fertilizer, and wood fiber mulch in the form of a slurry. Seeds of all sizes may be mixed together. Apply hydroseeding as follows:
1. Use wood fiber mulch as a metering agent and seed bed regardless of which mulching method is chosen. Apply wood fiber mulch at approximately 500 lbs/acre (560 kg/ha).
2. Prepare the ground for hydroseeding as for conventional seeding in Subsection 700.3.05.A.
3. Use specially designed equipment to mix and apply the slurry uniformly over the entire seeding area.
4. Agitate the slurry mixture during application.
5. Discharge slurry within one hour after being combined in the hydroseeder. Do not hydroseed when winds prevent an even application.

6. Closely follow the equipment manufacturer's directions unless the Engineer modifies the application methods.
7. Mulch the entire hydroseeded area according to Subsection 700.3.05.F.1, above, and Subsection 700.3.05.G, below.

G. Mulching

Except as noted in Subsection 700.3.05.B and Subsection 700.3.05.C, apply mulch immediately after seeding areas as follows:

Areas with permanent grass seed and covered with slope mats or blankets will not require mulch.

Evenly apply straw or hay mulch between 3/4 in and 1-1/2 in (20 mm and 40 mm) deep, according to the texture and moisture content of the mulch material.

Mulch shall allow sunlight to penetrate and air to circulate as well as shade the ground, reduce erosion, and conserve soil moisture. If the type of mulch is not specified on the Plans or in the Proposal, use any of the following as specified.

1. Mulch with Binder

Apply mulch with binder regardless of whether using ground or hydroseeding equipment for seeding.

a. Mulch uniformly applied manually or with special blower equipment designed for the purpose. When using a blower, thoroughly loosen baled material before feeding it into the machine so that it is uniformly coated with binder and broken up.

b. After distributing the mulch initially, redistribute it to bare or inadequately covered areas in clumps dense enough to prevent new grass from emerging.

Do not apply mulch on windy days.

c. Apply enough binder to the mulch to hold it in place. Immediately replace mulch that blows away.

When using a power blower to distribute the mulch, spray the binder onto the mulch as the mulch is ejected from the machine. If distributing the mulch by hand, immediately apply the binder uniformly over the mulched areas.

Use one of the following binders:

Emulsified asphalt, SS-1h or SS-1 (Section 822) : The public, adjacent property, bridges, pavements, curbs, sidewalks, and other existing structures shall be protected from discoloration by the asphalt. Correct discoloration damage at no expense to the Department.

Tackifier: Use a tackifier listed in the Laboratory Qualified Products Manual may be used at the manufacturer's recommended rates.

2. Walked-in-Mulch

Apply walked-in-mulch on slopes ranging in steepness from 5:1 to 2:1 and treat as follows:

a. Immediately walk it into the soil with a cleated track dozer. Make dozer passes vertically up and down the slope.

b. Where walked-in-mulch is used, do not roll or cover the seeds as specified in Subsection 700.3.05.E.3.

H. Sod

Furnish and install sod in all areas shown on the Plans or designated by the Engineer.

1. Kinds of Sod

Use only Common Bermudagrass (Cyndon dactylon) or one of the following Bermudagrass varieties:

Tifway 419,Tifway II,Tift 94,Tifton 10,Midlawn,Midiron,GN-1,Vamont

No dwarf Bermuda types shall be used. Sod shall be nursery-grown and be 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.

2. Type And Size Of Sod:

Furnish either big roll or block sod. Ensure that big roll sod is a minimum of 21 inches wide by 52 feet long. Minimum dimensions for block sod are 12 inches wide by 22 inches long. Ensure all sod consists of a uniform soil thickness of not less than 1 inch.

3. Ground Preparation

Excavate the ground deep enough and prepare it according to Subsection 700.3.05.A to allow placing of sod. Spread soil, meeting the requirements of Subsection 893.2.01, on prepared area to a depth of 4 inches.

4. Application Of Lime And Fertilizer

Apply lime and fertilizer according to Subsection 700.3.05.D within 24 hours prior to installing sod.

5 Weather Limitation

Do not place sod on frozen ground or where snow may hinder establishment.

6. Install Sod

Install Sod as follows:
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.
Stake sod placed in ditches or slopes steeper than 2:1 or any other areas where sod slipping can occur.
Use wood stakes that are at least 8 in (200 mm) in length and not more than 1 in (25 mm) wide.
Drive the stakes flush with the top of the sod. Use a minimum of 8 stakes per square yard (meter) to hold sod in place.
Once sod is placed and staked as necessary, tamp or roll it using adequate equipment to provide good contact with soil.
Use caution to prevent tearing or displacement of sod during this process. Leave the finished surface of sodded areas smooth and uniform.
7. Watering Sod
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 Engineer.
8. Dormant Sod
Dormant Bermuda grass sod can be installed. However, assume responsibility for all sod through establishment and until final acceptance.

9. Establishment
Sod will be inspected by the Engineer 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.
I. Application of Nitrogen Apply nitrogen at approximately 50 lbs/acre (56 kg/ha) when specified by the Engineer after plants have grown to2 in (50 mm) 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 the foliage is damp.
Do not apply nitrogen between October 15 and March 15 except in Zone 4. In planting zones 3 and 4 apply an additional application of nitrogen.
J. Application of Polyacrylamide (PAM)
1. Prepare soil according to project Plans and Specifications prior to applying PAM.
2. Apply PAM according to manufacturer's recommendations and the requirements listed herein.
3. Apply Polyacrylamide (PAM) to all areas that receive permanent grassing.
4. Apply PAM (powder) before grassing or PAM (emulsion) to the hydroseeding operation.
5. Use only anionic PAM.
6. Ensure that the application method provides uniform coverage to the target and avoids drift to non-target areas including waters of the state.
7. Achieve > 80% reduction in soil loss as measured by a rainfall simulator test performed by a certified laboratory (1 hour storm duration, 3 inches (75 mm) rainfall per hour).
8. Ensure uniform coverage to the target area and minimize drift to non-target areas. Apply anionic PAM to all cut and fill slopes, permanently grassed or temporarily grassed, either prior to grassing or in conjunction with hydroseeding operations. Mulch will not be eliminated.
9. Use application rates in accordance with manufacturer's instructions.
10. Do not exceed 200 lbs/acre/year (224 kg/ha/year).

