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BID DOCUMENTS

FOR

THE CONSTRUCTION OF

Lee Road/SR 1161/CR 817 Widening and Reconstruction Project

GDOT P.I. NO. 0004428

DOUGLAS COUNTY SOLICITATION NUMBER: 20-014

DOUGLAS COUNTY, GEORGIA
BOARD OF COMMISSIONERS

8700 HOSPITAL DRIVE
DOUGLASVILLE, GA 30134

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BOARD OF COMMISSIONERS

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LEE ROAD /SR 1161/CR 817
WIDENING AND RECONSTRUCTION

P.I.# 0004428
DOUGLAS COUNTY

DOUGLAS COUNTY BOARD OF COMMISSIONERS
Purchasing Department
Invitation to Bid
SOLICITATION NO. 20-014

NOTICE TO CONTRACTORS

Sealed Bids will be received by The Douglas County Board of Commissioners in the Douglas County Purchasing Department, 3rd Floor, Douglas County Courthouse, 8700 Hospital Drive, Douglasville, Georgia 30134, **until 10:00 a.m., ET Thursday, September 10, 2020. A non-mandatory pre-bid meeting will be conducted at 10:00 a.m. ET, Thursday, August 27, 2020, in the Citizen's Hall, 2nd Floor, Douglas County Courthouse.** Bids may be mailed, or hand delivered. **Bids shall be opened and read publicly at 10:00 a.m., ET Thursday, September 10, 2020.** You are invited to attend or submit your bid prior to the deadline.

The work to be bid consists of furnishing all materials, labor, and equipment for:

Lee Road/SR 1161/CR 817 Widening and Reconstruction Project
GDOT P.I. # 0004428
Douglas County, Georgia

All questions regarding this bid shall be in writing either by mail, fax (770-920-7219), or email (dcpurchasing@co.douglas.ga.us). No questions shall be received after **12:00 p.m. ET, Friday, August 28, 2020**. Responses will be provided by **5:00 p.m. ET, Thursday, September 3, 2020.** No other County staff or officials associated with this project should be contacted regarding this bid. **DOING SO, MAY RESULT IN BIDDER'S DISQUALIFICATION.**

All bids shall be accompanied by a Bid Bond in favor of the Board of Commissioners of Douglas County in the amount of at least five percent (5%) of the Bid for the complete work. The Bid Bond shall be forfeited to the Board of Commissioners of Douglas County, Georgia as liquidated damages if the Bidder fails to execute the Contract and provide Performance Bond, Payment Bond, and Liability Insurance Certificate within fifteen (15) calendar days after being notified that he/she has been awarded the contract. Per GDOT specification 103.05, a required performance bond is to be 100% of the contract amount and a required payment bond is to be 100% of the contract amount.

Payments will be made in accordance with the Douglas County's Financial Policy **(original invoice from contractor is required before payment will be made).** The County's terms are NET 30 days after receipt of an approved invoice or certified payment request.

Notice to Proceed (NTP) on this Project will be issued following receipt of the correct and fully executed Contract Documents and upon an approved Purchase Order in the full contract amount.

The Bid Form and Specifications may be downloaded at www.celebratedouglascounty.com under Purchasing Department. They are available for review at the Douglas County Purchasing Office (770.920.7247), 3rd Floor, Douglas County Courthouse, 8700 Hospital Drive, Douglasville, Georgia 30134 between the hours of 8:00 a.m. to 5:00 p.m. ET Monday through Friday.

Plans may be purchased at Superior Reprographics, Inc., 591 Thornton Road, Lithia Springs, Georgia, 30122 (770-944-7293) or email: print@superiorreprographics.com **for $1071.25 per set**. Such payments are non-refundable. Please reference **Douglas County Solicitation: 20-014.** Purchasing arrangements for Bid documents are strictly the responsibility of the bidder.

Superior Reprographics, Inc. is the **only** approved source for these plans. Bidders must allow **24 hours** printing time for each order. Bidders are cautioned not to obtain plans from any other source, than the one mentioned above,

to ensure that the plans are complete and include the latest amendments/changes and addenda. **IT IS THE BIDDER'S RESPONSIBILITY TO ENSURE THAT THEIR BID DOCUMENTS ARE COMPLETE AND CORRECT PRIOR TO BID SUBMITTAL.**

Completion Date for this Contract shall be:

SEVEN HUNDRED FIFTEEN (715) CALENDAR DAYS FROM NTP

Place **one (1) original and three (3) copies** of your response in a sealed envelope and clearly label in the lower left corner "**Solicitation No. 20-014 Invitation to Bid - Lee Road/SR 1161 Widening and Reconstruction Project, Douglas County, Georgia, 09/10/2020**, as well as the Bidder's name, addressed to the Douglas County Board of Commissioners, **ATTENTION:** Purchasing Department, 8700 Hospital Drive, Douglasville, Georgia, 30134**.**

No Bid will be received or accepted after the above specified time and date of the Bid Opening. Bids submitted after the designated time and date will be deemed invalid and returned unopened to the Bidder.

Please note Georgia Department of Transportation Standard Specifications, 2013 Edition, GDOT Supplemental Specifications Book, 2016 Edition, and applicable Supplemental Specifications and Special Provisions apply to this project. A **Disadvantaged Business Enterprise (DBE) minimum goal of fifteen percent (15%)** applies to this project. The DBE goal can be met by prime contracting, sub-contracting, joint-venture or mentor/ protégé relationship as may be allowed by Georgia Department of Transportation requirements.

All bidders must be Pre-Qualified with Georgia Department of Transportation (GDOT) and all subcontractors must be registered with GDOT. Qualifications of the Bidder will be reviewed before the Award of the Contract. The County may award the contract to other than low Bidder. The Douglas County Board of Commissioners reserves the right to reject all Bids and to waive informalities.

The Douglas County Board of Commissioners in accordance with Title VI of the Civil Rights Act of 1964 and 78 Stat. 252, 42 USC 2000d-42 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, part 21, Nondiscrimination in federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, or national origin in consideration for an award.

- Bidders submitting bids over $2,000,000 shall be prequalified with the GDOT.
- Bidders submitting bids $2,000,000 or less shall be prequalified or registered subcontractors with the GDOT.

CONTRACT DOCUMENTS

CONTRACT

THIS AGREEMENT made by and between **DOUGLAS COUNTY, GEORGIA,** hereinafter called **"COUNTY,"** and _____ a contractor doing business as an individual, a partnership, or a corporation of the City of _____, County of _____, and State of Georgia, hereinafter called **"CONTRACTOR".**

WITNESSETH: that for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the **County**, the **Contractor** hereby agrees to commence and complete the construction in accordance with requirements of Solicitation No. 20-014, described as follows:

NOTICE TO BIDDERS:

This project is funded by Federal, State, and/or local funds. Accordingly, the successful bidder will be required to comply with all applicable Federal and State rules and regulations, as well as those of Douglas County. The project must conform to all Americans with Disabilities Act (ADA) regulations.

All bidders submitting bids in excess of $2,000,000.00 shall be prequalified with the Georgia Department of Transportation (GDOT). All bidders submitting bids $2,000,000.00 or less shall be either a prequalified contractor or registered subcontractor with GDOT. All subcontractors will be required to be approved by the Department in advance of any work being performed by the Subcontractor.

A Disadvantaged Business Enterprise (DBE) goal of fifteen percent (15%) has been established for this project. Bidders shall comply with 49 C.F.R. Part 26 in their efforts to attain this goal. Bidders shall be required to document DBE participation to meet the goal. DBE firms must be certified with the GDOT Office of Equal Employment Opportunity. The project will require the use of Davis Bacon wage rates for Douglas County, Georgia, that are in effect on the date of the bid opening.

Project Name: Lee Road/SR 1161/CR 817 Widening and Reconstruction Project
Project No.: GDOT P.I.# 0004428, Douglas County

The purpose of this contract is for the widening and reconstruction of Lee Road/SR 1161/CR 817, beginning at Fairburn Road/SR 92 and ending at Monier Avenue, hereinafter referred to as the **"PROJECT",** including, but not limited to, erosion control, maintenance of traffic, grading, excavation, subgrade preparation, drainage construction, asphalt surfacing, concrete surface course, sidewalks, signs, traffic signalization, pavement marking, and grassing as further set forth in the project drawings, technical specifications and bid manual, hereinafter called the **"WORK".** The work also includes all explanatory matter.

The time allowed for performance of the project will be **seven hundred fifteen (715)** consecutive calendar days. Liquidated damages for this contract shall be in the amount accorded in GDOT provision 108.08 per day for every day the contract is not completed within the specified timeframe.

The Contractor shall submit a monthly invoice. Invoices for payment will be processed, and payment issued, after the associated daily activity logs, weekly payrolls, and monthly DBE report for the respective invoice period are received and approved.

If the Contract is awarded, it will be awarded to the lowest responsible and responsive bidder whose proposal shall have met all the prescribed requirements (Section 103.02). The low bid will be determined based on the sum of the base bid and any alternates selected by the Sponsor.

CONTRACT

All work performed under this contract shall be in accordance with the Georgia Department of Transportation Standard Specifications - edition in effect on date of bid, GDOT Supplemental Specifications Book - edition in effect on date of bid, and applicable Supplemental Specifications and Special Provisions.

The Douglas County, Georgia, Department of Transportation in accordance with Title VI of the Civil Rights Act of 1964 and 78 Stat. 252, 42 USC 2000d-—42 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, part 21, Nondiscrimination in federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, national origin, disability, or age in consideration for an award.

The **Contractor** must also execute and submit "Contractor Affidavit and Agreement" as well as the "Subcontractor Affidavit and Agreement" and "Immigration and Compliance Certification" located in the contract documents and executed by all of their subcontractors **prior to beginning work** on the project.

Failure to comply with any of the requirements and procedures of the County (i.e., failure to timely supply required affidavits or compliance certification documents; failure to utilize federal work authorization procedures; failure to permit or facilitate audits or reviews of records by records by County officials upon request; and/or failure to continue to meet any of the statutory or County obligations during the life of the contract) shall constitute a material breach of the agreement and shall entitle the County to dismiss any general contractor or to require the dismissal of any subcontractor or sub/subcontractor (irrespective of tier) for failing to fully comply with these requirements, and

That upon notice of a material breach of these provisions, the **Contractor** (or subcontractor, regardless of tier) shall be entitled to cure the breach within ten (10) days and provide evidence of such cure. Should the breach not be cured, the County shall be entitled to all available remedies, including termination of the contract, the requirement that a subcontractor be dismissed from performing work under the contract, and any and all damages permissible by law.

Disadvantaged Business Enterprise (DBE) Participation and Small Business Participation (SBP) in all DOT contracts is encouraged. Contractors must submit a DBE participation report to the County prior to beginning work on a project and a final DBE report must be submitted at the end of a project. Monthly DBE reports must be submitted with each monthly invoice. If DBE participation changes during the course of a project, an updated participation report must be submitted to the County at the time of such change. No Small Business reports are currently required; however, this is subject to change at the **County's** discretion.

For all bids on contracts involving utility work as defined in O.C.G.A. 43-14-1 et. seq., the **Contractor and/or its subcontractor(s)** that will perform utility work must have a valid State of Georgia Utility Contractor License and comply with all applicable provisions of Chapter 14 of Title 43 of O.C.G.A.

Hereinafter called the "Project," for the sum of _____ ($_____.__) and all work in connection therewith, under the terms as stated in the General Conditions, special Provisions and Detailed Specifications of the Contract, and at his/her/its/their own proper cost and expense to furnish all materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the proposal the General Conditions, Special Provisions and Detailed Specifications of the Contract, the plans, which include all explanatory matter thereof, as prepared by Douglas County, here entitled the "Engineers," the specifications and contract documents as enumerated in Section 105.03 of the General Conditions, all of which are made a part hereof and collectively constitute the Contract.

CONTRACT

The **Contractor** further **proposes and agrees hereby to promptly commence the Work** with adequate force and equipment **within ten (10) calendar days from receipt of Notice to Proceed, or as may be specified by Special Provision, and to complete the Work within seven hundred fifteen (715) consecutive calendar days from the issuance of the Notice to Proceed.**

The **County** agrees to pay the **Contractor** in current funds for the performance of the Contract subject to additions and deductions as provided in the General Conditions of the Contract, and to make payments on account thereof as provided in Section 109 of the Specifications, as modified in the General Conditions and Special Provisions.

IN WITNESS WHEREOF, the parties to those presents have executed this Contract in five (5) counterparts, each of which shall be deemed an original.

Executed this_____day of _____, 202__.

DOUGLAS COUNTY, GEORGIA

By: _____
Dr. Romona Jackson Jones
Douglas County Commission Chairman

ATTEST:

_____
County Clerk

_____
Lisa Watson

_____
Witness

_____
Printed Name

_____
CONTRACTOR

_____

By:_____
Signature

_____
Printed Name

Title:_____

ATTEST:

_____
Secretary

_____
Printed Name

_____
Witness

_____
Printed Name

(Seal)

Give proper title of each person executing affidavit. Attach seal as required.

CONTRACT

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor"), agree as follows:

1) Compliance with Regulations: The Contractor shall comply with the Regulations relative to nondiscrimination in federally-assisted programs of the Department of Transportation (hereinafter referred to as DOT), Title 49, Code of Federal Regulations, part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by attachment and made a part of this contract.

2) Nondiscrimination: The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, sex, or national origin in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall not participate either directly or indirectly in discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

3) Solicitations for Subcontractors, Including Procurement of Materials and Equipment: In all solicitations either by competitive bidding or negotiations made by the Contractor for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the ground of race, color, sex, or national origin.

4) Information and Reports: The Contractor shall provide all information and reports required by Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information and its facilities as may be determined by Douglas County or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to Douglas County or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.

5) Sanctions for Noncompliance: In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, Douglas County shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

   a. Withholding or payments to the Contractor under the contract until the Contractor complies; and/or

   b. Cancellation, termination, or suspension of the contract, in whole or in part.

6) Incorporation of Provisions: The Contractor shall include the provisions of paragraphs (1) through (5) in every subcontract, including procurement of materials and leases of equipment, unless exempt by Regulations, or directives issued pursuant thereto.

   The Contractor shall take such action with respect to any subcontractor or procurement as the City of Dallas or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the City of Dallas enter into such litigation to protect the interests of the state and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

GENERAL REQUIREMENTS

1. All work performed under this contract shall be in accordance with the Georgia Department of Transportation Standard Specifications, 2013 Edition, GDOT Supplemental Specifications Book, 2016 Edition, and applicable Supplemental Specifications and Special Provisions. The applicable GDOT specifications govern over any conflicting requirements that may be found in the Agreement, Supplemental General Provisions, and General Conditions.

   The materials used in The Work shall meet all quality requirements outlined in the GDOT Sampling, Testing, and Inspection Guide. Materials will not be considered as finally accepted until all tests, including any to be taken from the finished work, have been completed and evaluated. The contractor shall use suppliers on the appropriate GDOT Qualified Products List. Upon request by the Engineer, the Contractor shall furnish formal written invoices from the materials suppliers. The invoices shall show the quantities and the dates shipped.

   The Contractor shall maintain a daily summary of weather conditions, personnel on site (including subcontractors), and tasks performed.

   Erosion control, monitoring, sampling, and compliance is the responsibility of the Contractor. All testing is to meet the requirements outlined in the GDOT Sampling, Testing, and Inspection Guide. Douglas County will assign a GDOT-certified testing firm to perform material testing.

   Change orders may be required periodically throughout construction of the project. Change Orders must be submitted in writing to Douglas County and include a breakdown of itemized costs and time extension, if applicable. All change order submittals must be placed on the GDOT LAP Change form, signed by the contractor, and must then be approved by the County and GDOT prior to implementation.

2. **DEFINITIONS AND TERMS:** Delete the following paragraphs from Section 101 of the 2013 Edition of the Georgia Department of Transportation State of Georgia Standard Specifications Construction of Transportation System and replace with the following:

DELETE:	**REPLACE WITH:**
101.10 Board	**THE DOUGLAS COUNTY BOARD OF COMMISSIONERS**
101.13 Chief Engineer	**THE DIRECTOR OF THE DOUGLAS COUNTY DEPARTMENT OF TRANSPORTATION** or his duly authorized representative
101.14 Commissioner	**THE CHAIRMAN OF THE DOUGLAS COUNTY BOARD OF COMMISSIONERS**
101.22 Department	**THE DOUGLAS COUNTY DEPARTMENT OF TRANSPORTATION**
101.24 Engineer	Same as **101.13** - Chief Engineer (above)
101.62 State Highway Engineer	Same as **101.13** - Chief Engineer (above)
101.63 State	**THE DOUGLAS COUNTY BOARD OF COMMISSIONERS**
101.81 Treasurer	**THE DIRECTOR OF PURCHASING**

3. A Preconstruction conference, to include at a minimum a County representative, Contractor, the GDOT Area Engineer, the GDOT Project Manager(s), and affected Utility Companies, is mandatory prior to commencing with construction activities. The DBE firm(s) to be used on this project as identified on the DBE Goals Form are to be invited to the preconstruction conference to assure such firms are known to all parties and steps are taken to assure their use on the project.

BID BOND

(Five Percent (5%) of Bid)

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 authorized to do business in the State of Georgia, are held and firmly bound unto Douglas County, Georgia, in the full and just sum of: _____ Dollars, and _____ Cents ($_____) good and lawful money of the United States of America, to be paid upon demand to Douglas County, Georgia, to which payment will 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 Douglas County, Georgia, a Proposal for furnishing materials, labor and equipment for: **the Lee Road/SR 1161/CR 817 Widening and Reconstruction Project, GDOT project P.I. 0004428, Douglas County.**

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

NOW, THEREFORE, the conditions of this obligation are such that if the Proposal be accepted, the Principal shall within fifteen (15) days after receipt of notification of the acceptance, execute a Contract in accordance with the Proposal and upon the terms, conditions, and prices set forth in the form manner required by Douglas County, Georgia, and execute a sufficient Certificate of Liability Insurance, Performance Bond, and Payment Bond payable to Douglas County, Georgia. The Performance Bond shall be 100% of the total Contract Price, and the Payment Bond shall be 100% of the total Contract Price, in form and with security satisfactory to said Douglas County, Georgia, and otherwise to be and remain in full force and virtue in law; and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to Douglas County, Georgia, upon demand, the amount hereof in good and lawful money of the United States of America, not as 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 _____, 202__.

_____(SEAL)	_____(SEAL)
Principal	**Surety**
By: _____	By: _____
Address: _____	Address: _____
_____	_____
Telephone #: _____	Telephone #: _____

Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to conduct business in the State of Georgia.

100% PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we_____, as Principals, hereinafter called Contractor, and_____, a corporation duly organized under the laws of the State of_____, listed in the latest issue of U.S. Treasury Circular 570, and registered in the State of Georgia, as Surety, are held and firmly bound unto **DOUGLAS COUNTY,** hereinafter called Owner, in the sum of_____ _____Dollars (in words), ($_____) (in figures), for payment of which sum, well and truly to be made, the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has entered into a written contract dated the ____ day of _____, 202___, with the Owner for: the **Lee Road/SR 1161/CR 817 Widening and Reconstruction Project, GDOT project P.I. 0004428, Douglas County,** in accordance with drawings and specifications prepared by Douglas County Department of Transportation, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void otherwise shall remain in full force and effect. The Surety hereby waives notice of any alteration or extension of time made by the Owner. Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

A. Complete the Contract in accordance with its terms and conditions; or,

B. Obtain a bid or bids for completing the Contract in accordance with its terms, and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Owner elects, upon determination by the Owner and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as Work progresses (even though there should be default or a succession of defaults) under the contract or contracts of completion arranged under this paragraph sufficient funds to pay the cost of completion less the balance of the contract prices; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Price", as used in this paragraph, shall mean the total amount payable by Owner to Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

Any suit under this Bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of the Owner.

The Contractor is required to provide the Owner a one-year guarantee covering workmanship and materials of the Project. This Performance Bond shall remain in force for one year from the date of Acceptance of the Project by the Owner.

100% PERFORMANCE BOND

IN WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each one of which shall be deemed an original, this_____day of_____, 20___.

Attest: _____

_____(SEAL)
Principal (Bidder)

_____
Signature

_____
Typed Name

_____
Title

Attest: _____

_____(SEAL)
Surety

_____
Signature Attorney-in-Fact

_____
Typed Name

(Attach Certified and Dated Copy of Power of Attorney)
DO NOT DATE PERFORMANCE BOND. BOND DOCUMENT WILL BE DATED BY BOC.
(Bond must not be dated prior to date of Agreement)

100% LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we_____, as Principal, hereinafter called a Contractor, and_____, a corporation duly organized under the laws of the State of, listed in the latest issue of U.S. Treasury Circular 570, and registered in State of Georgia, as Surety, are held and firmly bound unto **DOUGLAS COUNTY**, hereinafter called Owner, in the sum of _____ Dollars (in words), ($_____) (in figures), for the payment of which sum, well and truly to be made, the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has entered into a written contract dated the _____ day of _____, 202___, with the Owner for the: **Lee Road/SR 1161/CR 817 Widening and Reconstruction Project, GDOT project P.I. 0004428, Douglas County,** in accordance with drawings and specifications prepared by Douglas County Department of Transportation, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

A. A claimant is defined as one having a direct contract with the Contractor or with a Subcontractor of the Contractor for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

B. The above named Contractor and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expense of any such suit.

C. No suit or action shall be commenced hereunder by any claimant,

1. Unless claimant, other than one having a direct contract with the Contractor, shall have given written notice to any two of the following: the Contractor, the Owner, or the Surety above-named, within ninety (90) days after such claimant did or performed the last of the work of labor, or furnished the last of the materials for which said 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 notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Contractor, Owner or Surety, at any place where any 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.

100% LABOR AND MATERIAL PAYMENT BOND

2. After one (1) year from the completion of Contract and the acceptance by Owner of the work thereunder, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

3. Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment of payments made in good faith hereunder, inclusive of the payment by surety of mechanics' liens which may be filed on record against said improvement, whether or not claim for the amount of such presented under and against this bond.