700.3.06 Quality Acceptance
The Engineer may require replanting of an area that shows unsatisfactory growth for any reason at any time.
Except as otherwise specified or permitted by the Engineer, prepare replanting areas according to the Specifications as if they were the initial planting areas. Use a soil test or the Engineer's guidance to determine the fertilizer type and application rate, then furnish and apply the fertilizer.

700.3.07 Contractor Warranty and Maintenance
A. Plant Establishment
Before Final Acceptance, provide plant establishment of the specified vegetation as follows:

1. Plant Establishment
Preserve, protect, water, reseed or replant, and perform other work as necessary to keep the grassed areas in satisfactory condition.
2. Watering
Water the areas during this period as necessary to promote maximum growth.
3. Mowing
Mow seeded areas of medians, shoulders, and front slopes at least every 6 months. Avoid damaging desirable vegetation. In addition, mow as necessary to prevent tall grass from obstructing signs, delineation, traffic movements, sight distance, or otherwise becoming a hazard to motorists.

Do not mow lespedezas or tall fescue until after the plants have gone to seed.

B. Additional Fertilizer Mixed Grade
Apply fertilizer at approximately 600 lbs/acre (675 kg/ha) each spring after initial plant establishment. Continue annual applications until Final Acceptance. This additional fertilizer will be measured and paid for at the Contract Unit Price for fertilizer mixed grade.

C. Growth and Coverage
Provide satisfactory growth and coverage, ensuring that vegetation growth is satisfactory with no bare spots larger than1 ft² (0.1 m²). Bare spots shall comprise no more than 1 percent of any given area. An exception is given for seed not expected to have germinated and shown growth at that time.

D. Permissible Modifications
When all Items of the work are ready for Final Acceptance except for newly planted repaired areas or other areas with insufficient grass, the Contractor may fill the eroded areas or treat bare areas with sod obtained, placed, and handled according to Subsection 700.3.05.H. Carefully maintain the line and grade established for shoulders, front slopes, medians, and other critical areas. Sod as described above will not be paid for separately, but will be an acceptable substitute for the satisfactory growth
and coverage required under this Specification. These areas treated with sod are measured for payment under the Item for which the sod is substituted.

700.4 Measurement

A. Permanent Grassing
Permanent Grassing will be measured for payment by the acre (hectare).

B. Mulches
Straw or hay mulch applied to permanent grassing areas will be measured by the ton (megagram). Wood fiber mulch furnished by the Contractor for permanent grassing is not measured for separate payment.

C. Quantity of Sod
Sod is measured for payment by the number of square yards (meters) , surface measure, completed and accepted.

D. Water
Water furnished and applied to promote a satisfactory growth is not measured for payment.

E. Quantity of Lime and Fertilizer Mixed Grade
Lime and fertilizer are measured by the ton (megagram). Lime used as a filler in fertilizer is measured by the ton (megagram). Liquid lime is measured by the gallon (liter).

F. Quantity of Nitrogen Used for Permanent Grassing
Nitrogen is measured in pounds (kilograms) based on the weight of fertilizer used and its nitrogen content.

G. Replanting and Plant Establishments
No measurement for payment is made for any materials or work required under Subsection 700.3.06 and Subsection 700.3.07.

H. Temporary Grass
Temporary grass is measured for payment by the acre (hectare) of seed according to Section 163.

700.4.01 Limits
General Provisions 101 through 150.

700.5 Payment
As grassing and planting progress, the Contractor will receive full measurement and payment on regular monthly estimates provided the work complies with the Specifications.

A. Permanent Grassing

Permanent grassing will be paid for at the Contract Price per acre (hectare), complete and in place. Payment is full compensation for preparing the ground, seeding, wood fiber mulch, polyacrylamide, and providing plant establishment and other incidentals.

B. Straw or Hay Mulch

Straw or hay mulch required for Permanent Grassing will be paid for according to Section 163.

C. Fertilizer Mixed Grade

Fertilizer mixed grade will be paid for at the Contract Price per ton (megagram). Payment is full compensation for furnishing and applying the material.

D. Lime

Lime will be paid for at the Contract Price per ton (megagram). Lime used as a filler in fertilizer will be paid for per ton (megagram). Liquid lime will be paid for per gallon (liter). Payment is full compensation for furnishing and applying the material.

E. Nitrogen

Nitrogen will be paid for at the Contract Price per pound (kilogram) of nitrogen content. Payment is full compensation for furnishing and applying the material.

F. Sod

Sod will be paid by the square yard (meter) in accordance with the following schedule of payments. Payment is full compensation for ground preparation, including addition of topsoil, furnishing and installing live sod, and for Plant Establishment.

1. 70% of the Contract Price per square yard will be paid at the satisfactory completion of the installation.
2. 20% of the Contract Price will be paid upon satisfactory review of sod which is healthy, weed free and viable at the inspection made at the end of the first spring after installation.,.
3. 10% of the contract price will be paid upon satisfactory review of sod that is healthy, weed free and viable at the Final Acceptance.

G. Temporary Grass

Temporary Grass will be paid for under Section 163.

Payment will be made under:

Item No. 700 Permanent grassing Per acre (hectare)
Item No. 700 Agricultural lime Per ton (megagram)
Item No. 700 Liquid Lime Per gallon (liter)
Item No. 700 Fertilizer mixed grade Per ton (megagram)
Item No. 700 Fertilizer nitrogen content Per pound (kilogram)
Item No. 700 Sod Per square yard (meter)

700.5.01 Adjustments

General Provisions 101 through 150.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SPECIAL PROVISION

Section 702—Vine, Shrub, and Tree Planting

Delete Section 702 and substitute the following:

702.1 General Description This Work includes furnishing and planting vines, shrubs, trees and plants, as well as treating regenerated areas according to the Specifications, Plans, and the Engineer.

702.1.01 Definitions General Provisions 101 through 150.

702.1.02 Related References **A. Standard Specifications**
Section 108—Prosecution and Progress
Section 700—Grassing
Section 882—Lime
Section 891—Fertilizers
Section 893—Miscellaneous Planting Materials **B. Referenced Documents** Standardized Plant Names

702.1.03 Submittals **A. Certificates of Inspection** Submit certificates of inspection with the invoice for each shipment of plants as required by law for transportation. File certificates with the Engineer before the material is accepted. Plants may be rejected at the site regardless of Federal or State government inspections at the place of growth. **B. Substitutions** When both primary and alternate plants are specified, use the alternate only after providing written proof that the primary plants specified are not available. In this case a Supplemental Agreement is not required to use the alternate plants. When a primary or an alternate plant cannot be furnished, provide the Engineer written proof that neither is available. A Supplemental Agreement is required for substitute plants in this case.

702.2 Materials Ensure that materials meet the requirements of the following Specifications:

Material	Section
Water	700.2.B
Agricultural Lime	882.2.01

Section 702—Vine, Shrub, and Tree Planting

Material	Section
Fertilizers	891.2.01
Plant Topsoil	893.2.01
Landscape Mulch	893.2.02
Vines, Shrubs, Trees, and Miscellaneous Plants	893.2.03
Tree Paint	893.2.06
Prepared Plant Topsoil	893.2.07
Stakes	893.2.08
Organic Soil Additives	893.2.09

A. Plant Specifications Furnish plants according to the plant name and Specifications included on the Plans titled, "Plant Specifications."

1. Plant Names; Ensure that the botanical and common names of plants specified conform with the most current edition of Standardized Plant Names, as adopted by the American Joint Committee on Horticultural Nomenclature.

2. Grades; Ensure that plants meet the grade requirements of the most current American Standard for Nursery Stock of the American Association of Nurserymen and any other requirements. Caliper used for establishing plant grades or trunk sizes is measured according to the American Standard for Nursery Stock. Plant trees with straight

stems and symmetrical branches according to their natural growth. Trees with broken or damaged terminal or main stems will be rejected.

3. Substitutions;

A. Use approved substitute plants, as designated by the Engineer, equal in value to specified plants. Request substitutions at least 30 days before the end of the planting season in the area.

B. Nursery Plants Unless otherwise specified, use plants stock-grown in a licensed nursery under intensive care and cultivation for at least one year. The branch system shall be normally developed and free of disease, injurious insects, disfiguring knots, sun-scald, injuries, bark abrasions, dead or dry wood, broken terminal growth, or other disfigurements. Ensure that proper certificates of inspection and a complete list of the nursery growers accompany nursery grown plants. See Subsection 893.2.03.

C. Collected Plants; Collected plants grow in the wild and are uncultivated and untransplanted. Do not take collected plants from areas infested with insects under quarantine. See Subsection 893.2.03 .

D. Approval and Selection of Materials and Work Select materials and execute operations required under the Specifications and drawings with the approval of the Engineer. Remove rejected materials from the site promptly.

702.2.01 Delivery, Storage, and Handling A. Bare-Rooted Plants Tie bare-rooted plants in bundles and place moist sphagnum moss, shingletoe, or other moisture-retaining material around the roots to keep the plants moist for up to 10 days. Over-wrap the bundle with a heavy weight, waterproof, flexible material, covering the roots and one-half of the tops. Keep the plants wrapped until they are planted or heeled-in. Wrapped plants may be held in the package for up to 10 days from shipment if protected from the sun and wind. If unable to plant plants within 10 days from shipment, unwrap, spread the roots, heel-in using moist soil, and water well.
Protect roots of plants that have been heeled-in from drying out. Cover soil and roots with wet canvas, burlap, or straw while transporting and distributing them for planting. The type of protection depends on weather conditions and the length of time the plants remain unplanted. Use protection methods satisfactory to the Engineer.

Section 702—Vine, Shrub, and Tree Planting

B. Balled and Burlapped Plants (B&B) Ensure that the soil in the ball is the original and undisturbed soil in which the plant has grown.

1. Dig, burlap, transport, and handle the plant carefully to avoid loosening the soil (stripping or exposing the roots). Burlap shall be a natural biodegradable material. Do not use synthetic burlap.

2. Replace plants rejected because of broken or loose balls, or balls of less diameter than that specified.

3. Adequately protect the roots of balled and burlapped plants, unless they are planted immediately after they are delivered. Completely cover them with damp soil, sawdust, or other moist material until removing them for planting.

4. Keep plants moist while awaiting planting.

a. Do not saturate the ball, causing it to pull off in handling.

b. Handle B&B plants by the ball and not by the top growth.

c. Never leave the balls of plants unprotected overnight.

C. Container-Grown Plants Keep container-grown plants moist until planted. Handle them by the container or soil ball and not by the top growth.

D. Collected Plants Do not collect plants more than 24 hours before planting.

1. Select plants with good shape and form. Do not select poorly shaped, weak plants taken from dense shade and crowded conditions.

2. Dig collected plants with a wide root system equal to at least the spread of the top of the plant.

3. Protect the roots with a moist packing material.

4. Load them onto a covered truck, protected from the sun and wind and transfer them directly to the final planting site.

5. Prune collected plants by removing from one-third to one-half of the side branches as directed by the Engineer.

E. Heeled-in Plants Properly maintain heeled-in plants until they are planted. Do not allow plants to remain heeled-in over the summer or for over 30 days without the Engineer's consent. **F. Injury Prevention** In digging, loading, unloading, planting, or otherwise handling plants, avoid injuring the trunk, branches, and roots of the plants. Injured plants will be rejected. Protect tops of shrubs and trees while in transit to prevent windburn.

702.3 Construction Requirements

702.3.01 Personnel General Provisions 101 through 150.

702.3.02 Equipment General Provisions 101 through 150.

702.3.03 Preparation

A. Inspect Plants Before Digging The Engineer will inspect trees or plants from the bidder's source for acceptability. When rejecting the trees or plants, the Engineer reserves the right to pursue and examine other sources of plants to find acceptable specimens. This change will not constitute an increase in cost to the State.

B. Clear and Grub

Clear and grub before planting or beginning to prepare the plant bed. See Section 201

C. Prepare Plant Bed Prepare for planting as follows:

1. Planting Limits

Stake planting limits according to Plan details and the Engineer. Have the Engineer approve the method of plant identification before planting.