PROVIDED FURTHER, that the Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

PROVIDED FURTHER, that no final settlement between Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claims may be unsatisfied.

THE REMAINDER OF THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY.

100% LABOR AND MATERIAL PAYMENT BOND

IN WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each one of which shall be deemed an original, this_____day of_____, 20__.

Attest: _____

_____(SEAL)
Principal (Bidder)

_____
Signature

_____
Typed Name

_____
Title

Attest: _____

_____(SEAL)
Surety

_____
Signature Attorney-in-Fact

_____
Typed Name

(Attach Certified and Dated Power of Attorney)
DO NOT DATE PAYMENT BOND. BOND DOCUMENT WILL BE DATED BY BOC.
(Bond must not be dated prior to date of Agreement)

EVIDENCE OF COMPLIANCE WITH GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT

The County and Contractor agree that compliance with the requirements of O.C.G.A. Sec. 13-10-91 and Rule 300-10-1-.02 of the Rules of the Georgia Department of Labor are conditions of this Agreement for the physical performance of services.

The Contractor represents that it employs:

_____500 or more employees;
_____100 or more employees; or
_____fewer than 100 employees
(*Contractor must initial appropriate category).*

The Contractor further agrees that its compliance with the requirements of O.C.G.A. Sec. 13-10-91 and DOL Rule 300-10-1-.02 is attested to on the executed Contractor Affidavit and Agreement attached hereto as EXHIBIT A.

If employing or contracting with any subcontractor(s) in connection with this Agreement, Contractor further agrees:

(1) To secure from the subcontractor(s) such subcontractor(s)') indication of the employee-number category applicable to the subcontractor(s); and
(2) To secure from the subcontractor(s) an affidavit attesting to the subcontractor's compliance with O.C.G.A. Sec. 13-10-91 and DOL Rule 300-10-1-.02; such affidavit being in the form attached hereto and referenced as EXHIBIT A-1; and
(3) To submit such contractor affidavit(s) to the County when the subcontractor(s) is retained, but in any event, prior to the commencement of work by the subcontractor(s),
(4) To submit to the County, such contractor and subcontractor affidavit(s) of "Immigration Compliance Certification," EXHIBIT A-2,

The failure of Contractor to comply with any of the requirements and procedures of the County (i.e. failure to timely supply required affidavits or compliance certification documents; failure to utilize federal work authorization procedures; failure to permit or facilitate audits or reviews of records by County or State officials upon request; and/or failure to continue to meet any of the statutory or County obligations) and to supply the affidavit of compliance at the time of execution of this Agreement and/or the failure of the Contractor to continue to satisfy the obligations of O.C.G.A. Sec. 13-10-91 and DOL Rule 300-10-1-.02 as set forth in this Agreement and during the term of the Agreement shall constitute a material breach of the Agreement and shall entitle the County to dismiss any general contractor or to require the dismissal of any subcontractor of sub/subcontractor (irrespective of tier) for failing to fully comply with these requirements and that upon notice of a material breach of these provisions, the Contractor shall be entitled to cure the breach within ten (10) days and provide evidence of such cure and in compliance with the terms of this Agreement and State law. Should the breach not be cured, the County shall be entitled to all available remedies, including termination of the contract, the requirement that a subcontractor be dismissed from performing work under the contract, and any and all damages permissible by law.

SEE ATTACHED AFFIDAVIT FORM

GDOT
Georgia Department of Transportation

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Contractor's Name:	
Solicitation/Contract No./ Call No. or Project Description:	0004428, Douglas County. Lee Road/SR1161 Widening and Reconstruction

CONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, entity or corporation which is engaged in the physical performance of services on behalf of the Georgia Department of Transportation has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.

Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. § 13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____ _____

Federal Work Authorization User Identification Number (EEV/E-Verify Company Identification Number) | Date of Authorization

_____

Name of Contractor

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

_____ _____

Printed Name (of Authorized Officer or Agent of Contractor) | Title (of Authorized Officer or Agent of Contractor)

_____ _____

Signature (of Authorized Officer or Agent) | Date Signed

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

____DAY OF _____, 20____

_____ [NOTARY SEAL]

Notary Public

My Commission Expires: _____

GDOT
Georgia Department of Transportation

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Contractor's Name:	
Sub-Contractor's (Your) Name	
Sub-Contractor's Address:	
Solicitation/Contract No.:	0004428, Douglas County
Solicitation /Contract Name:	Lee Road/SR 1161 Widening & Reconstruction

SUB-CONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. §13-10-91, stating affirmatively that the individual, entity or corporation which is engaged in the physical performance of services under a contract with _____ (name of Contractor) on behalf of the Georgia Department of Transportation has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.

Furthermore, the undersigned subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the subcontractor with the information required by O.C.G.A. § 13-10-91(b).

Additionally, the undersigned subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor to the contractor within five business days of receipt. If the undersigned subcontractor receives notice that a sub-subcontractor has received an affidavit from any other contracted sub-subcontractor, the undersigned subcontractor must forward, within five business days of receipt, a copy of the notice to the contractor. Subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____ _____

Federal Work Authorization User Identification Number (EEV/E-Verify Company Identification Number)

Date of Authorization

_____

Name of Sub-Contractor

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

_____ _____

Printed Name (of Authorized Officer or Agent of Contractor)

Title (of Authorized Officer or Agent of Contractor)

_____ _____

Signature (of Authorized Officer or Agent)

Date Signed

SUBSCRIBED AND SWORN BEFORE ME ON

_____

_____

Notary Public

[NOTARY SEAL]

My Commission Expires: _____

DOUGLAS COUNTY
BOARD OF COMMISSIONERS

SECTION TWO

STATE AND FEDERAL REQUIREMENTS

LEE ROAD /SR 1161/CR 817
WIDENING AND RECONSTRUCTION

P.I.# 0004428
DOUGLAS COUNTY

BID PROPOSAL

Page 1 of 3

Proposal of _____ (hereinafter called "**BIDDER**") a contractor organized and existing under the laws of the state of _____, *an individual, a corporation, or partnership doing business as_____.

*Strike out Inapplicable Terms.

THIS BID SUBMITTED TO: **DOUGLAS COUNTY, GEORGIA** (hereinafter called "**COUNTY**")

The undersigned **BIDDER** proposes and agrees, if this Bid accepted, to enter into an Agreement with the **COUNTY** in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the total Unit Price Fee and within the Contract Time indicated in this Bid.

BIDDER agrees to provide the necessary machinery, tools, apparatus, all materials and labor, and other means of construction necessary to complete the widening and reconstruction of Lee Road/SR 1161/CR 817, beginning at Fairburn Road/SR 92 and ending at Monier Avenue, hereinafter referred to as the **"PROJECT",** including, but not limited to, erosion control, maintenance of traffic, grading, excavation, subgrade preparation, drainage construction, asphalt surfacing, concrete surface course, sidewalks, signs, traffic signalization, pavement marking, and grassing as further set forth in the project drawings, technical specifications and bid manual, hereinafter called the **"WORK".** The work also includes all explanatory matter.

In submitting this Bid, the **BIDDER** represents that:

1. **BIDDER** acknowledges receipt of the following addenda:

   _____

   _____

2. **BIDDER** agrees that in case of failure on his part to execute said contract and bond, or provide satisfactory proof of carriage of the insurance required, within fourteen (14) calendar days after the award thereof, the Bid Bond or certified check accompanying his bid and the money payable thereon shall be forfeited to the **COUNTY** as liquidated damages; otherwise, the check or Bond accompanying this proposal shall be returned to the **BIDDER**.

3. **BIDDER** has examined the plans, specifications and related documents with respect to the site of the proposed work. Being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and supplies, the **BIDDER** agrees to construct the project within the time set forth herein and in accordance with the Contract Documents.

4. **BIDDER** has given the **COUNTY** written notice of all conflicts, errors or discrepancies discovered in the Contract Documents. **BIDDER** has received written resolution thereof by Addendum from the **COUNTY.**

5. **BIDDER** is aware no submitted bid may be withdrawn after the receipt of bids for a period of one hundred twenty (120) days.

BID PROPOSAL

6. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation.

7. **BIDDER** has not directly or indirectly induced or solicited any other Bidder to submit a false or sham bid.

8. **BIDDER** has not solicited or induced any person, firm or corporation to refrain from bidding; and, **BIDDER** has not sought by collusion to obtain for himself any advantage over any other Bidder or over **DOUGLAS COUNTY, GEORGIA**.

Further, **BIDDER** agrees that the cost of any work performed, materials furnished, services provided or expenses incurred, which are not specifically delineated in the Contract Documents, but which are incidental to the scope, intent, and completion of the Contract, shall be deemed to have been included in the prices bid for the various items scheduled.

BIDDER further proposes and agrees hereby to promptly commence the Work with adequate force and equipment within ten (10) calendar days from receipt of Notice to Proceed, or as may be specified by Special Provision; to continuously pursue the Work without interruption; and, to complete the Work in **seven hundred fifteen (715) calendar days from Notice to Proceed**.

TOTAL LUMP SUM BASE BID PROPOSAL SUM:

_____ $_____

(written amount)

The low bidder will be determined based upon the sum of the base bid.

BID PROPOSAL

Page 3 of 3

Attached hereto is a bid bond or certified check on the (Bank) _____ in the amount of _____.

(Five percent of Total Amount Bid).

The full name and residence of persons or parties interested in the foregoing bid as **CONTRACTORS**, are named as follows:

_____ _____

_____ _____

_____ _____

DOUGLAS COUNTY, GEORGIA

Signed, sealed, and dated this _____ day of _____, 202__.

BIDDER: _____
(company Name)

By: _____

Title: _____

Mailing Address:

_____

_____

_____

_____

Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to conduct business in the State of Georgia.

Bid Schedule of Items

Item No.	Item Description	Units	Quantity	Unit Price	Bid Amount
150-1000	TRAFFIC CONTROL - PI 0012621	LS	1		
150-5010	TRAF CTRL, PORTABLE IMPACT ATTN	EA	4		
153-1300	FIELD ENGINEERS OFFICE TP 3	EA	1		
156-0100	GPS DATA COLLECTION AND SUBMITTAL	LS	1		
163-0232	TEMPORARY GRASSING	AC	9		
163-0240	Mulch	TN	548		
163-0300	CONSTRUCTION EXIT	EA	4		
163-0520	CONSTR AND REMOVE TEMP PIPE SLOPE DRAIN	LF	1,000		
163-0529	CNST/REM TEMP SED BAR OR BLD STRW CK DM	LF	1,500		
163-0531	CONSTR & REM SEDIMENT BASIN, TP 1, STA NO- 142+35	EA	1		
163-0542	CONSTR & REM STONE FILTER RING	EA	67		
163-0550	CONS & REM INLET SEDIMENT TRAP	EA	190		
165-0010	MAINT OF TEMP SILT FENCE, TP A	LF	10,050		
165-0030	MAINT OF TEMP SILT FENCE, TP C	LF	2,950		
165-0041	MAINT OF CHECK DAMS - ALL TYPES	LF	750		
165-0060	MAINT OF TEMP SEDIMENT BASIN, STA NO - STA 142+35 LT	EA	2		
165-0101	MAINT OF CONST EXIT	EA	4		
165-0105	MAINT OF INLET SEDIMENT TRAP	EA	190		
165-0111	MAINT OF STONE FILTER RING	EA	67		

Bid Schedule of Items **Page 2 of 8**

Item No.	Item Description	Units	Quantity	Unit Price	Bid Amount
167-1000	WATER QUALITY MONITORING AND SAMPLING	EA	7		
167-1500	WATER QUALITY INSPECTIONS	MO	24		
171-0010	TEMPORARY SILT FENCE, TYPE A	LF	20,100		
171-0030	TEMPORARY SILT FENCE, TYPE C	LF	5,900		
207-0203	FOUND BKFILL MATL, TP II	CY	32		
210-0100	GRADING COMPLETE - MSL00-0004-00(428)	LS	1		
217-1500	OVEREXCAVATION OF CONTAM SOIL	CY	1,000		
310-1101	GR AGGR BASE CRS, INCL MATL	TN	117,601		
318-3000	AGGR SURF CRS	TN	1,700		
402-1812	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	TN	684		
402-3121	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	TN	38,238		
402-3130	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	TN	2,973		
402-3190	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	TN	15,935		
402-4510	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL POLYMER-MODIFIED BITUM MATL & H LIME	TN	9,326		
413-0750	TACK COAT	GL	13,642		
432-5010	MILL ASPH CONC PVMT, VARB DEPTH	SY	5,667		
441-0016	DRIVEWAY CONCRETE, 6 IN TK	SY	1,963		

441-0018	DRIVEWAY CONCRETE, 8 IN TK	SY	403		
441-0104	CONC SIDEWALK, 4 IN	SY	12,024		
441-0108	CONC SIDEWALK, 8 IN	SY	596		
441-0303	CONC SPILLWAY, TP 3	EA	6		
441-0740	CONC MEDIAN, 4 IN	SY	3,424		
441-0748	CONC MEDIAN, 6 IN	SY	237		
441-4020	CONC VALLEY GUTTER, 6 IN	SY	2,211		
441-4030	CONC VALLEY GUTTER, 8 IN	SY	445		
441-5057	CONC DWL INT CURB, TP 7, DOWELS	LF	750		
441-6216	CONC CURB & GUTTER/ 8X24TP2	LF	105		
441-6222	CONC CURB & GUTTER/ 8X30TP2	LF	31,647		
441-6740	CONC CURB & GUTTER/ 8X30 TP7	LF	28,281		
444-1000	SAWED JTS IN EXIST PVMTS - PCC	LF	3,009		
446-1100	PVMT REF FAB STRIPS, TP2,18 INCH WIDTH	LF	1,500		
500-3201	CL B CONC, RET WALL	CY	222		
500-3800	CL A CONC, INCL REINF STEEL	CY	10		
500-9999	CL B CONC, BASE OR PVMT WIDEN	CY	5		
515-2020	GALV STEEL PIPE HDRAIL,2, ROUD	LF	730		
550-1120	STM DR PIPE, 12, H 1-10	LF	12		

Bid Schedule of Items **Page 4 of 8**

550-1180	STM DR PIPE 18,H 1-10	LF	10,896		
550-1240	STM DR PIPE 24,H 1-10	LF	6,785		
550-1241	STM DR PIPE 24,H 10-15	LF	706		
550-1300	STM DR PIPE 30,H 1-10	LF	640		
550-1360	STM DR PIPE 36,H 1-10	LF	1,208		
550-1480	STM DR PIPE 48,H 1-10	LF	143		
550-2108	SIDE DR PIPE 8,H 1-10	LF	227		
550-2180	SIDE DR PIPE 18,H 1-10	LF	474		
550-3318	SAFETY END SECTION 18,STD,4:1	EA	31		
550-4218	FLARED END SECT 18 IN, ST DR	EA	3		
550-4224	FLARED END SECT 24 IN, ST DR	EA	2		
550-4230	FLARED END SECT 30 IN, ST DR	EA	2		
550-4236	FLARED END SECT 36 IN, ST DR	EA	3		
573-2006	UNDDR PIPE INCL DRAIN AGGR 6	LF	1,000		
600-0001	FLOWABLE FILL	CY	10		
603-2180	STN DUMPED RIP RAP, TP 3, 12	SY	24		
603-2182	STN DUMPED RIP RAP, TP 3, 24	SY	214		
603-7000	PLASTIC FILTER FABRIC	SY	238		
615-1100	DIRECTIONAL BORE PIPE - 7 IN	LF	150		

615-1100	DIRECTIONAL BORE PIPE - 3 IN	LF	595		
615-1100	DIRECTIONAL BORE PIPE - 5 IN	LF	330		
620-0100	TEMP BARRIER, METHOD NO. 1	LF	1,070		
634-1200	RIGHT OF WAY MARKERS	EA	219		
636-1033	HWY SIGNS, TP1MAT,REFL SH TP 9	SF	580		
636-1036	HWY SGN, TP1MAT,REFL SH TP 11	SF	1,230.16		
636-1041	HWY SIGNS, TP 2MAT,REFL SH TP 9	SF	30		
636-2070	GALV STEEL POSTS, TP 7	LF	2,683		
636-2080	GALV STEEL POSTS, TP 8	LF	99		
636-2090	GALV STEEL POSTS, TP 9	LF	331		
639-3004	STEEL STRAIN POLE, TP IV WITH 40 FOOT MAST ARM	EA	1		
639-3004	STEEL STRAIN POLE, TP IV WITH 50 FOOT MAST ARM	EA	1		
639-3004	STEEL STRAIN POLE, TP IV WITH 65 FOOT MAST ARM	EA	3		
639-3004	STEEL STRAIN POLE, TP IV	EA	2		
639-4004	STRAIN POLE, TP IV FOR S&M SPAN WIRE AT LEE ROAD STA.10+35	EA	2		
641-1200	GUARDRAIL, TP W	LF	2,299		
641-5001	GUARDRAIL ANCHORAGE, TP 1	EA	5		
641-5015	GUARDRL ANCHOR, TP 12A, 31 IN, TANG,E/A	EA	5		
643-0010	FIELD FENCE WOVEN WIRE	LF	355		

643-8200	BARRIER FENCE (ORANGE), 4 FT	LF	2,310		
647-1000	TRAF SIGNAL INSTALLATION NO - NO.l	LS	1		
647-1000	TRAF SIGNAL INSTALLATION NO - NO.2	LS	1		
647-1000	trRAF SIGNAL INSTALLATION NO -TEMPORARY 1	LS	1		
647-1000	trRAF SIGNAL INSTALLATION NO-TEMPORARY 2	LS	1		
647-1000	ITRAF SIGNAL INSTALLATION NO - TEMPORARY 3	LS	1		
647-2150	PULL BOX, PB-5	EA	2		
647-5230	ISIGNAL ASS, FLASHING SCHOOL, CO	EA	1		
653-0120	ITHERM PVMT MARK, ARROW, TP 2	EA	133		
653-0170	ITHERM PVMT MARK, ARROW, TP 7	EA	14		
653-0210	ITHERM PVMT MARK, WORD, TP 1	EA	5		
653-0235	iTHERM PVMT MARK, WORD, TP 3B	EA	1		
653-1501	iTHERMO SOLID TRAF ST 5 IN, WHI	LF	45,560		
653-1502	iTHERM O SOLID TRAF ST 5 IN, YEL	LF	33,460		
653-1704	trHERM SOLID TRAF STRIPE,24,WH	LF	834		
653-1804	trHERM SOLID TRAF STRIPE,8, WH	LF	11,020		
653-3501	iTHERMO SKIP TRAF ST, 5 IN, WHI	GLF	34,990		
653-6004	THERM TRAF STRIPING, WHITE	SY	635		
653-6006	THERM TRAF STRIPING, YELLOW	SY	100		

654-1001	RAISED PVMT MARKERS TP 1	EA	330		
654-1003	RAISED PVMT MARKERS TP 3	EA	1,550		
670-4450	CONC VAULT - WATER VAULTS VARIES	EA	5		
668-1100	CATCH BASIN, GP 1	EA	146		
668-1110	CATCH BASIN, GP 1, ADDL DEPTH	LF	139		
668-1200	CATCH BASIN, GP 2	EA	2		
668-1210	CATCH BASIN, GP 1, ADDL DEPTH	LF	10		
668-2100	DROP INLET, GP 1	EA	27		
668-2110	DROP INLET, GP 1, ADDL DEPTH	LF	4		
668-4300	STORM SEW MANHOLE, TP 1	EA	18		
668-4311	ST SEW MANHOLE,TP 1,A DEP,CL 1	LF	37		
668-6000	SPRING BOX	EA	1		
668-6112	TRENCH DRAIN, 12 IN	LF	12		
682-6233	CONDUIT, NONMETL, TP 3, 2 IN	LF	2,360		
700-6910	PERMANENT GRASSING	AC	17		
700-7000	AGRICULTURAL LIME	TN	78		
700-8000	FERTILIZER MIXED GRADE	TN	6		
700-8100	FERTILIZER NITROGEN CONTENT	LB	1,300		
711-0200	TURF REINFORCING MATTING, TP 2	SY	500		

Bid Schedule of Items

Item No.	Item Description	Units	Quantity	Unit Price	Bid Amount
716-2000	EROSION CONTROL MATS, SLOPES	SY	22,000		
937-6050	INT VIDEO DET SYS ASMBLY, TP A	EA	6		
937-8030	TESTING - INTERSECTION VIDEO DETECTION	LS	1		
937-8030	TESTING - INTERSECTION VIDEO DETECTION	LS	1		
937-8030	TESTING - INTERSECTION VIDEO DETECTION	LS	1		
937-8530	TESTING - INTERSECTION VIDEO DETECTION	LS	1		
937-8530	TESTING - INTERSECTION VIDEO DETECTION	LS	1		
937-8530	TESTING - INTERSECTION VIDEO DETECTION	LS	1		
				TOTAL BID:	

CONTRACTOR: _____

AUTHORIZED REPRESENTATIVE'S NAME: _____

AUTHORIZED REPRESENTATIVE'S SIGNATURE: _____ Date: _____

Note: Bidders are responsible for verifying quantities.
This unit price bid schedule can be inserted as an amended page in the bid documents.

Business References

Submit reference information for similar projects. This list shall include customers' names, addresses, and a current contact with phone number.

References
Please provide three (3) customer references

1. Contact Name: _____

   Company Name: _____

   Address: _____

   Phone: _____ Email Address: _____

2. Contact Name: _____

   Company Name: _____

   Address: _____

   Phone: _____ Email Address: _____

3. Contact Name: _____

   Company Name: _____

   Address: _____

   Phone: _____ Email Address: _____

INSTRUCTIONS FOR LIST OF DBE PARTICIPANTS

If a DBE Goal is indicated, you must propose to achieve a goal that is equal or greater then the percentage required. If no goal is indicated, you may propose your own goal.