2. Applications of Soil Additives

a. Apply fertilizer approximately 3 lbs/100 ft² (1.5 kg/10 m²) of bed surface. Fertilizer for plant bed may be 6-12-12 if 4-12-12 is not available.

b. Apply agricultural lime for plant bed approximately 5 lbs/100 ft² (2.5 kg/10 m²) of bed surface.

c. Spread an organic soil additive, (See Subsection 893.2.09), evenly throughout the designated area to at least 2 in (50 mm) deep. Thoroughly dig it into the soil to at least 6 in (150 mm) deep using a rotary hoe type tiller or other equipment that evenly mixes the soil, lime, fertilizer, and organic soil additive.

d. Till the area until the surface is smooth and free of weeds, roots, rocks, and other debris, to the satisfaction of the Engineer.

702.3.04 Fabrication General Provisions 101 through 150.

702.3.05 Construction

A. Seasonal Limitations for Planting

For geographic seasonal limitations, refer to the Planting Zones Map found in Subsection 700.3.05. Plant in Zones 1 and 2 between October 15 and March 15. Plant in Zones 3 and 4 between November 1 and March 1.

B. Planting Operations

Plant using either the pit method or the dibble method as called for on the Plant Specification sheet. Before beginning planting of each area, have available the necessary materials including prepared plant topsoil (see Subsection 893.2.07), water, stakes, and mulch. When seasonal limitations and weather conditions permit,

continuously water, mulch, guy, and stake, until completing the last operation. After completing planting, provide a method for retaining water adjacent to the plant according to the details shown on the Plans or as directed by the Engineer.

1. Planting By the Pit Method

a. Placing Bare-Rooted Plants

Plant bare-rooted plants delivered to the pit area. Protect roots from drying out until placing them in the pit.

Center plants in pits and spread roots as they originally grew.

Cover and prepare the topsoil according to details shown on the Plans.

b. Placing Balled and Burlapped Plants

Immediately plant these plants after they are delivered to the pit site. Never allow the balls to remain unprotected overnight.

The pit diameter shall be a minimum of 3 times the diameter of the rootball. Center the ball in the prepared pit, leaving the top of the ball 1 in (25 mm) above the top of the ground for settlement.

Cut away and remove the top 1/3 of burlap from the rootball. Cut all ropes and twine, pull the nails, and drop the remaining burlap to the bottom of the hole. Cut away and remove any wire from the top 1/3 of the rootball.

Partially fill the pit with prepared plant topsoil and compact the soil enough to hold the ball firmly.

c. Placing Container-Grown Plants

When the container is delivered to the pit site, split the container from top to bottom and carefully remove the plant.

The pit diameter shall be a minimum of 3 times the diameter of the rootball. Spread into the hole any major roots growing around the container or prune them to remove any circular growth.

Place the ball in the center of the prepared pit, leaving the top of the ball 1 in (25 mm) above the top of the ground for settlement.

Partially fill the pit with prepared plant topsoil and compact the soil enough to hold the ball firmly.

d. Completing Pit Plantings

After placing pit plantings, water plants thoroughly the same day regardless of weather or soil moisture conditions.

After the water has soaked in, add prepared plant topsoil and compact firmly up to 2 in (50mm) below the adjacent ground.

Stop compacting when the compacted prepared topsoil is 2 in (50 mm) below the adjacent ground.

Fill the remainder of each pit with loose, prepared plant topsoil according to the details shown on the Plans.

Prepare the loose topsoil to retain water adjacent to the plant according to the Plans or as directed by the Engineer.

2. Planting By the Dibble Method

If the Plans require the dibble method, perform the Work as outlined. Standard dibble blades are made in 10 in (250 mm) and 12 in (300 mm) heights. Use the 12 in (300 mm) blade on all plants except those with a root system of 8 in (200 mm) or less. Locate plants as shown on the Plans or as approved by the Engineer. Only plant when there is adequate moisture in the ground and when the ground is not frozen. Follow these steps when grass or other vegetation is present:

a. Mow an area at least 2 ft (600 mm) on all sides of the proposed location of the individual dibbled plants to a height of 1 in (25 mm).

b. Apply landscape mulch of the specified type and amount to the mowed area before planting.

c. Dibble the seedling into the soil.

d. Dibble the plant within 48 hours after mowing.

e. Complete each planting according to the Plan details to retain water adjacent to the plant.

C. Landscape Mulching

1. For Pit Plantings

Follow these requirements when mulching for pit plantings:

a. Where the distance between plants is 8 ft (2.4 m) or less, spread mulch throughout and 3 ft (900 mm) beyond the outermost plants. Where plants are more than 8 ft (2.4 m) apart, apply mulch in a circular fashion around each plant, forming a ring 5 ft (1.5 m) in the outside diameter.

If plant pits are greater than 5 ft (1.5 m) in diameter, ensure that the mulch extends out to cover the berm as shown in the planting details on the Plans.

b. Apply mulch within 3 days of planting at least 4 in (100 mm) in depth to obtain a compacted depth of at least 3 in (75 mm).

Compaction occurs naturally. Check compaction at least two months after spreading and exposing the mulch to the elements. If the compacted depth is less than 3 in (75 mm), apply additional mulch to deficient areas within 1 month following notification. c. Apply mulch to a uniform depth and remove lumps for a neat appearance. Tuck mulch neatly against all paving edges, drainage structures, and where planting beds meet grassed areas. d. Leave a 1 in (25 mm) to 2 in (50 mm) ring of non-mulched area directly around all tree trunks. e. Do not mulch with Cypress Mulch.

2. For Plantings by the Dibble Method

Apply landscape mulch according to Subsection 702.3.05.C.1 with the following exceptions:

a. Apply mulch before planting.

b. Ensure that the minimum compacted height after 2 months exposure is 2 in (50 mm).

Section 702—Vine, Shrub, and Tree Planting

D. Wrapping Do not wrap the trucks of tree unless specified in the plans. When wrapping is specified, tightly wrap the trunks of deciduous trees over 1.25 in (32 mm) in caliper. Wrap in strip burlap or waterproof crepe tree wrapping paper or other approved materials.