The DBE firms to be utilized as counting toward the proposed goal must be listed on this form, along with their addresses, type of work, and the amount to be paid to each of the minority firms. The amount entered will not necessarily be the contract amount, but must be the actual amount that will be paid to the DBE firm. In the case of a DBE supplier, the amount paid and 60% of that amount both will be entered; and only the 60% figure should be added to the total. An example of this is shown in the example chart:

Vendor Number	Company Name And Address (City and State)	Type Of Work	*Work Code	Race Neutral	Race Conscious	Amount
	ABC Oil Company Atlanta, GA	Diesel Fuel Supplier				$80.000.00 (60%= $48,000.00)

* For Departmental use ONLY. Do not fill in Work Codes.

The Contractor shall indicate for each DBE and Type of Work whether the DBE Participant is Race Neutral or Race Conscious by placing a checkmark in the appropriate column.

PLEASE NOTE: For 60% of the amount paid to a DBE supplier to be eligible to count toward fulfilling the DBE goal, the supplier must be an established "regular dealer' in the product involved, and not just a broker. A "regular dealer" would normally sell the product to several customers and would usually have product inventory on hand.

DBE GOALS

VENDOR ID: BIDDER'S COMPANY NAME:

P.I.# 0004428, Douglas County

LET NO: LET DATE: TOTAL BID:

THE REQUIRED DBE GOAL ON THIS CONTRACT IS: **15%**

I PROPOSE TO UTILIZE THE FOLLOWING DBE CONTRACTORS:

LIST OF DBE PARTICIPANTS

VENDOR NUMBER	DBE NAME/ ADDRESS (CITY, STATE)	TYPE OF WORK	*WORK CODE	Race Neutral	Race Conscious	AMOUNT
		TOTAL				

***For Departmental use only. Do not fill in Work codes.**

PLEASE NOTE: Only 60 % of the participation of a DBE Supplier who does not manufacture or install the product will be counted toward the goal. See below for further instructions.

Revised 06-01-2010

INSTRUCTIONS TO CONTRACTOR
DBE PARTICIPATION REPORT

In order to receive credit toward the DBE Goal, the prime contractor must complete the report in its entirety and submit this form MONTHLY to the Project Manager in charge of the contract. Failure to submit this form will result in no credit toward the contract DBE requirements.

1. PROJECT NUMBER – This is the GDOT assigned project number – See Contract.
2. COUNTY – See Contract.
3. CONTRACT ID NUMBER – This is the GDOT Contract Identification Number – See Contract.
4. CONTRACTOR NAME –
5. REPORT SUBMISSION DATE – This is the date the report is completed.
6. REPORT NUMBER – Reports must be consecutively numbered.
7. REPORT TYPE – This should be checked monthly until all work has been completed, at which time the Report Type should be changed to Final and submitted to the Project Manager.
8. DATE WORK BEGAN – This is the date of the first day any work occurred on the project.
9. DBE REQUIRED PERCENTAGE – This is the total required % of the original contract amount.
10. CONTRACT $ AMOUNT – DBE Amount: *The DBE amount and percentage are the DBE amount and percentage shown in the original contract. (In some instances, this amount may be greater than the percentage amount and may exceed the percentage in the contract; for reporting purposes, the amount over the DBE percentage on this contract is considered race neutral). Original subcontract amount should be at least the amount listed in the contract. Any amounts above the race conscious number or percentage are counted as race neutral and should be shown on report on a separate line than the race conscience. The contractor cannot add the race neutral until the race conscious is exceeded.*
11. PERCENT $ COMPLETE – Insert the Percentage Complete, which reflects the percentage of project completed in dollars to the ending date of this report.
12. DBE $ AMOUNT – The is the total dollar amount representing the percentage of the original contract.
13. PERCENT PROJECT COMPLETE – Insert the Percentage of Project Complete, which indicates the time completed on the project.
14. DATE CLOSING THIS REPORT – Please check the appropriate date for the close of payments for this report.
15. SUPPLIER (S) – One who supplies material to the Project. The dollar value shown in the contracts for suppliers represents the calculated sixty percent (60%) dollar value of the original amount; therefore, the supplier percentage requires no further adjustments. The amount in the contact should be shown as the subcontract amount.
16. OWNER / OPERATOR (0) – One who owns and operates the equipment themselves.
17. SUBCONTRACTOR (SC) – Those who aren't a supplier or owner/operator.
18. SUBCONTRACTOR AGREEMENT RECEIVED (SAR): The Department requests that you supply a copy of valid executable subcontract agreements between your company and your DBE sub-contractors per section 108.01 of the Standard Specifications. All subcontracts shall include the Required Contract Provisions, FHWA 1273; these provisions shall not be incorporated by reference. A copy of subcontractor agreement (SAR) between the prime and each DBE must be submitted to the Area Engineer's Office.
19. RACE NEUTRAL (RN) – DBE participation that would have been used in the absence of any contract goal provisions.
20. RACE CONSCIOIUS – DBE participation that was utilized specifically to meet the proposed contract goal or portion thereof.

21. ORIGINAL SUBCONTRACT AMOUNT – This is the original amount shown in the Signed Contract.
22. PREVIOUS PAYMENTS – This totals all PAYMENTS prior to this report.
23. PAYMENTS THIS REPORT – These are the totals of PAYMENTS during this report period only.
24. PAYMENTS TO DATE – Show the actual amount that each DBE has payments to-date under the contract based on the unit prices paid to the DBE by the prime contractor and not contract unit prices. When a supplier is used to fulfill the DBE requirements, only 60% of the amount earned by the supplier may be entered. Show that total amount in the space provided.
25. CURRENT COLUMN TOTALS – Total each column.
26. PERCENT OF CONTACT – This percentage is calculated using the contract amount and the total DBE payments-to-date.
27. CERTIFICATION – The contractor or his authorized representative must sign this form prior to submittal. Failure to complete and submit this form in a timely manner may delay monthly progress payments.
28. DBE must perform at least 30% of work with own forces to meet commercially useful function criteria (49CFR26.55). If a DBE subcontracts part of the work of its contract to another firm, the value of the work can only be counted toward the DBE goal if the DBE's subcontractor is itself a DBE.
29. A DBE hauler must itself own and operate at least one fully licensed, insured and operational truck to be used on the contract.
30. Payments and commitments for Federal-aid projects **shall be separate and distinct and cannot be transferred or combined in any manner**.
31. Credits towards DBE goal can only be claimed after the amount being claimed toward the goal has been paid to the DBE. Attach cancelled checks: Prime Contractor shall submit documentation regarding all payments made from the Prime to all DBE subcontractors on federal aid projects in the form of copies of cancelled checks or notarized electronic documentation which validates said payments made on the DBE Monthly Participation Reports. This information shall be required monthly and submitted with the DBE Monthly Participation Report (49CFR26.11).

GENERAL INFORMATION

The prime contractor may change DBE firms only with the approval of the District Engineer, provided the changes confirm to contract regulations.

The prime contractor is responsible for sending a copy of the subcontractor agreement between the prime and its subcontractors to the Project Manager. After submitting this document to the Project Manager, the prime contractors checks the block on the DBE Participation Report. Only one copy of the subcontractor agreement is requested for each DBE subcontractor.

If the prime contractor has not submitted a copy of the subcontractor agreement between the prime and its DBE subcontractor(s), the project manager will contact the prime contractor and request this document.

The prime contractor is not requested to send copies of the subcontractor agreement signed with the DBE firms to multiple offices within GDOT. Sending this information to the Project Manager will satisfy the federal requirements.

The prime contractor is responsible to accurately complete the report prior to submitting to the department. Once submitted to the department, the department project manager is responsible for reviewing it for accuracy.

If the report is inaccurate, the department project manager shall send the report back to the prime contractor for corrections. Payment will be withheld by the Department until a correct report is received.

The prime contractor is required to submit the monthly DBE from the month of Notice To Proceed until the Final DBE Report is submitted. Payment will be withheld by the Department until the report is received.

Upon completion of the work, a final "DBE Participation Report" will be required and submitted to the Area Engineer prior to final payment. All information shown on the form must be completed, including the payments of each approved DBE.

Joint ventures between non-DBE and certified DBE: Only that portion of the work for which the DBE is responsible may be used to satisfy the requirements.

Should you have questions about the Monthly DBE Participation Report – ARRA Reporting, contact the local District Contracts Administration Office or District EEO Officer.

FOR DEPARTMENTAL USE ONLY:

Federal Law requires that the work of DBE contractors be monitored in the field as part of the effort to ensure that DBEs are actually performing the work (49CFR26.37 (b).

District EEO Officers must receive copies of the Monthly DBE Participation Reporting.

C2-98

DBE PARTICIPATION REPORT

PROJECT NO.(S) 0004428 COUNTY Douglas REPORT NO. _____

CONTRACTOR _____ DATE _____ CONTRACT AMOUNT _____

CONTRACT ID NO _____ - _____ - _____ DBE REQUIRED 15 % DBE AMOUNT _____

Month Ending (CHECK ONE) ☐ _____ (month) ☐ FINAL

APPROVED DBE	VENDOR NUMBER	DESCRIPTION OF WORK	SUPPLIER	OWNER/ OPER.	SUB-CONTR	ORIG. SUBCONTRACT AMOUNT	EARNINGS TO-DATE
			☐	☐	☐		
			☐	☐	☐		
			☐	☐	☐		
			☐	☐	☐		
			☐	☐	☐		
			☐	☐	☐		
			☐	☐	☐		
			☐	☐	☐		

TOTAL DBE EARNINGS TO DATE $ _____

% CONTRACT _____ %

I HEREBY CERTIFIY THAT THE ABOVE STATEMENT IS TRUE AND CORRECT AND SUPPORTING DOCUMENTATION IS ON FILE AND IS AVAILABLE FOR INSPECTION BY DEPARTMENT PERSONNEL AT ANY TIME.

SIGNED _____
CONTRACTOR

REMARKS _____

FOR DEPARTMENT USE ONLY :
THIS DOCUMENT HAS BEEN REVIEWED AT THE PROJECT LEVEL BY:
SIGNED _____ TITLE _
THIS DOCUMENT HAS BEEN REVIEWED AT THE DISTRICT LEVEL BY:
SIGNED _____ TITLE _

PAGE OF

DEPARMENT OF TRANSPORTATION
STATE OF GEORGIA
INSTRUCTIONS TO CONTRACTOR

In order to receive credit toward the contractor DBE Goal, the prime contractor must complete the reverse side and submit this form quarterly to the engineer in charge of the contract. Failure to submit this form will result in no credit toward the contract DBE requirements.

1. Report Number: Reports must be consecutively numbered. It will only be necessary to submit a report in a quarter when the approved DBE has performed a portion of the work that has been designated for the contract.

2. Date: Actual date of the quarterly period ending.

3. Earnings To-Date: Show the actual amount that each DBE has earned to-date under the contract based on the unit prices paid to the DBE by the prime contractor and not contract unit prices. When a supplier is used to fulfill the DBE requirements, only 60% of the amount earned by the supplier may be entered. Show the total amount in the space provided.

4. Percent of Contract: This percentage is calculated using the contract amount and the total DBE earnings-to-date.

5. Certification: The contractor or his authorized representative must sign this form prior to submittal. Failure to complete and submit this form in a timely manner may delay monthly progress payments.

GENERAL INFORMATION

When the approved DBE is to provide materials, goods or services, this completed form must be submitted to the Area Engineer.

The prime contractor may change DBE firms only with the approval of the District Engineer, provided the contract DBE Goal is met and the changes conform to contract regulations. This form should be updated and submitted to the Area Engineer.

Upon completion of the work, a final "DBE Participation Report" will be required and submitted to the Area Engineer prior to final payment. All information shown on the form must be completed, including the final earnings of each approved DBE.

When the prime contractor is an approved DBE, it will only be necessary to complete the total DBE earnings to-date.

Joint ventures between non-DBE and certified DBE: Only that portion of the work for which the DBE is responsible may be used to satisfy the requirement.

CUF Inspection Form Instructions

The form does not and is not intended to document every possible CUF consideration. CUF is recognized during the normal course of inspecting the DBE's work on the project. The form merely records that CUF was inspected for the benefit of the record, and provides evidence to FHWA that CUF is being reviewed. It is the primary responsibility of the prime contractor to ensure that the DBE is performing a CUF. GDOT, as the contracting agency, has oversight responsibility to ensure that the prime contractor has effectively met this responsibility under its contract with the Department.

I. **Preconstruction Meetings:**

Remind the Prime contractor/s about the DBE goal and the contract requirements. Briefly go through the list of DBEs in the contract and what they will be performing. Remind the contractor about their CUF responsibilities identified in the Contract – Special Provision "Criteria for Acceptability". DBEs must perform a commercially useful function by actually performing, managing, and supervising the work involved. Credit toward the goal must not be reported on the monthly report unless the DBE is serving a CUF. You may ask the prime at this time if they have a CUF Process. If they say no, EEO will provide them guidance prior to the DBEs beginning work. Remind the Contractor, the Superintendent shall notify the Engineer prior to starting any Pay Item Work. The Prime Contractor shall coordinate and be responsible to the Engineer for all activities of subcontractors.

II. **Construction phase:**

Be familiar with the Contractors progress schedule. When will the DBEs begin work and on what items. The Prime contractor must not do the work of the DBE without the Engineers approval. Make certain the Prime gets a subcontract approval prior to the DBE begins work. And obtain a physical copy of the subcontract or supply agreement.

III. **Reviewing the Subcontract:**

The physical subcontract must be specific as to the work the DBE will perform. If the subcontract states: *furnish and install,* the expectation should be that the DBE will pay for the materials. If the subcontract merely states the DBE will *Install, haul, or perform the work,* the Prime may have made arrangements to supply the materials themselves.

IV. **DBE begins work—CUF Form**

Begin the inspection by interviewing the Prime. Section A of the form. The intent is to establish that the contractor is aware of their responsibilities. Sections B through F are observations made during the normal course of inspecting the DBEs work.

Document a minimum of one review for each DBE for each project with a DBE goal. File the completed form in the official project records with the applicable DBE report. If your project is audited by a State or Federal agency, the expectation will be that each DBE that has worked on the project has had at least one documented CUF inspection.

The review should be started when the DBE first begins work and is not complete until the DBE has received a payment. Continue to monitor compliance through the course of the project. Use the CUF form to document any further noted concerns or inconsistencies.

Contact the District EEO Officer if you believe a DBE may not be performing a Commercially Useful Function (CUF), or if you have any questions related to the program. This form does not document every possible question or concern. Monitoring the DBE for CUF is a continuous process through the life of the project. Training is available online to aide in identifying fronts, scams, and pass-through schemes.

COMMERCIALLY USEFUL FUNCTION (CUF)
PROJECT SITE REVIEW *(CONSTRUCTION PROJECTS)*

GDOT EEO 5/2014

Per 49 CFR 26.55, "*A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved*". It is the primary responsibility of the Prime Contractor to ensure that the DBE is performing a CUF. The Department, as the contracting agency, has oversight responsibility to ensure that the Prime Contractor has effectively met this responsibility under its contract with the Department.

- Document a minimum of one review for each DBE for each project with a DBE goal. File the completed form in the official project records with the applicable DBE report. The review should be started when the DBE first begins work and is not complete until the DBE has received a payment. Continue to monitor compliance through the course of the project. Use the CUF form to document any further noted concerns or inconsistencies. Contact the District EEO Officer if you believe a DBE may not be performing a Commercially Useful Function (CUF), or if you have any questions related to the program. This form does not document every possible question or concern. Monitoring the DBE for CUF is a continuous process through the life of the project.

Project Number: 0004428 County: Douglas County Prime Contractor:	GDOT Reviewer: Reviewer's Title: Review Date:

DBE Name:

DBE is performing as a Contractor: The Prime Contractor ☐ A Subcontractor ☐ A Tier Subcontractor ☐

DBE is performing as a Material Supplier: A Manufacturer ☐ A Regular Dealer ☐ A Broker ☐

Scope of Work
Provide a brief description of the DBE's scope of work. (Refer to Subcontract Agreement and/or Purchase Order if needed.)

	YES	NO
A. Prime Contractor Interview and Subcontract Approval		
1. Does the Prime Contractor have a process in place to substantiate the DBE's CUF and the allowable credit toward the DBE goal in the Contract?	☐	☐
2. Is the DBE only using equipment it owns, rents, or leases? (Obtain copies of all rent or lease agreements).	☐	☐
3. Is the DBE performing *at least* 30% of their work described in the subcontract?	☐	☐
4. Does the DBE hauling firm own or lease their trucks? (Obtain copies of lease agreements, if applicable).....(NA ☐)	☐	☐
B. Field Observations during work inspection and Payroll Inspection		
1. Is the DBE firm supervising its employees and their work?	☐	☐
2. Is the supervisor a full-time employee of the DBE?	☐	☐
3. Is the DBE working without assistance from the prime contractor or another subcontractor? (Use of prime's equipment in an emergency is allowed but the cost associated with the use of the equipment cannot be credited towards the goal.)	☐	☐
4. Are DBE leased trucks properly placard?	☐	☐
C. Labor Interviews		
1. Does the DBE have employees on the job to perform the work?	☐	☐
2. Do the DBE's employees only work for the DBE?	☐	☐
D. Material Invoice Inspection		
1. Does a review of the haul tickets associated with the project indicate that hauling is being performed by the DBE?.....(NA ☐)	☐	☐
2. Does the DBE's name appear on all invoices, haul tickets, and/or bills of lading?	☐	☐
E. Commensurate		
1. Is Payment received by the DBE comparable with the work being performed? (Comparison of DBE report, canceled checks, subcontract, and inspection pay reports).	☐	☐
F. Joint Checks... *(if applicable)*		
1. Is the Prime paying the DBE and the DBE's Supplier with one check?	☐	☐
2. Has the Department approved the use?	☐	☐
G. CUF		
1. Does the DBE appear to be performing a Commercially Useful Function (CUF)? (If no, provide comments and ***contact your District EEO Officer at*** _____	☐	☐

COMMENTS: *if any response recorded in section A- E is "no", comments explaining the "no" are mandatory.* Attach a 2nd page if necessary.

CUF DETERMINANTS

PERFORMING

a. DBE must be responsible for performing its own work on the project
b. At least 30% of the work must be performed by the DBE with its own workforce
c. The DBE keeps a regular workforce and has its own employees
d. The DBE is utilizing its own equipment
e. Operation of the equipment must be subject to the full control of the DBE

RED FLAGS

- A portion of the DBE's work being done by the Prime Contractor or jointly with another contractor
- Employee working for both the Prime and the DBE
- Equipment used by DBE belongs to the Prime Contractor or another contractor with no formal lease agreement
- Equipment signs and markings cover another contractor's identity

RECORDS/DOCUMENTS

- Subcontract Agreement or Purchase Order
- Equipment ownership, rental, or lease documents
- Certified payrolls

MATERIALS (For material credit)

a. DBE is responsible for the delivery of the materials
b. DBE is ordering the material and invoices indicate that DBE is the customer
c. Material invoices indicate that DBE owner or Superintendent is the contact person
d. Department has approved use of joint checks

RED FLAGS

- Materials for DBE credited work are delivered by the Prime Contractor
- Materials are ordered, billed to, and/or paid by the Prime Contractor
- Invoices do not indicate that DBE is the customer
- Prime's employee is listed as the contact person on invoices
- Materials come from Prime's stockpiles

RECORDS/DOCUMENTS

- Invoices
- Haul tickets or Bills of Lading
- Material on Hand documentation
- Joint check agreement
- Cancelled checks

SUPERVISING

a. DBE supervisor is a full-time employee of the DBE
b. Employees are being supervised by DBE supervisor
c. DBE is scheduling work operations

RED FLAGS

- DBE's employees are being supervised by Prime Contractor or another contractor
- DBE provides little or no supervision of work
- DBE supervisor is not a full-time employee of the DBE

RECORDS/DOCUMENTS

- Certified Payrolls
- Document communication with DBE owner or Superintendent

FEDERAL AID CERTIFICATION

(English Project)

First Use Date 2013 Specifications: November 22, 2013
Revised: June 8, 2016

Failure to complete appropriate certification requirements identified below or submission of a false certification shall render the bid non-responsive.

EQUAL EMPLOYMENT OPPORTUNITY

I further certify that I have ___/have not ___ participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246, and that I have ___ / have not___ filed with the Joint Reporting Committee, the Director of the *Office of Federal Contract Compliance,* a Federal Government contracting or administering agency, or the former *President's Committee on Equal Employment Opportunity,* all reports due under the applicable filing requirements.

I understand that if I have participated in a previous Contract or Subcontract subject to the Executive Orders above and have not filed the required reports that 41 CFR 60-1.7(b)(1) prevents the award of this Contract unless I submit a report governing the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U. S. Department of Labor.

Reports and notifications required under 41 CFR 604, including reporting subcontract awards in excess of $10,000.00 should be addressed to:

Ms. Carol Gaudin
Regional Director, U. S. Department of Labor
Office of Federal Contract Compliance Programs, Region 4
Rm. 7B75
61 Forsyth St. SW
Atlanta GA 30303

EXAMINATION OF PLANS AND SPECIFICATIONS

I acknowledge that this Project will be constructed in English units.

I certify that I have carefully examined the Plans for this Project and the Standard Specifications 2013 Edition, Supplemental Specifications and Special Provisions included in and made a part of this Proposal, and have also personally examined the site of the work. On the basis of the said Specifications and Plans, I propose to furnish all necessary machinery, tools, apparatus and other means of construction, and do all the work and furnish all the materials in the manner specified.

I understand the quantities mentioned are approximate only and are subject to either increase or decrease and hereby propose to perform any increased or decreased quantities of work or extra work on the basis provided for in the Specifications.

I also hereby agree that the State, or the Department of Transportation, would suffer damages in a sum equal to at least the amount of the enclosed Proposal Guaranty, in the event my Proposal should be accepted and a Contract tendered me thereunder and I should refuse to execute same and furnish bond as

herein required, in consideration of which I hereby agree that, in the event of such failure on my part to execute said Contract and furnish bond within fifteen (15) days after the date of the letter transmitting the Contract to me, the amount of said Proposal Guaranty shall be and is hereby, forfeited to the State, or to the Department of Transportation, as liquidated damages as the result of such failure on my part.

I further propose to execute the Contract agreement described in the Specifications as soon as the work is awarded to me, and to begin and complete the work within the time limit provided. I also propose to furnish a Contract Bond, approved by the State Transportation Board, as required by the laws of the State of Georgia. This bond shall not only serve to guarantee the completion of the work on my part, but also to guarantee the excellence of both workmanship and materials until the work is finally accepted, as well as to fully comply with all the laws of the State of Georgia.

CONFLICT OF INTEREST

By signing and submitting this Contract I hereby certify that employees of this company or employee of any company supplying material or subcontracting to do work on this Contract will not engage in business ventures with employees of the Georgia Department of Transportation (GA D.O.T.) nor shall they provide gifts, gratuities, favors, entertainment, loans or other items of value to employees of this department.

Also, by signing and submitting this Contract I hereby certify that I will notify the Georgia Department of Transportation through its District Engineer of any business ventures entered into between employees of this company or employees of any company supplying material or subcontracting to do work on this Contract with a family member of GA D.O.T. employees.

DRUG FREE WORKPLACE

The undersigned certifies that the provisions of Code Sections 50-24-1 through 50-24-6 of the Official Code of Georgia Annotated, relating to the "Drug-free Workplace Act", have been complied with in full. The undersigned further certifies that:

(1) A drug-free workplace will be provided for the Contractor's employees during the performance of the Contract; and

(2) Each Contractor who hires a Subcontractor to work in a drug-free workplace shall secure from that Subcontractor the following written certification:

"As part of the subcontracting agreement with _____(Contractor's name)_____, (Subcontractor's name) certifies to the Contractor that a drug free workplace will be provided for the Subcontractor's employees during the performance of this Contract pursuant to paragraph (7) of subsection (b) of Code Section 50-24-3."

Also, the undersigned further certifies that he will not engage in the unlawful manufacture, sale distribution, dispensation, possession, or use of a controlled substance or marijuana during the performance of the Contract.

BOYCOTT OF ISRAEL

By signing and submitting this Contract and Pursuant to O.C.G.A. Sec. 50-5-85, CONTRACTOR hereby certifies that it is not currently engaged in, and agrees that for the duration of this contract, it will not engage in a boycott of Israel.

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

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 the Department of Transportation, 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 the Department of Transportation to accept or reject this Proposal at any time within thirty (30) 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 amendments of the Proposal, Plans, Specifications and/or other documents pertaining to the Contract.

Amendment Nos.: 1___2___3___4___5___. I understand that failure to confirm the receipt of amendments 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 before 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_____.

_____
(Notary Public)

My Commission expires the _____day of _____, 20_____.

_____
(Federal ID No./IRS No.)

_____
(Print Company Name)

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

Joint Bidder:

_____
(Print Company Name)

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

Joint Bidder:

_____
(Print Company Name)

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

LOBBYING/DEBARMENT CERTIFICATION

I hereby certify that I am the_____and duly authorized representative of _____ whose address is _____. I hereby certify to the best of my knowledge and belief that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or any employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, 'Disclosure Form to Report Lobbying', in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000.00 and not more than $100,000.00 for each such failure.

The CONTRACTOR also agrees that the language of this certification shall be included in all subcontracts and lower tier subcontracts which exceed $10,000.00 and that all such recipients and sub-recipients shall certify and disclose accordingly.

I also certify that neither I nor the above entity I here represent has:

(a) employed or retained for a commission, percentage, brokerage contingent fee, or other consideration, any firm or person (other than a bona fide employee working solely for me or the above entity) to solicit or secure this Agreement.

(b) agreed, as an express or implied condition for obtaining this contract, to employ or retain the services of any firm or person in connection with carrying out the Agreement, or

(c) paid or agreed to pay, to any firm, organization or person (other than a bona fide employee working solely for me or the above entity) any fee, contribution, donation, or consideration of any kind for, or in connection with, procuring or carrying out the Agreement; except as here expressly stated (if any):

I acknowledge that this certificate is to be furnished to the Douglas County Department of Transportation and is subject to applicable State and Federal laws, both criminal and civil.

Signed and sealed this_____ day of _____, 201__.

In the presence of:

_____ By: _____(Seal)

Contractor

NOTICE TO ALL BIDDERS

ALL BIDDERS SUBMITTING BIDS IN EXCESS OF $2,000,000
SHALL BE PRE-QUALIFIED WITH THE GEORGIA DEPARTMENT OF
TRANSPORTATION (GDOT).

ALL BIDDERS SUBMITTING BIDS $2,000,000
OR LESS SHALL BE REGISTERED SUBCONTRACTORS OR PRE-QUALIFIED
WITH THE GDOT.

SUBCONTRACTORS SHALL BE PRE-QUALIFIED OR
REGISTERED WITH THE GDOT.

IF CONSTRUCTION WORK INVOLVES WELDED STRUCTURES,
SUCH AS BRIDGES, THE MANUFACTURER OF THE
STRUCTURE SHALL BE ON THE GDOT QPL LIST 60.

NOTICE TO ALL BIDDERS

To report bid rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 AM to 5:00 PM, Eastern Time. Anyone with the knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse, and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

First Use Date: October 18, 2013

SPECIAL PROVISION

Required Contract Provisions
Federal-Aid Construction Contracts

1. *Subsection I.4 Selection of Labor; Delete the last sentence in the paragraph.*

2. *Subsections IV Davis Bacon and Related Act Provisions; Delete the first paragraph in its entirety and substitute the following:*

   "This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts. The requirements apply to all projects located within the right-of-way of a roadway."

GEORGIA DEPARTMENT OF TRANSPORTATION
REQUIRED CONTRACT PROVISIONS, FEDERAL-AID HIGHWAY PROGRAM

EFFECTIVE FEBRUARY 15, 2016

The Cargo Preference Act (CPA) establishes certain requirements for the use of privately owned United States-flag commercial vessels in transporting equipment, materials, and commodities by ocean vessel. Contractors are required to comply with the CPA requirements and 46 CFR 381 and are required to insert the substance of these provisions into any subcontracts issued pursuant to this contract.

Cargo Preference Act Requirements

All Federal-aid projects shall comply with 46 CFR 381.7 (a)–(b) as follows:

(a) *Agreement Clauses.* Use of United States-flag vessels:

(1) Pursuant to Pub. L. 664 (43 U.S.C. 1241(b)) at least 50 percent of any equipment, materials or commodities procured, contracted for or otherwise obtained with funds granted, guaranteed, loaned, or advanced by the U.S. Government under this agreement, and which may be transported by ocean vessel, shall be transported on privately owned United States-flag commercial vessels, if available.

(2) Within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (a)(1) of this section shall be furnished to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

(b) *Contractor and Subcontractor Clauses.* Use of United States-flag vessels: The contractor agrees—

(1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the Gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

(2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

(3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

The CPA requirements would be appropriate for oceanic shipments of materials or equipment that is intended for use on a specific Federal-aid project, such as a precast concrete structural members, fabricated structural steel, tunnel boring machines, or large-capacity cranes.

The CPA requirements are not applicable for goods or materials that come into inventories independent of an FHWA funded-contract. For example, the requirements would not apply to shipments of Portland cement, asphalt cement, or aggregates, as industry suppliers and contractors use these materials to replenish existing inventories. In general, most of the materials used for highway construction originate from existing inventories and are not acquired solely for a specific Federal-aid project.

A test for whether CPA requirements apply or do not apply to shipped goods or materials would be if the goods or materials are what one would consider to be common inventory supplies for highway construction contractor, then CPA would **not apply**. If the materials or goods are considered to be supplies one would consider to be not common supplies of a highway construction contractor then CPA would **apply**.

APPENDIX A
NOTICE TO CONTRACTORS
COMPLIANCE WITH TITLE VI OF THE CIVIL RIGHTS ACT OF 1964
FOR
FEDERAL-AID CONTRACTS

During the performance of this Contract, the Contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor"), agrees as follows:

1. Compliance with Regulations: The Contractor will comply with the Regulations of the Department of Transportation relative to nondiscrimination in Federally-assisted programs of the Department of Transportation (Title 49, Code of Federal Regulations, Part 21, hereinafter referred to as the "Regulations"), which are herein incorporated by reference and made a part of the Contract.

2. Nondiscrimination: The Contractor, with regard to the work performed by it afterward and prior to completion of the contract work, will not discriminate on the ground of race, color, national origin, disability, sex, or age in the selection and retention of subcontracts including procurements of materials and leases of equipment. This will be done in accordance with Title VI of the Civil Rights Act of 1964 and other Non-Discrimination Authorities i.e., Section 504 of the 1973 Rehabilitation Act, the 1973 Federal-Aid Highway Act, the 1975 Age Discrimination Act, and the Americans with Disabilities Act of 1990. The Contractor will not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when contract covers a program set forth in Appendix B of the Regulations. In addition, the Contractor will not participate either directly or indirectly in discrimination prohibited by 23 CFR 710.405 (b).

3. Solicitations for subcontracts, including procurements of materials and equipment: In all solicitations, either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this Contract and the Regulations relative to nondiscrimination on the ground of race, color, national origin, disability, sex or age.

4. Information and Reports: The Contractor will provide all information and reports required by the Regulations, or orders and instructions issued pursuant thereto, and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Department of Transportation, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the Department of Transportation shall impose such Contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

(a) withholding of payments to the Contractors under the Contract until the Contractor complies, and/or

(b) Cancellation, termination or suspension of the Contract, in whole or in part.

6. Incorporation of Provisions: The Contractor will include the provisions of paragraph (1) through (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, orders or instruction issued pursuant thereto. The Contractor will take such action with respect to any subcontract or procurement as the Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as result of such direction, the Contractor may request the State to enter into such litigation to protect the interests of the State, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interest of the United States.

FEDERAL REGISTER / VOL. 45, NO. 194 / FRIDAY, OCTOBER 3, 1980 / NOTICES

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246) (43 FR 14895)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered areas, are as follows:

GOALS FOR FEMALE PARTICIPATION

APPENDIX A
(43 FR 19473)

The following goals and timetables for female utilization shall be included in all Federal and federally assisted construction contracts and subcontracts in excess of $10,000. The goals are applicable to the contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a Federal of federally-assisted construction contract or subcontract. Area covered: Goals for Women apply nationwide.

Goals and timetables

Timetable		Goals (percent)
4-1-78	to 3-31-79	3.1
4-1-79	to 3-31-80	5.0
4-1-80	Until Further Notice	6.9

GOALS FOR
MINORITY PARTICIPATION

Appendix B-80

Until further notice, the following goals for minority utilization in each construction craft and trade shall be included in all Federal or federally assisted construction contracts and subcontracts in excess of $10,000 to be performed n the respective geographical areas. The goals are applicable to each nonexempt contractor's total onsite construction workforce, regardless of whether or not part of that workforce is performing wok on a Federal, federally assisted or non-federally related project, contact or subcontract.

Construction contractors which are participating in an approved Hometown Plan (see 41 CFR 60-4-5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the areas covered by the Hometown Plan. With regard to all their other covered construction work, such contractors are required to comply with the applicable SMSA or EA goal contained in this appendix B-80.

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State	Goal (percent)
Georgia:	
035 Augusta, GA:	
SMSA Counties:	
0600 Augusta, GA-SC	27.2
GA Columbia; GA Richmond, SC Aiken;	
Non-SMSA Counties	32.-8
GA Burke; GA Emanuel; GA Glascock; GA Jefferson; GA Jenkins; GA Lincoln; GA McDuffie, GA Talleferro; GA Warren; GA Wilkes; SC Allendale; SC Bamburg; SC Barnwell; SC Edgefield; SC McCormick;	
036 Atlanta, GA:	
SMSA Counties:	
0520 Atlanta, GA	21.2
GA Butts; GA Cherokee; GA Clayton; GA Cobb; GA DeKalb; GA Douglas; GA Fayette, GA Forsyth; GA Fulton; GA Gwinnett; GA Henry; GA Newton; GA Paulding; GA Rockdale; GA Walton	
Non-SMSA Counties	19.5
GA Banks; GA Barrow; GA Bartow; GA Carroll; GA Clarke; GA Coweta; GA Dawson; GA Elbert; GA Fannin; GA Floyd; GA Franklin; GA Gilmer; GA Gordon; GA Greene; GA Habersham; GA Hall; GA Haralson; GA Hart; GA Heard; GA Jackson; GA Jasper; GA Lamar; GA Lampkin; GA Madison; GA Morgan; GA Oconee, GA Oglethorpe; GA Pickins, GA Pike; GA Polk; GA Rabun; GA Spalding; GA Stephens; GA Towns; GA; Union; GA Upson White	
037 Columbus, GA:	
SMSA Counties:	
1800 Columbus, GA – AL	29.6
Al Russell; GA Chattahoochee; GA Columbus	

Non-SMSA Counties 31.6
Al Chambers; AJ Lee; GA Harris; GA Marion; GA Meriwether; GA Quitman; GA Schley; GA Stewart; GA Sumter; GA Talbot: GA Troup; GA Webster

038 Macon, GA:
SMSA Counties:
4680 Macon, GA 27.5
GA Bibb; GA Houston; GA Jones; GA Twiggs
Non-SMSA Counties 31.7
GA Baldwin; GA Bleckley; Crawford; GA Crisp; GA Dodge; GA Dooly; GA Hancock; GA Johnson; GA Laurens; GA Macon; GA Monroe; GA Peach; GA Pulaski; GA Putman; GA Taylor; GA Telfair; GA Treutlan; GA Washington; GA Wheeler; GA Wilcox; GA Wilkinson

039 Savannah, GA:
SMSA Counties:
7520 Savannah, GA 30.6
GA Bryan; GA Chatham; GA Effingham

Non-SMSA Counties 29.8
GA Appling; GA Atkinson; GA Bacon, GA Bulloch; GA Candler; GA Coffee; GA Evans; GA Jeff Davis; GA Liberty; GA Long; GA McIntosh; GA Montgomery; GA Screven; GA Tattnall; GA Toombs; GA Wayne; SC Beaufort; SC Hampton; SC Jasper

040 Albany, GA:
SMSA Counties:
0120 Albany, GA 32.1
GA Dougherty; GA Lee

Non-SMSA Counties 31.1
GA Baker; GA Ben Hill; GA Berrien; GA Brooks; GA Calhoun; GA Clay; GA Clinch; GA Colquitt; GA Cook; GA Decatur; GA Early; GA Echols; GA Grady; GA Irwin; GA Lanier; GA Lowndes; GA Miller; GA Mitchell; GA Randolph; GA Seminole; GA Terrell; GA Thomas; GA Tift; GA Turner; GA Worth

Florida:
041 Jacksonville FL:
Non-SMSA Counties..... 22.2
GA Brantley; GA Camden; GA Charlton; GA Glynn; GA Pierce; GA Ware

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246) (43 FR 14895)

1. As used in these specifications:

    a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

    b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegated authority;

    c. "Employer Identification Number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

    d. "Minority" includes:

        (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

        (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

        (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

        (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contact resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, nor the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

    a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

    b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organization's responses.

    c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.

    d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

    e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minority and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

    f. Disseminate the Contractor's EEO policy by providing the notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year, and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc. prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organization, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and test to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc. such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensue that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contactor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete

benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to met its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Oder if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

REQUIRED CONTRACT PROVISIONS FOR FEDERAL-AID CONTRACTS

BUY AMERICA

Revised: March 25, 1992
Revised: January 7, 1994
Revised: June 9, 1995
First Use 2013 Specifications: November 1, 2013

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, provided the cost of materials and coatings used does not exceed one-tenth of one percent (0.1 percent) of the total contract cost or $2,500.00, 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 2013 Specifications: November 1, 2013

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 shall not exceed the amount produced 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.

Revised: December 7, 2009
Revised: October 21, 2013
Revised: November 3, 2014

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

CRITERIA FOR ACCEPTABILITY

The purpose of this special provision is to establish criteria for acceptability of DBE firms for work performed on this contract. The intent is to ensure all participation counted toward fulfillment of the DBE goals is (1) real and substantial, (2) actually performed by viable, independent DBE owned firms, and (3) in accordance with the spirit of the applicable laws and regulations.

The policy of the Georgia Department of Transportation is to ensure compliance with Title VI of the Civil Rights Act of 1964, 49 Code of Federal Regulations, Part 26 and related statutes and regulations in all program activities.

To this end the Georgia Department of Transportation shall not discriminate on the basis of race, color, sex or national origin in the award, administration and performance of any Georgia Department of Transportation assisted contract or in the administration of its Disadvantaged Business Enterprise Program. The Georgia Department of Transportation shall take all necessary and reasonable steps to ensure nondiscrimination.

DBE payments and commitments for Federal-aid projects shall be separate and distinct and cannot be transferred or combined in any matter.

The DBE Goal specified in the contract will be a percentage representing the DBE Race Conscious Participation. The Contractor will strive to achieve an additional percentage in his/her contracts for all projects during the course of the current State Fiscal Year, in order to meet the overall Georgia Department of Transportation DBE goal.

DBE DIRECTORY: The Department has available a directory or source list to facilitate identifying DBEs with capabilities relevant to general contracting requirements and to particular

solicitations. The Department will make the directory available to bidders and proposers in their efforts to meet the DBE requirements. The directory or listing includes firms which the Department has certified to be eligible DBEs in accordance with 49 CFR Part 26.

GOAL FOR PARTICIPATION: If a percentage goal for DBE participation in this contract is set forth elsewhere in this proposal, the Contractor shall complete the DBE GOALS Form included in the proposal. The Contractor is encouraged to make every effort to achieve the goal set by the Department. However, if the Contractor cannot find sufficient DBE participants to meet the goal established by the Department, the Department will consider for award a proposal with less participation than the established goal if:

(A) The bidder can demonstrate no greater participation could be obtained. This should be well documented by demonstrating the Contractor's actions through good faith efforts. The following is a list of types of actions which the Department will consider as part of the Contractor's good faith efforts to obtain DBE participation. This is not intended to be a mandatory checklist nor intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

(1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the contract. The Contractor must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The Contractor must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

(2) Selecting portions of the work to be performed by DBEs in order to increase the likelihood the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the Contractor might otherwise prefer to perform these work items with its own forces.

(3) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist DBEs participants in responding to a solicitation.

(4) (a) Negotiating in good faith with interested DBEs.

Contractor(s) are responsible to make a portion of the work available

to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

(b) Contractor(s) using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a Contractor to perform the work of a contract with its own organization does not relieve the Contractor of the responsibility to make good faith efforts. Contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

(5) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The Contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. nonunion employee status) are not legitimate causes for the rejection or non-solicitation of bids in the Contractor's efforts to meet the project goal.

(6) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the contractor.

(7) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

(8) Effectively using the services of available minority/women community organizations; minority/women Contractors' groups; local, state, and

Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE's.

(B) The participation proposed by the low bidder is not substantially less than the participation proposed by the other bidders on the same contract.

If no percentage goal is set forth in the proposal, the contractor may enter a proposed DBE participation. This voluntary DBE participation will count as race neutral DBE participation. Prime Contractor shall report race-neutral participation in accordance with the DBE Monthly Report requirements shown in this document.

To be eligible for award of this contract, all bidders will be required to submit the following information to the Department by the close of business on the 3rd working day following opening of the bid as a matter of bidder responsibility.

i. The names and addresses of DBE firms committed to participate in the Contract;
ii. A description of the work each DBE will perform; The Contractor shall provide information with their bid showing that each DBE listed by the Contractor is certified in the NAICS code(s) for the kind of work the DBE will be performing.
iii. The dollar amount of participation for each DBE firm participating; Written documentation of the bidder's commitment to use a DBE subcontractor whose participation it submits to meet a contract goal;
iv. Written confirmation from the DBE committed to participating in the contract, as provided in the prime contractor's commitment.
v. If the contract goal is not met, evidence of good faith efforts must be provided.

Failure by a bidder to furnish the above information may subject the bid to disqualification. Also failure by the bidder to submit satisfactory evidence of good faith efforts may subject the bid to disqualification.

Award of a contract by the Department to a Prime Contractor who has listed DBE participants with the bid may not constitute final approval by the Department of the listed DBE. The

Department reserves the right to approve or disapprove a Disadvantaged firm after a review of the Disadvantaged firm's proposal participation. Payment to the Contractor under the contract may be withheld until final approval of the listed DBEs is granted by the Department.

If the Contractor desires to substitute a DBE in lieu of those listed in the proposal, a letter of concurrence shall be required from the listed DBE prior to approval of the substitution, unless this requirement is waived by the Department.

Agreements between bidder and a DBE in which promises not to provide Subcontracting quotations to other bidders are prohibited.

DEFINITION: For the purposes of this provision, the following definitions will apply:
Disadvantaged Business Enterprise or DBE means a for-profit small business concern –

(1) Ensuring at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and

(2) Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own the business.

Good Faith Efforts means efforts to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement.

Joint Venture means an association of a DBE firm and one or more other firms to carry out a single, for-profit business enterprise, for which the parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

Socially and Economically Disadvantaged Individual means any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is –

(1) Any individual who the Department finds to be a socially and economically disadvantaged individual on a case-by-case basis.

(2) Any individual in the following groups, members of which are reputably presumed to be socially and economically disadvantaged.

(i) "Black Americans," which includes persons having origins, in any of the Black racial groups of Africa;

(ii) "Hispanic Americans," which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;

(iii) "Native Americans," which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;

(iv) "Asian-Pacific Americans," which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kiribati, Juvalu, Nauru, Federated States of Micronesia, or Hong Kong;

(v) "Subcontinent Asian Americans," which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;

(vi) Women;

(vii) Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

(3) GDOT will presume that such persons are socially and economically disadvantaged only to the extent permitted by applicable federal law.

Race-conscious measure is one focused specifically on assisting only DBEs, including women-owned DBEs.

Race-neutral measure is one being, or can be, used to assist all small businesses. For the purposes of this part, race-neutral includes gender-neutrality.