1. Begin wrapping at the ground and extend spirally up and beyond the first rosette of branches with an overlap of one half the width of the wrapping material.

2. Tie the wrapping material securely with binder twine spaced every 12 in (300 mm) for the full length of the wrapping. Wrap immediately after planting.

E. Staking and Guying

1. Perimeter Staking

Place perimeter stakes 2 in x 2 in x 36 in (50 mm x 50 mm x 900 mm). Stake the perimeter of indicated regenerated areas within specified planting dates according to the Plans or as directed by the Engineer.

2. Vine, Shrub, and Miscellaneous Plant Staking

Use stakes to identify isolated vines, shrubs, and miscellaneous plants outside of solid mulched beds according to Plan details.

3. Tree Staking and Guying

Stake trees with an identification stake and guy according to the details and dimensions shown on the Plans. Each guy wire shall consist of 18-gauge (1.2 mm) malleable galvanized iron wires twisted into a single strand and enclosed loosely into a rubber hose (or other approved covering or guying materials) extending around the trunk. Replace at no additional expense to the Department, any staking and guying materials that break or loosen. **Nylon guying straps of accepted size and quality may be substituted for the hose and wire specified above.**

a. After fastening the wire to the stake by tying or twisting it into a figure-8, nail or staple the wire to the stake to prevent slippage using a 4d nail or a 0.5 in (13 mm) staple.

b. Tighten the wire so that twisting the wire causes a slight strain between the tree and the stake.

c. Place guy wires above the first rosette of lower branches and fasten wire to the stake approximately 6 in (150 mm) above the ground.

F. Pruning 1. Prune plants on the site before planting and after initial inspection by the Engineer. Never prune severely to get plants to meet Specifications.

a. Follow modern horticultural practices and use approved tools designed for pruning.

Lopping, topping, or shearing trees or shrubs will result in rejection.

b. Prune back damaged, scarred, frayed, split, and skinned branches, limbs, and roots to live wood nearest to the next sound, outside lateral bud, branch, limb, or root.

c. Leave the terminal leaders or buds in trees intact.

d. Remove approximately one-third of the smaller branches on nursery grown vines, shrubs, and trees for root-top balance.

e. Prune roots, when necessary, as directed by the Engineer.

f. Prune Crape Myrtles to maintain natural form only. Severely cutting back crape myrtles is not permitted. Remove sucker growth from Crape Myrtles.

G. Watering

1. Apply water in a manner to prevent erosion. Water plants at the time of planting. Water after applying fertilizer called for in Subsection 702.3.05.H and as necessary to maintain enough moisture to promote plant growth. a. Apply enough water to wet the soil to a depth slightly below the roots. Direct the water to the ground around the plant, not the tops. b. Do not allow plant foliage to dry out or plants to defoliate from lack of water. Remove plants in such condition from the site immediately.

c. Apply water once per week throughout the planting season in which the plants are installed. Follow Subsection 702.3.07.B and 702.3.07.C for shrub and tree watering requirements throughout the life of the project.

Section 702—Vine, Shrub, and Tree Planting

H. Spring Application of Fertilizer

1. Method and Rate of Application

Follow these requirements when applying fertilizer in the spring:

a. Trees

Deep-root feed trees each spring by using a 8-12-12 slow release fertilizer. Bore a 1.5 in (38 mm) diameter hole between 18 in to 24 in (450 mm to 600 mm) deep at the rate of 8 to 10 holes per tree. Use 1 cup (0.25 L) of fertilizer per 1 in (25 mm) in caliper of tree measured 6 in (150 mm) off the ground. Fill the holes with soil upon completing each hole.

b. Shrubs

Fertilize shrubs with a 6-12-12 slow release 60 percent organic fertilizer by spreading fertilizer around the base of the plant and working it into the soil by hand. Use 0.5 cup (0.12 L) of fertilizer per foot (300 mm) of shrub height.

c. Bed Areas

Spread fertilizer on bed areas (defined by method of planting in Subsection 702.3.05.B), over the mulch at the rate of 3 lbs/100 ft^2 (1.5 kg/10 m^2) using 6-12-12 or 8-12-12. Thoroughly water in the plants.

d. Vines

Fertilize vines when not planted in a bed at the rate of 1/4 cup (60 ml) per vine using 6-12-12 or 8-12-12. Thoroughly water in the plants.

e. Regenerated Areas

Spread fertilizer on regenerated areas evenly at a rate of 3 lbs/100 ft² (1.5 kg/10 m²) and thoroughly water in using 6-12-12. **NOTE: 2 cups (1 L) of 6-12-12 or 8-12-12 equals 1 lb (1 kg).**

2. Time of Application

Apply fertilizer in the spring in Zones 1 and 2 (with reference to the Planting Zones specified in Subsection 702.3.05.A) between April 1 and April 15. Apply between March 15 and April 1 for Zones 3 and 4. For late plantings, do not apply fertilizer less than 30 days after the plantings.

3. Additional Fertilizer Grades 8-12-12 or 6-12-12

Approximately one month after the spring fertilizer is applied, the Engineer will inspect planted areas and determine if an additional application of fertilizer is needed for any plant or group of plants.
If the Engineer determines additional fertilizer is required, apply fertilizer at the rate specified in Subsection 702.3.05.H. Make the additional application between June 15 and July 15th.
I. Treatment of Regenerated Areas Treating regenerated areas includes staking the perimeter and applying fertilizer in the spring. Pruning, mulching, staking (except perimeter staking), guying, mowing, weeding, and watering (except watering following fertilization) are not required.
Perform perimeter staking as specified in Subsection 702.3.03.C.1. Apply fertilizer in the spring as specified in Subsection 702.3.03.C.2.
J. Restoration and Cleanup Restore areas where existing grass has been damaged or scarred during planting operations at no expense to the Department. Restore the disturbed areas to their original conditions as directed by the Engineer. Clean up debris, spoil piles, and containers and leave the Project area clean.
702.3.06 Quality Acceptance Preserve the plants in a healthy growing condition. The acceptability of the plant material planted and maintained as specified will be determined at the end of an establishment period.
The plant establishment period is the period from the last planting specified in Subsection 702.3.05.B until the following October 1. Plant all plants in one planting season unless otherwise approved by Engineer.