DISCRIMINATION PROHIBITED: No person shall be excluded from participation in, denied the benefits of, or otherwise discriminated against in connection with the award and performance of this contract on the grounds of race, color, sex or national origin.

The following assurance becomes a part of this contract and must be included in and made a part of each subcontract the prime contractor enters into with their subcontractors (49 CFR 26.13):

"The contractor, and/or subcontractor shall not discriminate on the basis of

race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT – assisted contracts. Failure by the contractor to carry out these requirements is (breach) of this contract which may result in the termination of this contract or such other remedy as the Department deems appropriate".

Failure to Achieve Requirements: Periodic reviews shall be made by the Department to determine the extent of compliance with the requirements set forth in this provision. If the Contractor is found to be in noncompliance, 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 this contract. During the life of the contract, the contractor will be expected to demonstrate good faith efforts at goal attainment as provided by 49 CFR 26.

The contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains the Department's written consent to substitute and, unless the Department's consent is provided the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

Participation will be counted toward fulfillment of the DBE goal as follows:

(A) When a DBE participates in a contract, the Contractor counts only the value of the work actually performed by the DBE toward DBE goals.

(1) Count the entire amount of the portion of a construction contract (or other contract not covered by paragraph (A) (2) of this section) performed by the DBE's own forces. Include the cost of supplies and materials obtained by the DBE for the work of the contract, including supplies purchased or equipment leased by the DBE (except supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate).

(2) Count the entire amount of fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, toward DBE goals, provided the Department determines the fee is reasonable and not excessive as compared with fees customarily allowed for similar services.

(3) When a DBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward DBE goals only if the DBE's subcontractor is itself a DBE. Work that a DBE subcontracts to a non-DBE firm does not count toward DBE goals.

(B) When a DBE performs as a participant in a joint venture, count a portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work of the contract the DBE performs with own forces toward DBE goals.

(C) Count expenditures to a DBE contractor toward DBE goals only if the DBE is performing a commercially useful function on that contract.

(1) A DBE performs a commercially useful function when responsible for execution of the work of the contract and carrying out responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the DBE must also be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material, and installing (where applicable) and paying for the material itself.

(2) A DBE does not perform a commercially useful function if their role is limited to being an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation.

(3) If a DBE does not perform or exercise responsibility for at least 30 percent of the total cost of their contract with their own work force, or the DBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involved, the Department will presume the DBE is not performing a commercially useful function.

(4) When a DBE is presumed not to be performing a commercially useful function as provided in paragraph (C) (3) of this section, the DBE may present evidence to rebut this presumption.

(5) The Department's decisions on commercially useful function matters are subject to review by the US DOT, but are not administratively appealable to the US DOT.

(D) The following factors are to be used in determining whether a DBE trucking company is performing a commercially useful function:

(1) The DBE must be responsible for the management and supervision of the entire trucking operation for which they are responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting DBE goals.

(2) The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

(3) The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.

(4) The DBE may lease trucks from another DBE firm, including an owner / operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provided on the contract.

(5) The DBE may also lease trucks from a non-DBE and is entitled to credit only for the fee or commission it receives as a result of the lease arrangement. The DBE does not receive credit for the total value of the transportation services provided by the lessee, since these services are not provided by a DBE.

(6) For purposes of this paragraph (D), a lease must indicate the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

(E) Count expenditures with DBEs for materials or supplies toward DBE goals as provided in the following:

(1) (i) If the materials or supplies are obtained from a DBE manufacturer, count 100 percent of the cost of the materials or supplies toward DBE goals.

(ii) For purposes of this paragraph, a manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment

required under the contract and of the general character described by the specifications.

(2) (i) If the materials or supplies are obtained from a DBE regular dealer, count 60 percent of the cost of the materials or supplies toward DBE goals. (ii) For purposes of this section, a regular dealer is a firm owning, operating, or maintaining a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.

(A) To be a regular dealer, the firm must be an established, regular business engaging, as its principal business and under its own name, in the purchase and sale or lease of the products in question.

(B) A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided in this paragraph **(E)(2)(ii)** if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis.

(C) Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers within the meaning of this paragraph **(E)(2).**

(3) With respect to materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, toward DBE goals, provided you determine the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services. Do not count any portion of the cost of the materials and supplies themselves toward DBE goals, however.

(4) You must determine the amount of credit awarded to a firm for the provision of materials and supplies (e.g., whether a firm is acting as a regular dealer or a transaction expediter) on a contract-by-contract basis. Do not count the participation of a DBE subcontractor toward the prime contractor's DBE

achievements until the amount being counted toward the goal has been paid to the DBE.

(5) No participation will be counted not in compliance with Special Provision entitled "Criteria for Acceptability" which is a part of this contract or with any provisions included in 49 CFR Part 26.

(6) If the contract amount overruns, the contractor will not be required to increase the dollar amount of DBE participation. If the contract amount under runs, the contractor will not be allowed to under run the dollar amount of DBE participation except when the DBE subcontracted items themselves under run.

REPORTS

A. The contractor shall submit a "DBE Participation Report" on this contract monthly which shall include the following:

1. The name of each DBE participating in the contract.
2. A description of the work to be performed, materials, supplies, and services provided by each DBE.
3. Whether each DBE is a supplier, subcontractor, owner/operator, or other.
4. The dollar value of each DBE subcontract or supply agreement.
5. The actual payment to date of each DBE participating in the contract.
6. The report shall be updated by the Prime Contractor whenever the approved DBE has performed a portion of the work that has been designated for the contract. Copies of this report should be transmitted promptly to the Engineer. Failure to submit the report within 30 calendar days following the end of the month may cause payment to the contractor to be withheld.
7. The Prime Contractor shall notify the Project Engineer at least 24 hours prior to the time the DBE commences working on the project. The DBE must furnish supervision of the DBE portion of the work, and the person responsible for this supervision must report to the Project Engineer when they

begin work on the project. They must also inform the Project Engineer when their forces will be doing work on the project.

B. In order to comply with 49 CFR 26.11, the Prime Contractor shall submit documentation regarding all payments made from the Prime to all DBE subcontractors on federal aid projects in the form of copies of cancelled checks or notarized electronic documentation which validates said payments made on the DBE Monthly Participation Reports. This information shall be required monthly and submitted with the DBE Monthly Participation Report.

C. Failure to respond within the time allowed in the request will be grounds for withholding all payments on all Contracts.

SUBSTITUTION OF DBEs: The Contractor shall make reasonable efforts to replace a DBE Subcontractor unable to perform work for any reason with another DBE. The Department shall approve all substitutions of Subcontractors in order to ensure the substitute firms are eligible DBEs.

When a DBE subcontractor is terminated, or fails to complete its work on the contract for any reason, the prime contractor must make good faith efforts to find another DBE subcontractor to substitute for the original DBE. These good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the contract as the DBE that was terminated, to the extent needed to meet the contract goal. The good faith efforts shall be documented by the contractor. If the recipient requests documentation under this provision, the contractor shall submit the documentation within 7 days, which may be extended for an additional 7 days if necessary at the request of the contractor, and the recipient shall provide a written determination to the contractor stating whether or not good faith efforts have been demonstrated.

CERTIFICATION OF DBEs: To ensure the DBE Program benefits only firms owned and controlled by Disadvantaged Individuals, the Department shall certify the eligibility of DBEs and joint ventures involving DBEs named by bidders.

Questions concerning DBE Certification/Criteria should be directed to the EEO Office at (404) 631-1972.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

First Use 2013 Specifications: November 01, 2013
Updated July 01, 2018

SPECIAL PROVISION

PROMPT PAYMENT:

Prime Contractors, who sublet a portion of their work, shall pay their subcontractors for satisfactory performance of their contracts no later than 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.

Prime contractors must maintain records and documents of payments to subcontractors, including DBEs, for a minimum of three (3) years after Contract Final Acceptance. These records shall be made available for inspection upon request by any authorized representative of the Georgia Department of Transportation or USDOT.

All subcontract agreements shall contain this requirement.

GDOT Supplemental Specifications Book 2016 Edition

Section 109—Measurement and Payment

109. H. Insert the Following in Each Subcontract

The Contractor shall insert the following in each Subcontract entered into for work under this Contract: "The Contractor shall not withhold any retainage on Subcontractors. The Contractor shall pay the Subcontractor 100% percent of the gross value of the Completed Work by the Subcontractor as indicated by the current estimate certified by the Engineer for payment."

Neither the inclusion of this Specification in the Contract between the Department and the Prime Contractor nor the inclusion of the provisions of this Specification in any Contract between the Prime Contractor and any of his Subcontractors nor any other Specification or Provision in the Contract between the Department and the Prime Contractor shall create, or be deemed to create, any relationship, contractual or otherwise, between the Department and any Subcontractor.

0004428, Douglas: Davis Bacon Wage Rates

"General Decision Number: GA20200242 **01/03/2020**

Superseded General Decision Number: GA20190242 State: Georgia

Construction Type: Highway County: **Douglas County** in Georgia.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, **the contractor must pay all workers in any classification listed on this wage determination at least $10.80 per hour** (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date	SUGA2014-076 10/03/2016
0	01/03/2020	

	Rates	Fringes
CARPENTER, Excludes Form Work	$ 16.19	0.00
CEMENT MASON/CONCRETE FINISHER	$ 17.69	0.00
FENCE ERECTOR	$ 16.54	0.00
FORM WORKER	$ 15.26	2.08
HIGHWAY/PARKING LOT STRIPING: Operator (Striping Machine)	$ 12.37	1.95
INSTALLER - GUARDRAIL	$ 15.65	0.00
INSTALLER - SIGN	$ 13.03	0.00
IRONWORKER, REINFORCING	$ 14.64	0.00
IRONWORKER, STRUCTURAL	$ 15.12	0.00
LABORER: Concrete Paving Joint Sealer	$ 17.66	0.00
LABORER: Grade Checker	$ 11.45	0.00
LABORER: Mason Tender - Brick	$ 11.61	0.00
LABORER: Mason Tender - Cement/Concrete	$ 11.44	0.00
LABORER: Pipelayer	$ 12.45	0.00
LABORER: Asphalt (Includes Distributor, Raker, Screed, Shoveler, and Spreader)	$ 13.15	0.00
LABORER: Common or General, Includes Erosion Control	$ 10.67	0.00
OPERATOR: Backhoe/Excavator/Trackhoe	$ 18.14	0.00
OPERATOR: Bobcat/Skid Steer/Skid Loader	$ 13.38	0.00
OPERATOR: Broom/Sweeper	$ 14.83	1.38
OPERATOR: Bulldozer	$ 16.07	1.81
OPERATOR: Compactor	$ 14.64	0.00

0004428, Douglas: Davis Bacon Wage Rates

OPERATOR: Concrete Saw.....$ 18.94 0.00
OPERATOR: Crane.....$ 21.06 4.24
OPERATOR: Distributor.....$ 17.00 1.93
OPERATOR: Grader/Blade.....$ 18.42 5.04
OPERATOR: Hydroseeder.....$ 15.20 0.00
OPERATOR: Loader.....$ 14.27 1.49
OPERATOR: Mechanic.....$ 19.54 0.00
OPERATOR: Milling Machine Groundsman.....$ 13.43 1.24
OPERATOR: Milling Machine.....$ 16.00 1.31
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....$ 16.50 2.93
OPERATOR: Piledriver.....$ 16.70 0.00
OPERATOR: Roller.....$ 13.86 1.35
OPERATOR: Scraper.....$ 12.64 0.00
OPERATOR: Screed.....$ 14.67 1.86
OPERATOR: Shuttle Buggy.....$ 14.06 1.98
PAINTER: Spray.....$ 23.30 0.00
TRAFFIC CONTROL: Flagger.....$ 12.26 0.88
TRAFFIC CONTROL: Laborer-Cones/Barricades/Barrels - Setter/Mover/Sweeper.....$ 13.29 0.00
TRAFFIC SIGNALIZATION: Laborer.....$ 13.75 1.14
TRAFFIC SIGNALIZATION: Electrician.....$ 23.41 4.26
TRUCK DRIVER: Dump Truck.....$ 15.00 0.00
TRUCK DRIVER: Flatbed Truck.....$ 14.91 1.07
TRUCK DRIVER: Hydroseeder Truck.....$ 16.74 0.00
TRUCK DRIVER: Lowboy Truck.....$ 18.98 0.00
TRUCK DRIVER: Off the Road Truck.....$ 12.38 0.00
TRUCK DRIVER: Pickup Truck.....$ 13.29 0.00
TRUCK DRIVER: Water Truck.....$ 13.19 1.46
TRUCK DRIVER: Semi/Trailer Truck.....$ 16.26 0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

0004428, Douglas: Davis Bacon Wage Rates

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

0004428, Douglas: Davis Bacon Wage Rates

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

DOUGLAS COUNTY
SUBCONTRACTORS NOTIFICATION LIST

Required information on subcontractors doing work in Douglas County.

Please list any subcontractors whom may perform work on this project, include their Business License number, the Activity or Commercially Useful Function (CUF*) they may perform, and if they are a DBE/MBE/WBE Firm.

GENERAL CONTRACTOR: _____

LICENSE NUMBER: _____

SUBCONTRACTOR:_____ LICENSE NUMBER: _____

ACTIVITY/CUF *: _____

DBE/MBE/WBE □Yes □No □ RN □RC GDOT UCP No: _____

SUBCONTRACTOR:_____ LICENSE NUMBER: _____

ACTIVITY/CUF*: _____

DBE/MBE/WBE □Yes □No □ RN □RC GDOT UCP No: _____

SUBCONTRACTOR:_____ LICENSE NUMBER:_____

ACTIVITY/CUF*: _____

DBE/MBE/WBE □Yes □No □ RN □RC GDOT UCP No: _____

SUBCONTRACTOR:_____ LICENSE NUMBER:_____

ACTIVITY/CUF*: _____

DBE/MBE/WBE □Yes □No □ RN □RC GDOT UCP No: _____

SUBCONTRACTOR:_____ LICENSE NUMBER:_____

ACTIVITY/CUF*: _____

DBE/MBE/WBE □Yes □No □ RN □RC GDOT UCP No: _____

Note: All subcontractors must be reported on this form for License Inspection purposes.

ST-C 214-6 (Rev. 3/13)
Georgia Department of Revenue

Certification of Subcontractor Residency

_____
(Subcontractor's Legal Name) (GA DOR Sales & Use Tax No.)

is a subcontractor contracting with _____
(Contractor's Legal Name)

to perform all or any of the construction, alteration, repair, or improvement of the real property located at

_____

commencing on _____.
(Date)

Under penalties of perjury I declare that this certificate has been examined by me and to the best of my knowledge and belief is true and correct, made in good faith, pursuant to the sales and use tax laws of the State of Georgia.

I certify that _____, is
(Subcontractor's Legal Name)

☐ **a nonresident subcontractor,** as provided by O.C.G.A. § 48-8-63, who does not have a bona fide place of business in Georgia through the maintaining of a permanent domicile or business facility engaged in constructing, altering, repairing, or improving real property;

or

☐ **a resident subcontractor** who does have a bona fide place of business in Georgia through the maintaining of a permanent domicile or business facility engaged in contracting real property work. The street address (P.O. Box not accepted) of the bona fide place of business is:

_____

_____ _____
Subcontractor's Authorized Representative Date

_____ _____
Print Name Title

FINAL AFFIDAVIT

TO DOUGLAS COUNTY, GEORGIA

I,_____, hereby certify that all supplies of materials, equipment and service, subcontractors, mechanics, and laborers employed by _____ _____or any of his subcontractors in connection with the construction of _____ _____at Douglas County have been paid and satisfied in full as of_____, 201___ , and that there are no outstanding obligations or claims of any kind for the payment of which Douglas County on the above named project might be liable, or subject to, in any lawful proceeding at law or in equity.

_____
Signature

_____
Printed Name

_____
Title

Personally appeared before me this_____day of_____, 201_____,

_____, who under oath deposes and says that he is _____of the firm of_____that he has read the above statement and that to the best of his knowledge and belief same is an exact true statement.

_____
Notary Public

_____
Printed Name

My Commission Expires

_____

DOUGLAS COUNTY
BOARD OF COMMISSIONERS

SECTION THREE

SPECIAL PROVISIONS

LEE ROAD /SR 1161/CR 817
WIDENING AND RECONSTRUCTION

P.I.# 0004428
DOUGLAS COUNTY

July 6, 2015

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SPECIAL PROVISION

PROJECT: MSL00-0004-00(428), DOUGLAS COUNTY, PI No. 0004428
Section 107 – Legal Regulations and Responsibility to the Public

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Add the following to Subsection 107.23:

H. Protection of Federally Protected Species

The following conditions are intended as a minimum to protect these species and their habitat during any activities that are in close proximity to the known locations of these species.

1. All Project personnel employed on the Project shall be notified of the potential presence and appearance of the federally protected northern long-eared bat (*Myotis septentrionalis*) and that there are civil and criminal penalties for harassing, harming, pursuing, hunting, shooting, wounding, killing, capturing, or collecting this species in knowing violation of the Endangered Species Act of 1973. Pictures and habitat information are attached and shall be posted in a conspicuous location in the Project field office until such time that Project construction has been completed and time charges have stopped.

2. For the protection of the northern long-eared bat, tree clearing shall not take place from March 31 through October 15 within the following station ranges:

    - STA 66+00 RT to 80+00 RT

3. In the event any incident occurs that causes harm or injury to the northern long-eared bat along the Project corridor, the incident shall be immediately reported to the Engineer who in turn will notify the State Environmental Administrator, Georgia Department of Transportation, Office of Environmental Services at (404) 631-1101. All activity shall cease pending consultation by the Department with the US Fish and Wildlife Service and the lead Federal Agency.

4. A log detailing any incidents that cause harm or injury to northern long-eared bats in or adjacent to the Project shall be recorded until such time that project construction has been completed and time charges have stopped. Following Project completion, the log and a report summarizing any incidents that caused harm or injury to these species shall be submitted by the Contractor to the Engineer and the State Environmental Administrator, Georgia Department of Transportation, Office of Environmental Services, 600 West Peachtree Street NW, Atlanta, Georgia 30308. GDOT in turn will provide copies of the report to the US Fish and Wildlife Service, the Georgia Department of Natural Resources Wildlife Resources Division, and the lead Federal Agency.

5. All costs pertaining to any requirement contained herein shall be included in the overall bid submitted unless such requirement is designated as a separate Pay Item in the Proposal.

Protected Species On This Project

Northern Long-Eared Bat (*Myotis septentrionalis*)

Photo Credit: Al Hicks

Description:

* Adults are medium-sized with a body length of 3 to 3.7 inches and a wing span of 9 to 10 inches.
* Fur color can be medium to dark brown on the back and tawny to pale-brown on the underside.
* As its name suggests, this bat is distinguished by its long ears, particularly as compared to other bats in its genus, *Myotis*.
* During spring and summer months bats emerge from roost trees or structures at dusk and forage until dawn.

Habitat:

During spring and summer months within Georgia, northern long-eared bats will roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. It has also been found, rarely, roosting in structures like barns and sheds. Prime foraging habitat consists of the understory of forested hillsides and ridges. Northern long-eared bats also feed on insects over vegetation and water surfaces.

Harming, harassing or killing this animal can lead to fines or jail time. See special provision 107.23 G.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SPECIAL PROVISION

PROJECT No: MSL-0004-00(428)

COUNTY: Douglas

P.I. No.: 0004428

Section 108-Prosecution and Progress

Retain sub-section 108.08 and add the following:

C. Intermediate Completion

1. Failure to open lanes as specified in Sub Section 150.11 A of the Contract will result in the assessment of Liquidated Damages at the rate of $1,000.00 per hour or portion of an hour thereof per site.

2. Failure to maintain traffic signal detection as specified in Sub Section 150.11 B of the Contract will result in the assessment of Liquidated Damages at the rate of $1,000.00 per hour or portion of an hour thereof per site.

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

SPECIAL PROVISION

PROJECT No: MSL-0004-00(428)

COUNTY: Douglas

P.I. No.: 0004428

SECTION 150 – TRAFFIC CONTROL

Add the following:

150.11 ADDITIONAL TRAFFIC CONTROL REQUIREMENTS

A. ROAD/LANE CLOSURES

This project requires the following restricted work hours:

The Contractor shall not install lane closures, perform flagging, or move equipment on the travel way that interferes with traffic flow on Lee Road or local side streets between the hours of 5:00 a.m. to 9:00 a.m. and 3:30p.m. to 9:00p.m., Monday through Friday.

Weekend lane closures and flagging operations are allowed from 09:00 pm Friday to 05:00 am Monday morning.

B. TRAFFIC SIGNAL

The Contractor shall maintain presence detection and existing communication/timing between traffic signals at all times. The cost for complying with this requirement should be included in Lump Sum Traffic Control. This work will require temporary detection either by loops or video detection. This requirment will apply to any new, relocated, or temporary traffic signals. If at any point should detection become inoperable or fail, it shall be restored and made operational by the contractor within 24 hours. Failure to maintain the traffic signals and communications will result in liquated damages as specified in Special Provision Section 108.08.C.

Local Administered Projects
Contract Modification
(Local Government and Contractor)

GDOT PI No.: 0004428 **County:** Douglas

Local Government: Douglas County **Contractor:** _____

Modification Type and No. _____

Whereas the below Contractor entered into a contract with the Local Government on _____ for the construction of GDOT Project No. 0004428.

Whereas, certain items of construction encountered are not covered by the original contract, the Parties hereby agree to the following amendment to the contract:

Modify the Contract as follows:

Item No:	Item Description	Units	Qty	Price	Total

It is agreed that as a result of this amendment the contract time will/will not be extended.

Except as specifically amended herein, all terms and conditions of the original contract remain in full force and effect.

Now therefore, _____, Contractor, hereby agrees to said contract amendment consisting of the above mentioned items and prices, and agrees that this contract amendment is hereby made a part of the original contract to be performed under the specifications thereof.

Dated this _____ day of _____, _____.

BY: _____ _____
Contractor Name (Authorized Signature) (Seal)

BY: _____ _____
Douglas County (Authorized Signature)

Date Executed: _____

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
CONTRACT MODIFICATION SIGNATURE FORM
(Local Administered Projects)

DATE: _____ **MODIFICATION:** _____ (Type and **No.**)

Project No.: _____ **GDOT P.I.#:** 0004428 **County:** Douglas

Contract i.d.#: _____ **PCN:** _____

Local Government: Douglas County

Details of the change explaining why needed (attach executed contract agreement between the Local Government and Contractor):

☐ Do Not Concur / Non-Participating
☐ Concur / Non-Participating
☐ Concur / Participating Date Funding approved: _____

Amount (Federal Portion)

The current project amount is: _____

The revised project amount is: _____

Total Change Requested: _____

Recommended By: _____ Date: _____
(Area Engineer)

Concurred: _____ Date: _____
(Project Manager)

Approved By: _____ Date: _____
(Office Head – Program Delivery)

CHANGE ORDERS

Change orders may be required periodically throughout construction of the project. Change orders must be submitted in writing to the project engineer (engineer of record (EOR)) and include a breakdown of itemized costs and/or time extension, if applicable. All change order submittals must be placed on the GDOT LAP Change form (attached), with appropriate backup attached, signed by the contractor, and must then be approved by both Douglas County and GDOT prior to implementation. The Contractor, County and GDOT sets of drawings must be redlined to reflect changes.

Revised: December 18, 2002

DEPARTMENT OF TRANSPORATION
STATE OF GEORGIA

SPECIAL PROVISION

PROJECT NO. MSL00-0004-00(428), DOUGLAS COUNTY
P.I. NO. 0004428

SECTION 205 – ROADWAY EXCAVATION

Add the following to Sub-section 205.3.05.E:

The soils that will be excavated from the following cut sections are primarily Class IIIC1/IIIC2 soils with poor load carrying characteristics. Do not place these soils within 3 feet (915 mm) of the subgrade directly beneath the pavement in fill sections. These soils may be placed in the bottom of high fill sections, in the shoulders or in the median as directed by the Engineer:

Station to Station	Location
Lee Road	
14+75± to 16+50±	LT
31+50± to 33+75±	LT
35+75± to 37+50±	LT, RT
43+50± to 46+50±	LT, RT
49+00± to 51+50±	LT
51+50± to 59+50±	LT, RT
63+25± to 68+50±	LT
68+50± to 74+50±	LT, RT
91+50± to 95+00±	LT
118+50± to 121+50±	LT, RT
124+50± to 127+50±	LT, RT
Old Chestnut Log Road Reloc.	
1+22.09 to 5+00±	LT, CL, RT

Office of Materials and Research

Section 647—Traffic Signal Installation

647.1 General Description

This work consists of furnishing materials and erecting a traffic signal installation including all traffic signal equipment, poles, bases, wires and miscellaneous materials required for completion of the installation.

It also includes all test periods, warranties and guarantees as designated in subsequent sections, and response to maintenance and operational issues as described in subsequent sections.

Apply for, obtain and pay for all utility services, communications services to, and pole attachment permits that are necessary for the signal installation and operation required in the Plans. Maintain these utility services until final acceptance of the signal.

Upon final acceptance, make an orderly and uninterrupted transfer of these services and permits to the local government or other jurisdiction that will be responsible for subsequent maintenance and operation.

647.1.01 Definitions

General Provisions 101 through 150.

647.1.02 Related References

A. Standard Specifications

Section 106—Control of Materials
Section 500—Concrete Structures
Section 501—Steel Structures
Section 631—Changeable Message Signs
Section 636 – Highway Signs
Section 639—Strain Poles for Overhead Sign and Signal Assemblies
Section 645—Repair of Galvanized Coatings
Section 680—Highway Lighting
Section 681—Lighting Standards and Luminaires
Section 682—Electrical Wire, Cable, and Conduit
Section 700—Grassing
Section 800—Coarse Aggregate
Section 801—Fine Aggregate
Section 832—Curing Agents
Section 833—Joint Fillers and Sealers
Section 850 Aluminum Alloy Materials
Section 853—Reinforcement and Tensioning Steel
Section 854—Castings and Forgings
Section 861—Piling and Round Timber
Section 870—Paint
Section 886—Epoxy Resin Adhesives
Section 910—Sign Fabrication
Section 911—Steel Sign Posts
Section 912—Sign Blanks and Panels
Section 913—Reflectorizing Materials
Section 915—Mast Arm Assemblies
Section 923—Electrical Conduit
Section 925—Traffic Signal Equipment
Section 935—Fiber Optic System
Section 936—CCTV System

Section 937—Video Detection System

Section 938—Radar Detection System

Section 939—Communications & Electronic Equipment

Section 940—Navigator Integration

B. Referenced Documents

National Electrical Manufacturers Association (NEMA) Traffic Control Systems Standards No. TS 1

NEMA Traffic Control Systems Standards No. TS 2

AASHTO Roadside Design Guide

The Manual on Uniform Traffic Control Devices (MUTCD), current edition

National Electrical Code (NEC)

GDT 7

GDT 24a

GDT 24b

GDT 67

647.1.03 Submittals

Submit to the Engineer, signal material specifications information on all materials proposed for use on the project. The Engineer will forward the materials submissions to the District Traffic Operations offices, which will forward the information onto the Traffic Operations offices at the TMC building.

Written approval is required from the State Traffic Signal Design Engineer prior to beginning any work on the project.

A. Review

For all submittals, the State Traffic Signal Design Engineer's review of the material should be completed within thirty (30) days from the date of receipt of the submission unless otherwise specified. The State traffic Signal Design Engineer will advise in writing, as to the acceptability of the material submitted.

All material submittals for fiber optic communications equipment and materials used on the project will be reviewed by the Department's Traffic Signal Electrical Facility (TSEF). The material review should be completed within thirty (30) days from the date of receipt of the material submission unless otherwise specified. The State Traffic Signal Engineer will advise in writing as to acceptability of materials to be used on the project.

The State Traffic Signal Design Engineer may determine that the item is approved, in which case no further action is required; or the item may be partially or totally rejected in which case, modify the submittal as required and resubmit within fifteen (15) days. At this time, the review and approval cycle described above begins again.

B. Submittal Costs

Include the costs of submittals within the price paid for individual bid items. No additional compensation will be made.

C. Steel Strain Pole, Concrete Strain Pole or Steel Pole Certification

Instruct the supplier or manufacturer of the strain poles or steel poles with traffic signal mast arms to submit a certification, including mill certificates to:

Department of Transportation

Office of Materials and Research

15 Kennedy Drive

Forest Park, Georgia 30297

Include the following in the certification:

- A statement that the items were manufactured according to the Specifications, including the Specification subsection number
- Project number and P.I. number

Instruct the supplier or manufacturer to send copies of the transmittal letter to the Engineer. Refer to Subsection 647.3.03.C.

Prepare Shop Drawings and related signal strain pole design calculations. Provide "bending moment at yield" to determine the foundation size according to the signal strain pole foundation drawings. Submit all Shop Drawings and related signal strain pole design calculations to the Engineer to be forwarded to the State Bridge and Structural Design Engineer for review and approval. Obtain written approval prior to pole fabrication and installation.

Show all dimensions and material designations of the designs on the drawings. See Section 501 for the certification procedure for poles and anchor bolts.

D. Signal Item Certification

Submit six (6) copies of material catalog product numbers and descriptions to the Engineer. Reference the project number, P.I. number and Specification subsection number for the following traffic signal items:

- Signal heads
- Mounting hardware
- Controllers
- Cabinet assemblies
- Detectors
- Monitors
- Cable
- Load switches
- Blank-out signs
- Lane use signals
- Preformed cabinet bases
- Other related signal equipment
- Modems
- Fiber Optic Modems

E. Test Results Submittal

Submit the results of the testing of the following items to the Engineer:

- Loop Detector Testing
- Signal Cable Testing
- Interconnect Cable Testing
- Pre-emption Testing
- Controller and Cabinet Testing
- Any other operational testing required by the Engineer

F. Mast Arm Pole Chart

For locations with mast arm pole installations, submit a "Mast Arm Pole Chart" for review and approval by the Engineer. The "Mast Arm Pole Chart" shall also include a sketch on an 8 ½ inch x 11 in (216 mm x 297 mm) sheet of paper showing the following:

- Curb lines
- Location of mast arm pole based on utility information. (Final location of mast arm pole must meet the criteria for setback from the road as specified in the Roadside Design Guide by AASHTO and in the Standard Detail Drawings)
- Distance from both adjacent curbs to mast arm pole

- Distance along mast arm from pole to curb and from curb to each proposed signal head
- Directional arrow
- Street names
- Position of Luminaries

Label the sketched distances. Once this pole chart is approved, the contractor shall use the distances measured to the proposed signal head locations when ordering the mast arm to ensure that the mast arm is fabricated with holes for signal head wiring in the correct locations

647.2 Materials

647.2.01 Delivery, Storage, and Handling

A. State-supplied Equipment

For projects where traffic signal equipment is to be supplied by the Georgia Department of Transportation, obtain State-supplied traffic signal equipment from the Traffic Signal Electrical Facility (TSEF):

1. Contact the Engineer by phone or correspondence within one week after receiving the Notice to Proceed and arrange for a location to pick up the signal equipment.
2. Sign GDOT's Warehouse Issue Request Form 592 to accept delivery of the State-supplied equipment from GDOT's Traffic Signal Equipment Warehouse. Initial Form 592 if equipment is received from a GDOT District Field Office.
3. Inspect the equipment to ensure that it is operating properly and perform any operational tests within ten (10) calendar days after receiving the equipment.
4. Before installation, and within ten (10) calendar days, certify to the Engineer in writing that the State-supplied equipment was received in good condition.
5. Notify the Engineer in writing if the State-supplied equipment is defective. The State Signal Engineer will replace the defective State-supplied equipment.
6. If no written dissent is received after ten (10) calendar days or if equipment is installed in the field, the Engineer will consider this equipment to be satisfactory and accepted.
7. The Contractor shall supply new equipment to replace State-supplied equipment that is damaged by the Contractor.

B. Signal Equipment

See Section 925 for signal equipment specifications.

The signal equipment, components, supplies, or materials used in traffic signal installation may be sampled and tested if not previously approved by the Department.

Test according to the Specifications and the Sampling, Testing, and Inspection Manual using one or more of the following methods:

- Have the Department use their own facilities.
- Have the supplier or manufacturer use their facilities with an authorized Department representative to witness the testing.
- Provide independent labratory test results indicating compliance with Department Specifications referenced in Subsection 647.1.02, "Related References", of this document.
- When testing by the Department is required, supply the item to the Department. Acceptance of materials tested does not waive warranties and guarantees required by the Specifications.

C. Cable

Use cable that conforms to Section 680, Section 925, and the appropriate IMSA, NEMA, or UL Specifications for the wire or cable.

Obtain pole attachment permits required by local utility companies or pole owners to allow joint use for signal cable, hardware, or other auxiliary devices.

D. Interconnect Communications Cable

The interconnect cable (communication cable) links the master controller, the field controllers, and sensors. Follow these guidelines:

1. Use fiber optic interconnect cable for all new interconnected signal systems. See Section 935 for fiber optic cable information, specifications and installation and testing techniques.
2. Use copper cable only as directed by the Project Engineer or where specifically shown in the Plans. Refer to Section 647.3.05, "Construction", of this document for installation.

E. Messenger Cable

Use cable that conforms to ASTM A 475 Siemens-Martin grade or better with Class A coating. The messenger is used to support cable indicated in the Plans as overhead cable. Use devices such as wire ties or lashings to attach the cable.

- Before erecting the messenger strand, determine the suspension strand length to span the distance between the poles.
- Run the messenger strand from structure to structure without splicing.
- The maximum allowable sag is five percent (5%) of one-half of the longest diagonal distance between the signal poles.
- Calculate attachment points for the messenger strand at the signal pole according to the Plan detail sheet.

F. Fiber Optic Cable

Use fiber optic cable that complies with Section 935. Use Department approved materials, and utilize Department and fiber optic cable manufacturer recommended installation methods practices and techniques for installation, storage and termination of fiber optic cable.

- Use minimum 24 fiber, single mode fiber optic cable, for communications unless otherwise specified in the plans.
- Submit fiber optic cable manufacturer supplied product information on materials to be used for review for Specification Section 935 for compliance.
- Before erecting the messenger strand, determine the suspension strand length to span the distance between the poles.
- Run the messenger strand from structure to structure without splicing.
- The maximum allowable sag is five percent (5%) of one-half of the longest diagonal distance between the signal poles.
- Calculate attachment points for the messenger strand at the signal pole according to the Plan detail sheet.
- For underground installation, utilize materials and techniques approved by the Engineer and in conformance with Subsection 647.3.05.M and detail sheets for conduit and pull box installations. Underground fiber optic cable installation shall include tone tape or cable for utility detection and in compliance with project detail sheets.

G. Conduit on Structures

Use rigid metallic materials for all exposed conduit for cabling. Use metallic conduit on the exterior of signal poles and other structures and to house signal conductors for the entire length from the weatherhead on the pole to the interior of the cabinet (see Subsection 647.3.05X).

647.3 Construction Requirements

Refer to Subsection 107.07 of the Specifications regarding proper conduct of The Work.

647.3.01 Personnel

For the definition of a qualified electrician, see Subsection 755.1.01.

647.3.02 Equipment

Use machinery such as trucks, derricks, bucket vehicles, saws, trenchers, and other equipment necessary for the work and approved by the Engineer prior to installation operations.

647.3.03 Preparation

Utility Permits

A. Application

Apply for, obtain, and pay for utility services and pole attachment permits for signal operation required in the Plans.

B. Maintenance

Maintain these utility services until Final Acceptance of each signal installation. After Final Acceptance, transfer these services and permits to the local government or jurisdiction responsible for maintenance and operation. Ensure that the transfer does not interrupt service.

C. Utility Location

1. Adjustment

   Prior to ordering signal poles, locate utilities and adjust the location of poles, where necessary, to minimize utility conflicts. Obtain approval from the Engineer for any deviation from the Plans.

   Determine the final length of mast arms based on any field adjusted pole locations. Final location shall be approved by the Engineer.

2. Clearance

   When installing aerial cable of any type, ensure that overhead clearance and separation requirements conform to local utility company standards and the NEC. Refer to the Standard Details Drawings for further information on utility clearances.

3. Pre-emption

   When traffic signal pre-emption is used, coordinate with the railroad, fire department or any other agency that uses pre-emption to obtain pre-emption output and route output cable to the signal controller operating the intersection to be pre-empted. Obtain all permits and approval for crossing at grade or grade separated railroad facilities.

647.3.04 Fabrication

General Provisions 101 through 150.

647.3.05 Construction

A. Acquiring and Disposing of Equipment

Do not modify the signal equipment, design, and operation without the District Traffic Operations Engineer's written approval.

All traffic signal equipment removed or replaced shall be returned to District Traffic Signal Shops unless otherwise noted in the Plans or as directed by the Engineer.

B. Traffic Signal Equipment Modification and Removal

Upon modification of any existing traffic signal equipment, responsibilities for maintenance, operations and response to traffic signal malfucntion become the responsibility of the contractor and provisions of Section 647.3.07, "Contractor Warranty and Maintenance", apply.

1. Remove existing signal equipment that is not used in the final installation when the new signal equipment is operational.

   Carefully remove equipment to minimize damage and retain it in its original form. This equipment may include:

   - Steel poles including the foundation down to 2 feet (600 mm) below ground level finished grade
   - Concrete Strain poles
   - Timber poles
   - Traffic signal cabinets including contents, cabinet base and work pads
   - Original signal heads including span wire support
   - Other equipment not retained in the final installation

   Salvage the equipment as directed in the Plans or as directed by the Engineer

2. If the Plans specify delivery of salvaged equipment to a Department facility, provide an inventory list and arrange a mutually agreeable delivery time with the Engineer twenty-four (24) hours in advance.
3. Replace traffic signal equipment that the Engineer determines has been damaged or destroyed during installation or modification of the traffic signal, at no expense to the Department. Replace with new material.
4. If the Engineer finds that the existing material to be relocated is unsatisfactory, replace with new material. The costs will be paid for as Extra Work. Include the removal costs of all equipment, including salvaged equipment, in the cost of the overall bid price submitted.

5. Remove old signal heads by the end of the day that the new signal equipment is placed in operation. Remove all other signal equipment within seven (7) days after operations of the newly operational equipment, or within thirty (30) day burn-in period commencement.

C. Auxiliary Cabinet Equipment

Provide auxiliary cabinet equipment or special purpose equipment with connecting harnesses, if necessary, or as shown in the Plans or Standard Detail Drawings.

1. Install the equipment in its associated cabinet. Extraneous wiring maybe necessary to install the equipment. Additional cabling shall be enclosed in rigid, galvanized conduit and neatly secured.
2. Connect the auxiliary equipment to its cable harness, or insert it in premounted racks or sockets.

D. Signal Controllers

Furnish and install approved microprocessor controllers at the locations shown in the Plans or as directed by the Engineer. All equipment furnished shall comply with Section 925,"Traffic Signal Equipment".

1. Identify the controller and other auxiliary equipment by serial number and model. These numbers shall agree with previously approved catalog submittals.
2. Assemble the controller, cabinet, and auxiliary equipment to provide the operational sequence shown in the Plans and future operations specified.

E. Cabinet Assembly

1. Location

   When placing the cabinet, choose a location that:

   a. Protects maintenance personnel from vehicles when servicing the equipment
   b. Allows the front panel door of the controller to open away from the intersection for view of signal indications while servicing or performing cabinet work.
   c. Does not block a sidewalk or passageway and complies with Federal regulations for Americans with Disabilities Act (ADA) clearance requirements.
   d. Is located away from the roadway or curb line to prevent vehicular damage to the cabinet.
   e. Is not located within drainage areas or installed in areas likely to collect and hold surface water.

   Relocate the cabinet to avoid conflicts from proposed reconstruction projects, commercial driveways, etc. within the right-of-way at the Engineer's discretion.

2. Erection

   Install and level traffic signal controller cabinets at locations shown in the Plans and/or as directed by the Engineer.

   a. Install cabinets to conform to the Standard Detail Drawings. Install pole or base-mounted as indicated in the Plans.
   b. Seal base-mounted cabinets to their base using silicone based sealer. Pliable sealant used shall not melt or run at temperatures as high as 212 ºF (100 ºC).
   c. Use prefabricated bases and work pads
   d. Install technician pad in front and rear of the controller cabinet door. See standard details for pad information.

3. Field Cabinet Wiring

   All wiring shall be neat and secured and comply with NEC, NEMA, and Table 647-1, Table 647-2, Table 647-3 and Table 647-4 of this Specification.

   a. Cut field cabinet wiring to the proper length and organize it in the cabinet.
      - Use at least No. 6 AWG wire on conductors between service terminals and the "AC+" terminals to signal light relays, and buss terminals.
      - Use at least No. 6 AWG wire on terminal connections to light neutral.
   b. Crimp terminal connections to conductors with a ratchet-type crimping tool that will not release until the crimping operation is completed.
   c. Do not use splices inside the controller cabinet, base, or conduit.
   d. Do not use solid wire, except grounding wire.

e. Supply the cabinets with cabinet wiring diagrams, schematic drawings, pin assignment charts, and manuals for circuits and components. Store these documents in the cabinet in a resealable, weatherproof container.

F. Signal Monitors

Furnish signal monitor equipment as follows:

1. Mount signal monitors in a rack with appropriate connectors to attach to the wiring harness.
2. Program the monitor card according to the signal operation indicated in the Signal Plans before placing the installation in flash or stop-and-go operation.
3. Configure and equip the signal monitor to monitor all red signal indications. Ensure that the red output for unused or vacant load bays or output slots is jumpered to 120 V AC+.

G. Power Disconnect

Install a power disconnect box at each intersection as shown in the Standard Detail sheets. Install service cables from disconnect box and terminate as specified on the controller cabinet-wiring diagram.

H. Flashing Beacon

Furnish and install the flashing beacon controller at the locations shown in the Plans and/or as directed by the Engineer. Install it as a complete unit (solid state flasher and cabinet with time clock, if applicable) and ensure that it conforms to this Specification.

I. Loop Detector Systems

Install and test loop detector systems according to NEMA Standards Publication TS 1-1983, Section 15, Inductive Loop Detectors, subsequent revisions (except as shown in the Plans), details, notes, and this Specification.

Ensure that loop detectors are complete and fully operational before placing the signal in stop-and-go operation.

1. General Installation Requirements

   Each loop must consist of at least two turns of conductor, unless otherwise shown in the Plans or this Specification. Do not place a portion of the loop within 3 feet (1 m) of a conductive material in the pavement such as manhole covers, water valves, grates, etc.

   a. Install pull boxes, condulets, and conduits before beginning loop installation.
   b. Ensure that the ambient pavement surface temperature in the shade is at least 40 ºF (5 ºC) before placing sealant into saw cuts.

2. Loop Saw Cuts

   a. Outline the loop on the pavement to conform to the specified configuration.
   b. Install the detector loop in a sawed slot in the roadway surface deep enough to provide at least 2 inches (50 mm) of sealant cover.
   c. Ensure that the slot is at least 0.25 inches (6 mm) wide for stranded No. 14 AWG loop wire, THHN, THWN, XHHN, or XLPE, and at least 0.31 inches (7 mm) wide for polyethylene or PVC encased No. 14 AWG loop wire.
      1) At the intersection of the slots, drill a 1.25 inch (31 mm) diameter hole or make miter saw cuts in the pavement.

         Overlap miter saw cuts at the intersection of saw cuts so that the slots have a full-depth and smooth bottom.
      2) Prevent the wire from bending sharply.
      3) Do not install detector loop wire unless sawed slots are completely dry and free of debris. Use compressed air to thoroughly dry the sawed slot.
      4) Install the loop wire starting at the nearest pull box or condulet, around the loop for the specified number of turns, and back to the pull box or condulet.