Section 702—Vine, Shrub, and Tree Planting

A. First Establishment Period At the end of the first planting season, the first establishment period begins. The Department will make the first semi-final inspection 30 days before the end of the first establishment period. Replace dead, dying, diseased, unsatisfactory, and missing plants ,by January 20 of the next (second) planting season. **B. Second Establishment Period** At the end of the second planting season, the second plant establishment period begins. The Department will make the second semi-final inspection 30 days before the end of the second establishment period. Again, replace dead, dying, diseased, unsatisfactory, and missing plants, by January 20 of the next (third) planting season. **C. Final Inspection** The Department will make the final inspection of the plants during May, following any needed replacements during the previous planting season. Assume responsibility for the plants until the Final Acceptance of the Project or a portion of the Project.
702.3.07 Contractor Warranty and Maintenance Project maintenance includes, but is not limited to, watering, cultivating, weeding, pruning, repairing, adjusting guys and stakes, and performing other work as ordered by the Engineer until final acceptance.
Promptly remove from the Project area dead plants or those that no longer conform to the requirements of Subsection 702.2.A.2. Mow the entire right-of-way within the limits of the Project up to a maximum of four times per calendar year. **A. Leaning Trees**
Straighten leaning trees as directed by the Engineer. Follow Staking and Guying requirements for replacements or repairs as per Subsection 702.3.05.E.
B. Shrub Maintenance

1. Pruning

Prune or thin shrubs, as directed by the Engineer, at least two times per year, once before spring and once during mid-summer. Maintain an attractive shape and fullness with respect to the intended character of the planting. See Subsection 702.3.05.F.

2. Landscape Mulching

Continuously maintain shrub and tree beds with a clean, freshly mulched appearance using the mulch originally specified. See Subsection 702.3.05.C. a. Apply a 2 in (50 mm) loose layer of specified mulch (top-dressing) on top of all areas, including tree pits, initially mulched, at the following times: ● In August, during the first plant establishment period. ● In April, during the second plant establishment period. ● In August, during the second plant establishment period. ● In April, prior to the final inspection.

3. Applying Fertilizer: See Subsection 702.3.05.H.

4. Applying Pesticides

a. Inspect all planted or seeded vegetation for insects, grubs, mites, diseases, etc., once every two weeks. Apply insecticides, fungicides, and herbicides according to the manufacturer's recommendations to effectively control or eradicate the problem. b. Perform all pesticide applications under the direct supervision of a trained licensed pesticide operator. Carry the pesticide license/certification on the work site during applications. Carry all labeling associated with the chemical being applied at the work site. c. Submit all product information data sheets and EPA approval numbers on all pesticides proposed to be used prior to application for approval. d. Notify the Engineer a minimum of 48 hours prior to any and all pesticide applications.

e. Add a blue dye to all spray applications unless approved otherwise by the Engineer. f. Monitor the weather and spray under proper weather conditions. Spraying shall not occur when the weather is greater than 10 miles per hour. g. Wear the proper safety attire. Wear long sleeve shirts, long pants, gloves, and safety glasses. Wear or use any additional protective safety attire or gear as recommended by the product's manufacturer. h. Repair any damage that is a result of mishandling or misuse of materials, at no expense to the Department, to the satisfaction of the Engineer.

5. Edging

a. Edge all shrub pits, shrub beds, and tree pits twice a month throughout the life of the project such that the vee-cut edging detail specified on the plans is maintained. Prevent grass and weeds from growing over or into the shrub beds and tree pits. b. Use equipment specifically designed for edging. Line trimming equipment shall not be used.

6. Watering

a. Check all planted material once a week throughout the contract for dryness by removing the mulch from their base and "sampling the soil" approximately 4 in (100mm) deep. Water if the soil is not moist. b. Water all planted material if a drought (no rain for two weeks) occurs. Provide the water required to meet the watering requirements. c. Water each plant thoroughly until the ground is saturated to a depth slightly below the root ball. Apply water in a manner to prevent erosion. 7. Weed Control Perform weed control throughout the project, a minimum of once every two weeks, in all areas within the project limits to maintain tree pits, shrub beds, sidewalks, curb and gutter, walkways, ditch paving, concrete medians, and other pavement weed free. Meet the following conditions: a. Perform weed control to prevent weeds from becoming established, setting seed, or from becoming visible in the planting beds. b. Completely remove all undesirable plants (weeds) by hand pulling. Removal of weeds may be accomplished using herbicides if approved by the Engineer. c. Apply an approved pre-emergent herbicide twice each year, once in the spring and once in the fall, throughout the contract. Apply pre-emergent to all shrub beds and tree pits. Notify the Engineer 48 hours prior to spraying. Use a blue dye in all applications unless approved otherwise by the Engineer. d. If noted on plans, eradicate all invasive exotic pest plants found within the project limits throughout the life of the project. e. Dispose off site on a daily basis all weed, exotic plants, clippings, litter, and debris generated. 8. Policing Remove debris such as paper, broken limbs, bottles, cans, etc., a minimum of the first and third week of each month from all areas within the project limits while maintaining the site.

C. Tree Maintenance

1. Watering

See Subsection 702.3.07.B.6

2. Landscape Mulch

See Subsection 702.3.07.B.2

3. Fertilizer

See Subsection 702.3.05.H.

4. Abnormal Conditions

Periodically (once every two weeks) observe trees and shrubs for abnormal conditions such as insects, borers, web worms, red spiders, etc., and immediately treat.

5. Sucker Growth

Remove sucker growth once a month. Sucker growth is the shoots that sprout out around the base of the tree trunk.

6. Pruning and Deadwood

Remove deadwood at least two times a year. Prune dead branches. Paint cuts, and wounds or scars with tree paint only when specified in the plans. Do not top Crape Mrytles. See Subsection 702.3.05.F.

7. Pesticide Control

Apply pesticides as necessary to control bores, aphids, mealy bugs, mites, and tent worms, and diseases. Follow the manufacturer's instructions. . See Subsection 702.3.07.B.4. NOTE: Use chemicals according to Federal, State and county directives on environmental control that carry an EPA approval number.