         NOTE: Loop wire from the street is to be spliced in condulets or pull boxes only.

   d. Press the wire in the slot without using sharp objects that may damage the jacket.

e. Hold the loop in place every 5 feet (1.5 m) with 1 inch (25 mm) strips of rubber, neoprene, flexible tubing, or foam backer rod as approved by the Engineer.

f. Leave the hold down strips in place when filling the slot with loop sealant.

g. Where encased loop wire is used, apply a waterproof seal to the ends of the polyethylene tubing that encase the wire to prevent moisture from entering the tube.

h. Where the loop wires cross pavement joints and cracks, protect the loop wires using the method specified in "Miscellaneous Details" in the Plans.

3. Loop Sealing

After successfully testing each loop, fill the slots with sealant to fully encase the conductors.

a. Ensure that the sealant is at least 2 inches (50 mm) thick above the top conductor in the saw cut.

b. Apply the sealant so that subsequent expansion does not extend the sealant material above the pavement surface.

c. Before the sealant sets, remove surplus sealant from the adjacent road surfaces without using solvents or epoxy sealants.

d. Obtain approval from the Office of Materials and Research to use polyurethane sealants. They shall conform to Subsection 833.2.09.

e. When the Engineer determines that the loop sealant can accommodate traffic but the surface is tacky, dust the sealer on the pavement surface with cement dust before opening the roadway to traffic.

f. Dispose of the solvents used to clean loop installation equipment according to the manufacturer's specifications and local, State, and Federal regulations.

4. Loop Connections

Connect loop conductors to a shielded lead-in cable that runs from the pull box adjacent the pavement edge or condulet to the detector hook-up panel in the controller cabinet, unless otherwise specified in the Plans.

a. Use continuous (no splices) shielded lead-in cable from the pull box or condulet to the cabinet input file terminal. Do not ground the shield in the loop lead-in cable at the cabinet.

b. Connect each loop to an individual detector channel as specified in the Plans.

c. If the Plans specify that two or more loops will be operated on the same detector channel or detector amplifier unit, wire them in series to their loop lead-in at the pull box or condulet.

d. Use series-parallel connections when series connections do not meet the manufacturer's specified operating range for the detector amplifier unit.

e. Make weather-tight and waterproof splices as detailed on the plan Standard Detail sheets. Make loop splices to loop lead-in cable only after the detector system has been tested and demonstrated under traffic conditions to the Engineer's satisfaction.

5. Loop Maintenance

Locate all existing loops, determine the operational status of all loop assemblies, and notify the Engineer prior to commencing loop construction activities at the intersection.

Maintain all existing, operational loops, unless otherwise notified by the Engineer. Repair of an existing loop that is non-operational prior to beginning work will be considered as extra work.

Locate points of conflict between new loops and existing loops, and install all new loops and saw cuts so as not to cut existing loop lead-ins and loop wires that are to be retained.

If an existing operational loop that is not scheduled for replacement fails during the construction time frame, notify the Engineer and complete the replacement of the damaged loops immediately.

The Engineer may grant a twenty-four (24) hour period to repair the loops if their operation is not critical. All costs associated with the replacement of the loops damaged during construction shall be charged and paid for by the Contractor.

J. Pedestrian Push Button

Install the push button with a pedestrian instruction sign as illustrated on the Department's standard detail sheets and according to the Plans.

1. Place the pedestrian buttons as shown on the signal plan sheet and within easy access of the pedestrian crosswalk.

2. Position the pedestrian button to correspond to the appropriate signal phase. Locate pedestrian buttons perpendicular to the appropriate signal indication and signal phase, and as field conditions require..
3. Place the buttons approximately 3.5 feet (1.05 m) above the sidewalk or ground level.

K. Cable

Install and connect electrical cable to the proper equipment to produce an operating traffic signal system. Use stranded copper cable conforming to Section 925.

Install wiring in accordance with ISMA, NEMA, UL, and the Department's Traffic Signal Wiring Standards, shown in Tables 647-1, 647-2, 647-3, and 647-4 of this Specification.

In addition to the information provided below, see Section 682, Section 922, and Section 925 for cable equipment and installation specifications.

Table 647-1
Vehicular Signals
Georgia DOT Wiring Standards

Signal Indications	3-Section Signal Heads Seven Conductor Cable		5-Section Signal Heads Seven Conductor Cable
	Phases 2, 4, 6, and 8	Phases 1, 3, 5, and 7	Phases 1/6, 2/5, 3/8 & 4/7
Red	Red Wire		Red Wire
Yellow	Orange Wire		Orange Wire
Green	Green Wire		Green Wire
Red Arrow		White Wire with Black Tracker	
Yellow Arrow		Black Wire	Black Wire
Green Arrow		Blue Wire	Blue Wire
Neutral	White Wire	White Wire	White Wire

Table 647-2
Vehicular Loop Detectors
Georgia DOT Wiring Standards

Detectors	Phases 3, 4, 7, and 8 Presence Loops		Phases 2 and 6 Setback Pulse Loops and Phases 1 and 5 Presence Loops	
	Loop Wires	Shielded Loop Lead-in Cable, 3 Pair	Loop Wires	Shielded Loop Lead-in Cable, 3 Pair
Right Curb Lane	Red Wire	Red/Black Pair (1)	Red Wire	Red/Black Pair (1)
Second Lane	Green Wire	Green Black Pair (1)	Green Wire	Green Black Pair (1)
Third Lane	White Wire	White/Black Pair (1)	White Wire	White/Black Pair (1)
Fourth Lane	Red Wire	Red/Black Pair (3)	Red Wire	Red/Black Pair (3)
Fifth Lane	Green Wire	Green/Black Pair (3)	Green Wire	Green/Black Pair (3)
Sixth Lane	White Wire	White/Black Pair (3)		
First Left-Turn Lane			Red Wire	Red/Black Pair (4)
Second Left-Turn Lane			Green Wire	Green/Black Pair (4)

Table 647-3 Pedestrian Signals Georgia DOT Wiring Standards		
Signal Indications	**2-Section Signal Heads Seven Conductor Cable**	
	Phases 2 and 6	**Phases 4 and 8**
Don't Walk	Red Wire	White Wire with Black Tracker
Walk	Green Wire	Blue Wire
Neutral	White Wire	White Wire

Table 647-4 Pedestrian Detectors Georgia DOT Wiring Standards		
Push Buttons	**3 Pair Shielded Cable**	
	Phase 2 and 6	**Phase 4 and 8**
Call	Green and Black Pair	Red and Black Pair

NOTE: Do not use aluminum cable.

L. Signal Cable for Vehicular Signal Heads and Pedestrian Heads

Install cable for signal heads and pedestrian heads as follows:

1. For vehicle signal heads, install one 7-conductor signal cable for each intersection approach from the controller cabinet to the leftmost through-signal head on each approach. From this leftmost signal head, install a 4-conductor signal cable to each of the other signal heads on the same approach in sequence.
2. For pedestrian signal heads, install one 7-conductor signal cable from the controller cabinet to each pedestrian head installation location to operate either one or two pedestrian heads.
3. Make a minimum 2 foot (600 mm) diameter weather drip loop as shown in the Standard Detail Drawings in the Plans at the entrance to each signal head, pole, overhead conduit, and weatherhead.
4. Neatly tie signal cables leaving a structure or weatherhead to enter a signal fixture. Tie the cables to the messenger cable as illustrated in the Standard Detail Drawings.

M. Interconnect Communications Cable

Use fiber optic interconnect cable for all new interconnected signal systems. See Section 935 for fiber optic cable information, specifications and installation and testing techniques. Install and test interconnect communications cable as follows:

1. Installation
   a. Provide support for the interconnect cable on new or existing utility poles or signal poles; install underground in conduit.
   b. Pull cables with a cable grip that firmly holds the exterior covering of the cable.
   c. Pull the cables without dragging them on the ground, pavement or over or around obstructions. The Engineer will inspect and approve the cable prior to installation. Use powdered soapstone, talc, or other approved inert lubricants to pull the cable through the conduit.
   d. When using a separate messenger cable, spirally wrap the communications cable with a lashing machine according to the IMSA-20-2 Specifications.
   e. Do not splice outside the signal cabinet except at the end of full reels of 5,000 feet (1500 m).
   f. Ensure that splice points are near support poles and accessible without closing traffic lanes.
   g. Unless drop cable assemblies for communications are used, loop the cable in and out of the control cabinets. Coil and tie 10 feet (3 m) of cable in the controller cabinet foundation. Tape the cable ends to keep moisture out until the terminals are attached.

h. Prevent damage to the cable during storage and installation.

> **NOTE: Do not allow workers to step on or run over any cable with vehicles or equipment.**

2. Field Test

Conduct a test for continuity and isolation with the Engineer according to Section 935.

a. Perform the attenuation test for each fiber. Test for all events above 0.10 dB and total attenuation of the cable. Submit both printed and electronic (diskette) OTDR testing results as referenced in Subsection 935.1.03.

b. Perform the isolation test for testing insulation resistance for each conductor and cable shield in the system.

1) Fiber optic cable testing is to be conducted according to the requirements of Section 935.3.06.B, of the Specifications.

2) Record the fiber cable test results for each on the Interconnect Cable Data Sheet and include it as project documentation.

c. If the conductors fail the continuity or isolation test, remove the installed cable, install new cable, and repeat the tests.

Table 647-5
Interconnect Cable Data Sheet

Conditions			
Project Number:			
Date:			
Weather:			
Temperature:			
Contractor:			
Location			
Controller Cabinet:			
City or County:			
Intersection Name(s)			
Route Number(s)			
Termini of Cable:			
Materials			
Type:			
Manufacturer:			
Number of Conductors:			
Splice Point:			
Total Length of Cable:			
Tests			
Conductor Tube Color Description		**Continuity**	**Attenaution**
1.			
2.			
3.			
4.			

5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
Shield		
Comments		
Inspector's Name and Title:		

N. Loop Detector Lead-in Cable

Use 3-pair shielded lead-in cable in compliance with Section 925 for Detector loop lead-in installed for loop detectors. Use a shielded lead-in cable connecting the loop to the detector hook-up panel in the controller cabinet, unless otherwise specified in the Plans.

- Splice the loop detector wire to a shielded loop detector lead-in cable in a pull box adjacent to the loop detector installation.
- Use continuous (no splices) shielded lead-in cable from the pull box or condulet to the cabinet input file terminal. Do not ground the shield in the loop lead-in cable at the cabinet.
- Connect each loop to an individual detector channel as specified in the Plans.
- Make weathertight and waterproof splices between lead-in and loop wire. Loop installation may be approved only after the detector system has been tested and demonstrated under traffic conditions to the Engineer's satisfaction, during the Operational Test Period.

O. Pedestrian Push Button Lead-in

Use 3-pair shielded lead-in cable compliant with Section 925 for pedestrian push buttons. Install one 3-pair shielded lead-in cable to each corner of the intersection, to operate either one or two push buttons. Do not ground the shield for the push button lead-in cable at the controller cabinet.

P. Messenger Cable, Stranded-Steel

Set messenger strands so that the height of the installed traffic signal heads conforms to the clearances on the Standard Detail Drawings. Lash cables to messenger cable or use cable ties spaced at 6 inch (150 mm) increments.

1. Drill wood poles to receive the eye bolts so that the span wire and eyebolt at each connection form a straight angle. Never pull or strain the messenger on the eye bolt to an angle of variance greater than ten degrees (10º).
2. Attach down guy wires to guy hooks. Never attach them directly to the eyebolt.
3. Ensure that messenger strand clearances conform with local utility company standards.
4. Make stranded messenger cable attachment points with the appropriate size strand vises or 3 bolt clamps. Stranded steel messenger cable is not paid for separately under this Specification.

NOTE: Never splice messenger cable between structures.

Q. Underground Cable for Signal Circuits

Underground cable for signal circuits includes cable, with conduit, as shown in the Plans. Install cable under existing pavement or surfaced shoulder, according to Subsection 680.3.05.

1. Cable in Conduit

Pull cable into conduits as follows:

a. Pull cables into conduits without electrical or mechanical damage. Pull cables by hand only. The use of trucks or other equipment is not permitted, unless approved by the Engineer. If mechanical pulling is approved, do not exceed the manufacturer's tension rating for the cable.

b. Pull cables with a cable grip that firmly holds the exterior covering of the cable.

c. Use powdered soapstone, talc, or other inert lubricants to place conductors in conduit according to manufacturer's recommendations.

d. Handle and install the conductors to prevent kinks, bends, or other distortion that may damage the conductor or outer covering.

e. Pull all cables in a single conduit at the same time. When pulling cables through hand holes, pole shafts, etc., use a pad of firm rubber or other material between the cable and the opening edges to prevent cable damage.

f. When installing cable in conduit with existing signal cable circuits, remove all existing cables and pull them back into the conduit with the new cables.

g. The distance between pull boxes in a run of conduit shall not be greater than 250 feet (75 m), unless otherwise shown in the Plans or approved by the Engineer, with the exception of fiber optic cable. The distance between pull boxes in a run of conduit for fiber optic cable shall not exceed 750 feet (225 m). Identification tape and or tone detection wire shall be used for fiber optic cable in conduit. All unused conduit shall have a continuous pull cable installed between pull boxes. All buried conduit shall be marked using sentinel marker posts identifying buried conduit, approved by the project engineer. See Section 682 for additional requirements.

2. Splices

Required signal conductor splicing shall be performed according to the National Electric Code; use materials compatible with the sheath and insulation of the cable.

Make splices at the first opportunity for items such as electrical communication boxes, pull boxes, controller cabinets, or pole bases unless otherwise shown in the Plans.

NOTE: Do not splice signal conductor cables for vehicle signal heads or pedestrian heads between the controller cabinet and the first signal or pedestrian signal head attachment.

Do not splice the pedestrian push button lead-in cable between the controller cabinet and the first pedestrian push button on each corner.

Do not splice fiber optic cable or copper cable between intersections unless otherwise approved by the Engineer. If approved, splice only in above ground enclosures or aerial splice boxes. Do not splice fiber optic or copper cable in pull boxes.

Make signal conductor line splices with copper-clad pressed sleeves or an approved equivalent. See "Pull Box Splices" in the miscellaneous construction details in the Plans.

a. Insulate required splices with plastic, pressure sensitive, all-weather 1.5 mil (0.038 mm)electrical tape

b. Apply the tape half-lap to a thickness 1.5 times thicker than the factory-applied insulation and sheath. Taper it off over the sheath neatly to approximately 3 inches (75 mm) from the conductor splice.

c. For cable splicing in junction boxes, use a heat-shrinkable, self-sealing splice instead of the above.

d. Pad the sharp points and edges of the connector an fill voids with extra wraps of plastic tape. Do not stretch the tape excessively or cause creeping.

e. Make the spliced joints watertight.

Note: Splice detector wires to shielded loop detector lead-in at pull boxes located immediately after the loop wire leaves the roadway. No splices will be permitted in shielded loop detector lead-in cable from this point to the controller cabinet.

R. Aerial Cable for Signal Circuits

Aerial cable for signal circuits consist of one or all of the following cables:

- Loop lead-in (sensor and detector)
- Signal wiring (controller)
- Interconnect cable (communications)

Support these cables on existing or newly installed signal or utility poles as detailed in Subsection 647.2.01.F.

S. Conduit and Fittings

Install conduit by type (rigid, HDPE, PVC) as shown in the Plans and the Standard Detail Drawings. Refer to the NEC, for conduit full percentages.

Separate signal conductors from vehicle detector and communications interconnect cables, except inside of poles. Separate the power cable to the controller cabinet from all other cables in its own 1in (25 mm) rigid conduit except inside poles. Ensure that conduit conforms to Section 682, Section 923 and Section 925 with the following addition:

- Use flexible conduit only where shown in the Details or as directed to do so in writing by the District Signal Engineer.

Use the conduit size specified in the Plans, unless otherwise directed by the Engineer. Obtain written approval from the Engineer prior to installing conduit other than the size specified in the Plans.

All 2 inch (50 mm) conduit elbows shall be “sweep” type. The minimum radius for the elbow is 18 inches (450 mm), unless otherwise approved by the Engineer.

NOTE: Do not use multi-cell conduit.

Install conduit and fittings as follows:

1. Ensure that exposed conduit on poles are rigid, galvanized metal conduit.
2. Ream the ends of metallic conduit after cutting the threads. Ream other conduit as necessary.
3. Cut the ends square, and butt them solidly in the joints to form a smooth raceway for cables.
4. Make conduit joints to form a watertight seal.
5. Coat metallic conduit threads with red- or white-lead pipe compound, thermoplastic or Teflon seal. Ensure that they are securely connected.
6. Make plastic conduit joints with materials recommended by the conduit manufacturer.
7. Install bushings in the conduit to protect the conductors. When conduit is installed for future use, properly thread and cap the ends of the metallic conduit runs.
    a. Plug the ends of nonmetallic conduit runs to prevent water or other foreign matter from entering the conduit system.
    b. Seal the exposed conduit ends with a permanently malleable material.
    c. Ensure that empty conduit installed for future wire or cable has a nylon pull string or cord inside that is impervious to moisture and rot and can withstand a load of 50 pounds (23 kg) without breaking. Secure this pull cord at each open end and at each pull box.
8. Ensure that conduit on pole exteriors are mounted with galvanized, two-hole straps or clamps. Place the clamps not more than 3 feet (1 m) from junction boxes, condulets, or weatherheads. Place it at 5 foot (1.5 m) intervals elsewhere.
    a. Fasten the clamps to wood poles with galvanized screws or lag bolts.
    b. Do not install conduit risers on concrete, steel, or mast arm poles unless approved by the Engineer.
9. Install a weatherhead at the end of exterior conduit runs on a pole or other structure to prevent moisture of other matter from entering the conduit.
10. After installation, ensure that the conduit or fitting placement has not warped or distorted any condulet, terminal, or control or junction box.

T. Underground Conduit

Underground conduit includes encased or direct burial conduit.

1. Install the conduit in a trench excavated to the dimensions and lines specified in the Plans.
   a. Provide at least 18 inches (450 mm) finished cover, unless otherwise specified.
   b. Under pavement, excavate at least 36 inches (900 mm) below the bottom of the pavement.
2. Before excavation, determine the location of electrical lines, drainage, or utility facilities in the area to prevent damage.
   a. Place the conduit where it will not conflict with proposed guardrail, sign posts, etc.
   b. Change locations of conduit runs, pull boxes, etc., if obstructions are encountered during excavation. Changes are subject to the Engineer's approval.
   c. Where possible, provide at least 12 inches (300 mm) between the finished lines of the conduit runs and utility facilities such as gas lines, water mains, and other underground facilities not associated with the electrical system.
3. When the conduit run is adjacent to concrete walls, piers, footings, etc., maintain at least 4 inches (100 mm) of undisturbed earth or firmly compacted soil between the conduit and the adjacent concrete or, when the conduit is encased, between the encasement and the adjacent concrete.

   Unless specified in the Plans, do not excavate trenches in existing pavement or surfaced shoulders to install conduit.
4. When placing conduit under an existing pavement, install the conduit by jacking and boring, or other approved means. See Section 615 for jacking and boring pipe specifications. Obtain the Engineer's approval prior to installing conduit by means of boring-method.
5. When the Plans allow trench excavation through an existing pavement or surfaced shoulder, restore the pavement shoulder surface, base, and subgrade according to the Specification.
6. Cut trenches for conduit on a slight grade (0.25 percent minimum) for drainage, unless otherwise specified. When the grade can not be maintained all one way, grade the duct lines from the center, both directions, down to the ends.
7. Avoid moisture pockets or traps. Excavate vertical trench walls.
8. Tamp the bottom of the trench to produce a firm foundation for the conduit.
9. When necessary to prevent damage, sheet and brace the trenches and support pipe and other structures exposed in the trenches.
10. Conduit installed for fiber optic cable installation shall have detectable tone wire installed for detection as specified and detailed in the Project Standard Detail Sheets.

U. Encased Conduit

Place encased conduit in the locations shown in the Plans unless otherwise specified. Construct as follows:

1. Construct the encasement using Class A concrete that meets requirements in Section 500 .
2. Extend the encasement or conduit under roadway pavements or surfaces 6 inches (150 mm) past the outer edge of paved shoulders or sidewalks, or past curbs if no shoulder or sidewalk is present.
3. Extend the conduit at least 3 inches (75 mm) beyond the encasement.
4. Place 3 inches (75 mm) of concrete in the bottom of the trench and place the conduit on top of it.
5. Temporarily plug the ends of the conduit to prevent concrete or foreign materials from entering.
6. Cover the conduit with at least 3 inches (75 mm) of concrete.

   Wait to encase the conduit with concrete until the Engineer inspects and approves the conduit.
7. Cure the concrete encasement according to Subsection 500.3.05.Z, except curing may be reduced to twenty-four (24) hours. Use a precast encasement if approved by the Engineer.

V. Direct Burial Conduit

Install direct burial conduit as shown in the Plans. Use rigid galvanized steel, polyvinyl chloride, or polyethylene conduit. Excavate at least 36 inches (900 mm) below the top of the finished ground or 36 inches (900 mm) below the bottom of the pavement.

When rock is in the bottom of the trench, install the conduit on a bed of compacted, fine-grain soil at least 4 inches (100 mm) thick.

Conduit installed for fiber optic cable installation shall have detectable tone wire installed for detection as specified in Section 935 and detailed in Standard Detail Sheets.

W. Backfilling

Immediately backfill the conduit after the Engineer's inspection and approval, except for encased conduit, which must complete a twenty-four (24) hour cure period.

1. Backfill with approved material free of rocks or other foreign matter.
2. Backfill in layers no greater than 6 inches (150 mm) loose depth, up to the original ground level.
3 Compact each layer to one hundred percent (100%) of the maximum dry density as determined by GDT 7, GDT 24a, or GDT 24b, GDT 67.