8. Weed Control

See Subsection 702.3.07.B 9. Staking and Guying Remove all guy wires/nylon strapping and stakes from plants which have gone through one complete growing season.

702.4 Measurement

A. Plants Plants of the name and size specified are measured for payment according to the number planted that are still living and in an acceptable condition at the time of Final Acceptance. **B. Fertilizer** Spring application fertilizer applied to planted and regenerated areas will be the actual number of pounds (kilograms) placed and accepted. Fertilizer, lime, and plant topsoil used in prepared plant topsoil or plant bed preparation are not measured for separate payment. **C. Perimeter Stakes** Perimeter stakes is not measured for payment unless such item is shown as a separate Pay Item in the Proposal. **D. Clearing and Grubbing** Clearing and grubbing is not measured for payment unless the Item is shown as a separate Pay Item in the Proposal. **E. Landscape Mulch** The quantity of landscape mulch and top-dressing measured for payment will be the actual number of square yards (meters) completed as specified and accepted. The presence of weeds or other growth, or foreign material, will be cause for rejection. The addition of landscape mulch in deficient areas will not be measured for payment.

702.4.01 Limits General Provisions 101 through 150.

702.5 Payment

A. Plants Plants measured for payment will be paid for as follows:

1. After planting satisfactorily, the Department will pay 50 percent of the Contract Unit Price bid per each on the next estimate.

2. Until Final Acceptance, perform all required maintenance according to Subsection 702.3.07 when necessary or as ordered by the Engineer.

If the Contractor fails to properly maintain the landscaping, the Department will assess liquidated damages according to the schedule of deductions shown in Subsection 108.08, but not less than $150 per calendar day, and will continue until project maintenance is approved by the Engineer. The liquidated damages are in addition to those specified for delay or failure in completing the Work within the specified time.

3. After the first semi-final inspection, the Department will pay 15 percent of the Contract Unit Price bid per each of the live, viable plants.

4. After the second semi-final inspection, the Department will pay 15 percent of the Contract Unit Price bid per each of the live, viable plants.

Section 702—Vine, Shrub, and Tree Planting

5. At Final Acceptance, the Department will pay the remaining 20 percent less the Full Contract Unit Price bid per each plant not accepted.

Payments are full compensation for furnishing, planting, replanting as required, pruning, staking, guying, soil conditioning, and preparing plant beds, including applying additives, digging plant pits, preparing plant topsoil and mulch, disposing of waste material, and maintaining the plants during the plant-establishment period. **B. Fertilizer** All grades of fertilizer applied in the spring, measured as specified above, are paid for at the Contract Price per pound (kilogram) or per ton (megagram), whichever is indicated in the Proposal. Payment is full compensation for furnishing and applying and for watering regenerated areas. **C. Perimeter Stakes** Perimeter stakes will not be measured for payment. The cost will be included in the overall contract price. **D. Landscape Mulch** Landscape mulch measured for payment will be paid for as follows: 1. After mulching satisfactorily, the Department will pay 40% of the Contract Unit Price bid per square yard (meter). 2. After satisfactorily completing mulch (topdressing) in August of the first plant establishment period, the Department will pay 15% of the Contract Unit Price bid per square yard (meter). 3. After satisfactorily completing mulch (topdressing) in April of the second plant establishment period, the Department will pay 15% of the Contract Unit Price bid per square yard (meter). 4. After satisfactorily completing mulch (topdressing) in August of the second plant establishment period, the Department will pay 15% of the Contract Unit Price bid per square yard (meter). 5. After satisfactorily completing mulch (topdressing) in April of the final planting season, (a month before the Final Inspection), the Department will pay 15% of the Contract Unit Price bid per square yard (meter). Such payment shall be full compensation for furnishing, installing, topdressing, and maintaining mulch as required. Payment will be made under:

Item No. 702	Plant name and size	Per each
Item No. 702	Fertilizer, spring application	Per ton (megagram)
Item No. 702	Landscape Mulch	Per square yard (meter)
Item No. 702	Spring application fertilizer	Per pound (kilogram)

702.5.01 Adjustments General Provisions 101 through 150. OFFICE OF MAINTENANCE

First Use Date: March 17, 2006

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SUPPLEMENTAL SPECIFICATION

Section 710—Permanent Soil Reinforcing Mat

Delete Subsection 710 and substitute the following:

710.1 General Description

This work includes furnishing and placing a permanent mat over prepared areas according to the Plans or as directed by the Engineer.

710.1.01 Definitions General Provisions 101 through 150.

710.02 Related References

A. Specifications

Section 700—Grassing

Section 881—Fabrics

B. Referenced Documents

QPL 49

710.1.03 Submittals General Provisions 101 through 150.

710.2 Materials

Use materials listed in the QPL 49.

Ensure that materials meet the following requirements.

A. Preformed Mat

Use mat with a web of mechanical or melt-bonded polymer nettings, monofilaments, or fibers entangled to form a dimensionally stable matrix. Bond the mat with one of the following:

- Polymer welding
- Thermal fusion
- Polymer fusion
- Fibers placed between two high-strength, biaxially oriented nets bound by parallel-lock stitching with polyolefin, nylon, or polyester threads

Use a mat with enough strength and elongation to limit stretching and maintain its shape before, during, and after installation under dry or wet conditions. Provide a mat with stabilized components that avoid ultraviolet degradation and are inert to chemicals normally encountered in a natural soil environment. Ensure that the mat conforms to the following physical properties:

Property	Minimum Value	Test Method
Thickness	1/2 in (13 mm)	
Weight	0.60 lbs/yd² (325 g/m²)	
Roll width	38 in (965 mm)	
Tensile strength		ASTM D 5034*
Length (50% elongation)	15 lbs/in (2.5 N/mm)	
Length (ultimate)	20 lbs/in (3.5 N/mm)	
Width (50% elongation)	5 lbs/in (1 N/mm)	
Width (ultimate)	10 lbs/in (2 N/mm)	
Ultraviolet stability	80%	ASTM D 4355

1,000 hours in an Atlas ARC Weatherometer (ASTM G 23, Type
D)
ASTM D 822
* Modified to use minimum 6 in (150 mm) wide test specimens.

B. Stakes or Staples

Use 1 in by 3 in (25 mm by 75 mm) wood stakes made from sound stock cut in a triangular shape. Cut stakes 12 in to 18 in (300 mm to 450 mm) long depending on soil compaction.
Use metal staples with the following characteristics:

- 11 gauge steel
- U shape
- Legs at least 8 in (200 mm) long
- Crown 2 in (50 mm) across

C. Filter Fabric

Use woven or nonwoven filter fabric that meets the requirements of Subsection 881.2.05, "Plastic Filter Fabric."

710.2.01 Delivery, Storage, and Handling General Provisions 101 through 150.

Delete Subsection 710.3 and substitute the following:

710.3 Construction Requirements

710.3.01 Personnel General Provisions 101 through 150.

710.3.02 Equipment General Provisions 101 through 150.

710.3.03 Preparation

A. Site Preparation

Before protecting areas with mat, prepare the area according to Section 700 with the following steps:
1. Bring to final grade
2. Plow
3. Lime
4. Fertilize
5. Grass

Provide a smooth, firm, and stable surface free of rocks, clods, roots, or other obstructions that would prevent the mat from contacting the soil directly.

710.3.04 Fabrication General Provisions 101 through 150.

710.3.05 Construction

A. Installing Mat

Do not use a mat in areas with rock outcroppings or large rocks. Install the mat either in ditches or on slopes according to the following requirements:
1. Ditches

To install the mat in ditches:
a. Cut a transverse trench 6 in wide by 9 in deep (150 mm wide by 225 mm deep) at the ends of the mat and at 25 ft (7.5 m) intervals along the ditch.
b. Cut longitudinal, 4 in (100 mm) deep anchor slots along each side of the mat along the full length of the ditch, burying mat edges.
The Engineer will require additional or deeper anchor slots for large volumes of water.
c. Roll out the center strip of matting, starting at the lower end of the ditch.
d. Roll out each adjacent strip of matting to overlap the preceding strip at least 3 in (75 mm).
e. Overlap the ends of each mat roll 3 ft (1 m) with the upslope mat on top. Stretch the mat to the bottom of the slot, folding it back and staking through two layers of material.

f. Stake each strip of matting at 1 ft (300mm) intervals in each anchor slot, with one stake serving the overlapped edges of adjoining strips.
g. Backfill and compact the slot.
h. Fold the mat back over the slot and continue in the upstream direction (closed anchor slot).
i. Stake the mat snugly in the longitudinal slots and at intervals a maximum of 5 ft (1.5 m) along the ditch (open anchor slot).
j. Backfill and dress the longitudinal anchor slots.
Lay up to 10 ft (3 m) of filter fabric under runs of matting that begin at pipe outlets.

B. Grassing

Grass the entire area where mat will be placed and disturbed soil area according to Section 700.

710.3.06 Quality Acceptance General Provisions 101 through 150.

710.3.07 Contractor Warranty and Maintenance General Provisions 101 through 150.

710.4 Measurement

Permanent soil-reinforcing mat complete and accepted is measured for payment by the square yard (meter), surface measured.

710.4.01 Limits Overlaps and anchor slots are incidental to the work and are not measured for payment.

710.5 Payment This work will be paid for at the Contract Price per square yard (meter) for permanent soil-reinforcing mat, complete in place and accepted. Payment is full compensation for furnishing and installing the mat according to this Specification, including filter fabric and maintenance.

Preparing the area and grassing will be paid for according to Section 700. Payment will be made under:

Item No. 710 Permanent soil reinforcing mat Per square yard (meter)

710.5.01 Adjustments General Provisions 101 through 150.

Submitted: January 3, 2006

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SECTION 900 – Bollards

900.1 General Description

Add the following:

Bollards:

This work consists of the construction and installation of bollards. The bollards will be constructed of steel pipe walls, concrete footing, rebar installation and a sand cushion.

Install structures according to the Specifications and the details shown on the Plans, or as directed by the Engineer.

900.1.01 Definitions

General Provisions 101 through 150.

900.1.02 Related References

A. Standard Specifications

Section 207 – Excavation and Backfill for Minor Structures

Section 500 – Concrete Structures

Section 511 – Reinforcement Steel

Section 535 – Painting Structures

Section 813 – Pond Sand

Section 844 – Steel Pipe

Section 870 - Paint

B. Referenced Documents

General Provisions 101 through 150

900.1.03 Submittals

General Provisions 101 through 150

900.2 Materials

A. Steel Pipe

Ensure that steel pipe meets the specifications on the Plans and in Section 844 of the specifications.

B. Concrete

Concrete used in construction of bollard to meet specifications in Section 500 of the Standard Specifications and shall be Class "A".

C. Sand

Ensure sand used meets specifications in Section 813 – Pond Sand.

900.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150

900.3 Construction Requirements

900.3.01 Personnel

General Provisions 101 through 150

900.3.02 Equipment

General Provisions 101 through 150

900.3.03 Preparation

General Provisions 101 through 150

900.3.04 Fabrication

General Provisions 101 through 150.

900.3.05 Construction

Construction of bollard should proceed as follows:

1. Excavate a 24” diameter hole from the top of the finished grade down 4’-3”.
2. Insert hollow steel pipe into the previously excavated hole such that the bottom of the pipe is 3” from the bottom of the hole. This pipe will have had a 12” long piece of #4 rebar inserted through the walls of the pipe, 4” from the bottom of the pipe. Ensure pipe is placed vertically and maintains a vertical position throughout construction.
3. Fill hole to within 7” of finished grade with Class “A” Concrete and allow to cure.
4. Lightly tamp 2” of sand onto the cured concrete and construct sidewalk on top of the bollard footing. Sidewalk construction will be paid for separately.
5. Fill steel pipe with Class “A” Concrete to the top and smooth concrete to form a cap.

900.4 Measurement

Bollards are measured for payment by the number in place completed and accepted. Sidewalk surrounding completed bollard will be measured and paid for separately.

900.5 Payment

Bollards measured for payment will be paid for per each. Payment is full compensation for furnishing and erecting the Item complete in place according to the Plans and Specifications, and for providing materials and concrete, excavating, backfilling, and disposal of surplus materials.

Payment will be made under:

Item No. 900	Bollards	Per Each