X. Conduit on Structures

Install conduits, condulets, hangers, expansion fittings, and accessories on structures according to the Plans and, unless otherwise specified, the following:

1. Run the conduit parallel to beams, trusses, supports, pier caps, etc.
2. Install horizontal runs on a slight grade without forming low spots so they may drain properly.
3. Run conduits with smooth, easy bends. Hold the conduit ends in boxes with locknuts and bushings to protect the conductors.
4. When not specified in the Plans or Special Provisions, submit the type and method for attachment to structures to the Engineer for submission to the District Traffic Operations Engineer for approval.

All exposed conduit shall be galvanized, rigid condit unless otherwise specified.

Y. Testing Conduit

After installing the conduit, test it in the presence of the Engineer.

1. Test conduit using a mandrel 2 inches (50 mm) long and 0.25 inches (6 mm) smaller in diameter than the conduit.
2. Repair conduit to the Engineer's satisfaction if the mandrel can not pass through. If repairs are ineffective, remove and replace the conduit at no additional cost to the Department.
3. Thoroughly clean the conduits. When installing conduit but wiring at a later date:
   a. Perform the mandrel test.
   b. Ream the duct opening to remove burrs or foreign matter.
   c. Thoroughly clean the duct.
   d. Provide and install a weatherproof cap at each open end.
   e. All installed conduit not used or containing cable shall have a continuous nylon pull string installed between junction boxes.

Z. Grounding

Ground the cabinets, controller, poles, pull boxes, and conduit to reduce extraneous voltage to protect personnel or equipment. See Section 639 and Section 924 for grounding requirements.

NOTE: Grounding shall meet the minimum requirements of the NEC.

Provide permanent and continuous grounding circuits with a current-carrying capacity high enough and an impedance low enough to limit the potential above the ground to a safe level.

Perform grounding as follows:

1. Bond the grounding circuits to nonferrous metal driven electrodes. Use electrodes that are at least 0.625 inches (15 mm) in diameter, 8 feet (2.4 m) long, and are driven straight into the ground.
2. Use the shortest possible ground lead that leads directly to a grounding source.
3. Ensure that the maximum resistance between the ground electrode and the cabinet ground buss or other point in the grounding system is no greater than five (5) ohms.

4. Connect the ground electrodes and the ground wire with an exothermic weld.
5. Connect neutral conductors to the cabinet buss-bar and ground them at each terminal point.
6. Ground the cabinet with a No. 6 AWG solid copper wire between the buss-bar to the ground electrode. Bends shall not exceed 4 inch (100 mm) radius bends.
7. Permanently ground the poles by bonding the No. 6 AWG solid copper wire to a separate ground rod.
8. Ground pole-mounted accessories to the pole.
9. Underground metallic conduit or down guys are not acceptable ground electrodes. Do not use Snap-On connections.

AA. Ground Rod

Install ground rods in or adjacent to the traffic signal pole bases, controller cabinet bases, and pull boxes to shield and protect the grounding system.

When ground rods are not protected, bury them at least 2 inches (50 mm) below the finished ground level. See Section 924 for information pertaining to ground rod composition.

1. Use 0.625 inch (15 mm) diameter ground rods at least 8 feet (2.4 m) long. Use copper clad ground rods.
2. Drive single ground rods vertically until the top of the rod is no more than 2 inches (50 mm) above the finished ground.
3. Attach a length of No. 6 AWG solid copper wire to the top of the ground rod using an exothermic weld.
4. When controller cabinets are mounted on timber poles, ground them with No. 6 AWG solid copper wire attached to the ground rod. Run the wire inside a minimum 0.75 inch (19 mm) rigid conduit attached to the timber pole and to the chassis ground in the controller cabinet.
5. When ground penetration is not obtained:
   a. Place a horizontal ground rod system of three (3) or more parallel ground rods at least 6 feet (1.8 m) center-to-center and no more than 2 inches (50 mm) above the finished ground.
   b. Ensure that this grounding system produces a resistance of 5 ohms or less.
   c. Join the ground rods and connect them to the grounding nut of the traffic signal base with No. 6 AWG solid copper wire.
6. Install a ground wire on wood poles.
   a. Use at least No. 6 AWG solid copper wire bonded to the grounding electrode and extending upward to a point perpendicular to the uppermost span.
   b. Place wire staples no greater than 2 feet (0.6 m) apart to secure the ground wire to the pole.
   c. Connect the span wire to the pole ground using split bolt connectors. Use the pole ground for a pole mount cabinet.
7. Ensure that grounding for signal strain poles conforms to the grounding assembly typical erection detail sheet in the Plans.
8. Permanently ground cabinet and cabinet conduits to a multi-terminal main ground buss.
   a. Use a No. 6 AWG solid copper wire bonded between the buss and grounding electrode.
   b. Connect the power company neutral, conduit ground, and grounds of equipment housed in the cabinet to the buss-bar.
   c. Do not ground to a permanent water system instead of the driven ground rod. Ensure that grounding devices conform to the requirements of the NEC and NEMA.

BB. Signal Poles

See Section 501 for signal pole materials certification and Subsection 925.2.27 and Subsection 925.2.28 for traffic signal equipment. Refer to the Plans for pole locations.

Where necessary, adjust pole location to avoid utility conflicts. Provide minimum clearance distances between the signal pole and the roadway as specified in the Plans and on the Standard Detail Drawings.

1. Strain Poles

   Provide signal strain poles that conform to Section 639.

   Provide caissons or foundations that conform to the "Construction Detail for Strain Pole and Mast Arm Pole Foundations" in the Plans.

Determine the required foundation size based on the manufacturer's specified "bending moment at yield" for the each pole.

Provide strain poles with manufacturer-installed holes for pedestrian heads and push buttons. Seal unused holes with water tight plugs and/or rubber gaskets.

Rake the poles during installation to provide a pole that is plumb once the load is applied.

2. Metal Poles

Install metal poles as follows:

a. Ensure that anchor bolts, reinforcing bars, and ground rods conform to Section 639 and Section 852 and are placed in the excavation.

b. Support the anchor bolts with a template to provide the proper bolt circle for the pedestal or pole to be installed.

c. Wire the reinforcing bars together or to the anchor bolts.

d. Wire the conduits in the base to the reinforcing bars for support. Ensure that they are accessible above and beyond the foundation.

e. Before pouring the foundation concrete, determine that the anchor bolt orientation is correct so that the tensile load is divided between at least two anchor bolts. Pour and vibrate the concrete with the Engineer present.

f. Ensure that the pole foundations and pedestals with the anchor-type base conform to Section 500 and Section 639. Do not install or locate poles without the Engineer's approval.

The Engineer may take a concrete test cylinder as it is being poured.

1) Cure the cylinder and submit it for testing to the Office of Materials and Research.

2) If the concrete foundation fails to meet the requirements of the Specifications and is not accepted, replace the foundation upon notification of failure.

g. After installing poles and applying the load of the signal span, inspect them for plumb and for the proper horizontal position of the mast arm, when applicable.

Correct deficiencies by using the leveling nuts on the anchor bolts or be adjusting the mast arm.

h. The Engineer will examine the pedestals and poles for damaged paint or galvanizing. Restore the finish coating where necessary.

i. After the Engineer approves the pole installation, finish the area between the pole base and the top of the foundation with grounding material.

If the finish or galvanized steel materials is scratched, chipped, or damaged, the material will be rejected. The finish may be replaces as specified under Section 645, with the Engineer's approval.

NOTE: Never add holes or openings to the metal pole or mast arm without approval from the Office of Bridge and Structural Design.

j. For poles or arms that need galvanization, thoroughly clean the steel poles and arms and touch up non-galvanized parts with i-d red or original-type primer.

Apply the remaining coats according to the System V (Heavy Exposure) Section 535, unless otherwise indicated in the Plans.

k. Install a service bracket on one pole at each intersection to attach power service wire as specified in the Plan details. Install a disconnect box on one pole at each intersection to attach power service where the power service is provided overhead.

l. Install poles to which controller cabinets are attached with mounting plates, bolts, nipples, and at least two, 2 inch (50 mm) threaded openings at the top and bottom of the pole.

m. Attach the fittings to the poles as specified by the manufacturer in the Plans or as the Engineer directs. The fittings may include:

- Cast aluminum cap
- Weatherhead with chase nipples and couplings
- Galvanized elbow with bushing installed by cutting the pole and welding in place around the entire circumference

- Copper-clad ground rod that is 0.5 inches (12 mm) or 0.625 inches (15 mm) diameter by 8 feet (2.4 m) long attached to the pole by a tap screw or weld fitting of No. 6 AWG semi-hard drawn solid copper wire and a standard copper clad ground clamp

n. Use a strandvise to attach spanwire to a clevis device or another strandvise. The Office of Materials and Research will inspect the anchor bolts. If approved, the Office of Materials and Research will display the inspector's hammer stamp mark on the top of the bolt.

3. Concrete Strain Poles

   a. Ensure that concrete strain poles meet the requirements of Section 639. Use concrete poles that have threaded couplings to accept weatherheads, pedestrian head mounting hardware, or utility service points shown in the construction details.

   b. Install concrete strain poles so that the angle of variance between the eye bolt on the pole and the span wire is less than ten degrees (10º).

   c. Verify pole hole orientations for pedestrian heads, pedestrian push button stations, luminaries arms, etc., with the Engineer prior to proceeding with traffic signal installation.

4. Mast Arms

   Install mast arms that can accommodate traffic signal mounting hardware and that adhere to the manufacturer's recommended procedures and Section 925 and Section 915. Do not add holes.

   a. Seal the openings in the mast arms to prevent pests from entering.

   b. Align the mast arm to allow the signal heads to hang plumb at the correct height without using extensions.

> **NOTE: The contractor shall submit a "Mast Arm Pole Chart" to the Engineer for review and approval as described in Subsection 647.1.03.E of this Specification.**

   Verify pole hole orientations for pedestrian heads, pedestrian push button stations, luminaries arms, etc., with the Engineer prior to proceeding with traffic signal installation.

5. Aluminum Pedestrian Pedestals Poles

   Install aluminum pedestal poles, which adhere to Section 850 on breakaway aluminum bases that meet the requirements for breakaway construction. See Section 925 for breakaway base requirements. See the Standard Detail Drawings for Pole and Foundation Details.

   a. Secure at least four anchor bolts in a concrete foundation as shown in the construction detail.

   b. Contain the wiring inside the pole. Do not allow conduit outside the pole except to wire the pedestrian push button.

   c. Position the pedestal pole plumb and high enough to clear the pedestrian's head as shown in the Plans - usually 10 feet (3 m) from the ground line.

   d. Instruct the supplier to furnish a mill certificate that shows the alloy and physical properties of the steel used in fabricating the anchor bolts. The bolts may be subjected to a tensile and shear strength test.

6. Timber Poles

   Timber poles do not require the use of concrete for filling the cavity around the pole base.

   Use timber poles that meet the requirements of Section 861. Use Class II for all signal support poles. Use Class IV for aerial loop lead-in or communication cable if approved by the Engineer. Poles shall be inspected and include AWW stamp.

   Drill wood poles to receive the eye bolt so that the angle of variance between the eye bolt and span wire at each connection is less than ten degrees (10º). See the Standard Detail Drawings for additional information.

   Guy timber poles use single or double guy wires as shown in the Plans and as directed by the Engineer. Guy helper cables with separate guy wires when helper signal span cables are indicated in the Plans.

> **NOTE: Never attach down guy wires to eye bolts. Attach down guy wires to guy hook brackets only and install insulating rods on all down guy installations as detailed on Standard Detail Sheets .**

CC. Pull Boxes

Ensure that pull boxes conform to Subsection 680.3.05.B and the Standard Detail Drawings or Plan Detail Sheet. Install pull boxes as required by the Specifications and Plans.

1. Include provisions for drains in pull box excavations as specified.
2. Do not place the aggregate for the drain until the Engineer approves the excavation.
3. Set the precast pull boxes in place, level, and install conduits at required (conduit shall penetrate at least 3 inches (75 mm) into the pull boxes). Adjust the location of the pull box if necessary to avoid obstacles.
    - Do not locate pull boxes on the curb side of the signal pole in the intersection radius return
    - Install pull boxes so that the long dimension is parallel to the adjacent roadway
    - Install the pull box at a location that is level with the surrounding ground or pavement. Do not place a pull box in a ditch or depression. Unless otherwise shown in the Plans, when installed either in a sidewalk or in the ground, the top of the pull box shall be level with the sidewalk or ground surface
4. Obtain the Engineer's approval, and begin backfilling and installing the frame and cover. Ground metal lids or covers.

DD. Span Wire and Span Wire Assemblies

Use span wire to support signal heads, cable, and other hardware only. Use messenger cable to support the aerial cable plant. Install span wire and messenger wire where specified in the Plans and in accordance with the Standard Detail Drawings. See Section 925 for information on span wire and messenger cable.

1. Install signal span wire not to exceed the sag specified in the Standard Detail Drawings.
2. Use helper cables where specified in the plans and on the Standard Detail Drawings.
3. See Subsection 639.3.05.F except, when erecting cable on a timber pole, in which case locate the attachment point a minimum of 18 inches (450 mm) from the top of the pole, to determine the required attachment point.
4. For construction of a box or modified box span, use either bullrings or interlocking strandvises. Be consistent throughout the intersection in use of bull rings or strandvises.
5. Install 8 inch (200 mm) diameter drip loop wrapped two times at the cable entrance to signal heads. Arrange cable so that it enters the structure from the bottom of the drip loop. Use a 24 inch (600 mm) diameter drip loop where cables enter a weatherhead and use a 24 inch (600 mm) sag at corners of a span.
6. Lash cables to span wire or use cable ties spaced at 6 inch (150 mm) increments.
7. Ground all span wire and down guy assemblies as shown on Standard Detail Sheets .

EE. Traffic Signal Heads

Place traffic signal heads according to the signal design and Plan detail drawings. Deviation from the Plans must be according to the MUTCD, current edition and at the Engineer's approval.

1. Install traffic signal heads at least 17 feet (5.1 m), but no greater than 19 feet (5.7 m) over the roadway.
2. Use extension mounting hardware to give signal heads on the same approach the same vertical clearance.
    a. If extensions are over 2.5 feet (0.75 m), tether them at the bottom of the signal head using 0.25 inch (6 mm) span wire and a breakaway tether plate or fitting.
    b. Measure the clearance from the pavement to the lowest part of the assembly, including brackets and back plates.
    c. Mount traffic signals on the side of wood or metallic poles with a clearance of at least 12 feet (3.6 m) above the sidewalk or pavement grade of the center of the highway, whichever grade is higher.
3. Connect the signal cable to the wire in each signal head to provide the correct signal indication when the cables are connected to the controller cabinet back panes. Do not splice cables except in hand holes at the bases of poles or overhead in junction boxes.
4. Install optically programmable (OP) signal heads as shown in the Plans and standard detail sheet and as directed by the manufacturer.
5. Mount OP heads securely or tether them to limit movement. Mask the lamp for directing visibility under the Engineer's supervision.
6. Tether signal heads that have tunnel visors longer than 12 inches (300 mm), at the discretion of the Engineer.

7. Attach signal heads to mast arms using rigid mounting brackets. See Section 925 for equipment information. Adjust signal heads on mast arms so that all red indications on the same mast arm are at the same elevation.
8. Install lane control heads for reversible lane systems and ramp metering heads as shown in the Plans and the Standard Detail Drawings. Center each signal over the lane or lanes under signal control.

   Leave a vertical clearance for blank-out signs as shown on the Standard Detail Drawings. Use a spirit level to ensure that the bottom edge of each sign is horizontal.

FF. Pedestrian Signal Heads

Install pedestrian signal heads on wood, concrete, steel strain poles, wood or steel auxiliary poles, or metal pedestal poles. Do not mix pole mount methods at the same intersection installation.

Install the pedestrian signal heads as shown on the Standard Detail Drawings and the intersection plan sheets and drawings.

Leave a vertical clearance from the bottom of the head to the ground level of least 10 feet (3 m) unless specified by the Engineer.

1. Pedestal Mounts

   Make pedestal mounts with a lower supporting assembly consisting of:

   - A 4 inch (100 mm) slip-fitter bracket
   - Hollow aluminum arms with a minimum inside cross-sectional area equal to a 1.5 inch (38 mm) pipe

   Use serrated locking devices that firmly hold the signal heads in the required alignment.
2. Pole Mounts (Side of Pole)

   For Metal poles, use side hinge "clamshell" mounting hardware or hardware as described in Wood Pole or Metal Pole alternate.

   a. Side Hinge "Clamshell"

      See the Standard Detail Drawings.

   b. Wood Pole or Metal Pole alternate:

      Make pole mounts with the upper and lower assembly consisting of:

      - A post arm with a minimum cross-sectional area equal to a 1.5 inch (38 mm) pipe
      - A post hub plate that matches the outside pole contour
      - Secure the hubs to metal or concrete poles using 0.75 inch (19 mm) wide stainless steel bands. Secure the hubs to wood poles using lag bolts

Space the junctions so that each pedestrian signal head can be directed toward approaching traffic as needed.

Use serrated locking devices that hold the pedestrian signal heads in alignment.

GG. Blank-out Signs

Install blank-out signs as follows:

1. Securely fasten the sings to a stationary structure or to a messenger strand support system.
2. Center each sign over the lane or lanes under sign control, where applicable.
3. Leave a vertical clearance for blank-out signs as shown in the Plans or in Subsection 647.3.05.EE, "Traffic Signal Heads." Use a spirit level to ensure that the bottom edge of each sign is horizontal.
4. Use terminal strips to connect each sign electrically to the external control box or cabinet.

647.3.06 Quality Acceptance

A. Testing Loop Detector Installation

Test each loop after installing the conductors in the slots cut in the pavement and before sealing.

- Perform a test where the loop wire is spliced to the shielded lead-in wire and where the shielded lead-in wire enters the controller cabinet
- If there are no splice points, such as in direct entry to the controller cabinet, only perform the tests at the controller

- Record the test results on the Loop Installation Data Sheet in Table 647-8, as shown in this section. Make copies of the data sheet as needed
- Include the data sheets in the records, and place a copy in the controller cabinet

Conduct the following five (5) tests to evaluate each loop installation for acceptance before sealing the loop in the pavement:

1. Induced AC Voltage Test

   Read 0.05 V AC or less on a digital voltmeter or no deflection on the pointer of an analog meter.

2. Inductance

   Inductance (I) is measured in microhenries (mH), and the total inductance is equal to the inductance of loop plus inductance of the loop lead-in.

   Acceptable inductance is within 10 percent (10%) of the calculated value for a single loop with the design criteria listed in Table 647-6 and Table 647-7:

Table 647-6
Standard (Bi-Pole) Loops

6 ft x 6 ft (3 turns) [1.8 m x 1.8 m (3 turns)]	I = 76 mH per 100 feet of loop lead-in cable I = 76 mH per 30 m of loop lead-in cable
6 ft x 18 ft (2 turns) [1.8 m x 5.4 m (2 turns)]	I = 80 mH per 100 feet of loop lead-in cable I = 80 mH per 30 m of loop lead-in cable
6 ft x 30 ft (2 turns) [1.8 m x 9 m (2 turns)]	I = 126 mH per 100 feet of loop lead-in cable I = 126 mH per 30 m of loop lead-in cable
6 ft x 40 ft (2 turns) [1.8 m x 12 m (2 turns)]	I = 165 mH per 100 feet of loop lead-in cable I = 165 mH per 30 m of loop lead-in cable
6 ft x 50 ft (2 turns) [1.8 m x 15 m (2 turns)]	I = 205 mH per 100 feet of loop lead-in cable I = 205 mH per 30 m of loop lead-in cable
6 ft x 70 ft (2 turns) [1.8 m x 21 m (2 turns)]	I = 285 mH per 100 feet of loop lead-in cable I = 285 mH per 30 m of loop lead-in cable

Table 647-7
Quadrupole (QP) Loops

6 ft x 30 ft (2, 4, 2 turns) [1.8 m x 9 m (2, 4, 2, turns)]	I = 269 mH + 23 mH per 100 feet of loop lead-in cable I = 269 mH + 23 mH per 30 m of loop lead-in cable
6 ft x 40 ft (2, 4, 2 turns) [1.8 m x 12 m (2, 4, 2 turns)]	I = 349 mH + 23 mH per 100 feet of loop lead-in cable I = 349 mH + 23 mH per 30 m of loop lead-in cable
6 ft x 50 ft (2, 4, 4 turns) [1.8 m x 15 m (2, 4, 4, turns)]	I = 429 mH + 23 mH per 100 feet of loop lead-in cable I = 429 mH + 23 mH per 30 m of loop lead-in cable
6 ft x 60 ft (2, 4, 2 turns) [1.8 m x 18 m (2, 4, 2, turns)]	I = 509 mH + 23 mH per 100 feet of loop lead-in cable I = 509 mH + 23 mH per 30 m of loop lead-in cable
6 ft x 70 ft (2, 4, 2 turns) [1.8 m x 21 m (2, 4, 2, turns)]	I = 589 mH + 23 mH per 100 feet of loop lead-in cable I = 589 mH + 23 mH per 30 m of loop lead-in cable

3. Leakage Resistance to Ground

   The resistance to ground shall be 1 Mμ or more.

4. Loop Resistance

   The resistance reading on an ohmmeter is approximately within ten percent (10%) of the calculated value:

   - Acceptable Resistance @ (dc @ 68 ºF [20 ºC]):ohms(μ)

- No. 14 AWG wire: R = 13.32μ/mile (or) R = 2.523 x 10^{-3}μ/ft. Approximately 2.52 ohms per 1,000 feet of No. 14 AWG wire)[R = 8.3μ/km (or) R=8.3 x 10^{-3}μ/m]
- No. 12 AWG wire: R = 5.2μ/mile (or) R = 9.85 x 10^{-4}μ/ft. Approximately 0.98 ohms per 1,000 feet of No. 12 AWG wire [R = 3.24μ/km (or) R = 3.24 x 10^{-3}μ/m]

5. Loop Q

   Q at 50 kHz is greater than 5.

Report to the Engineer an out-of-range reading on any of the above tests. If a test is found unacceptable, remove the loop, install new wire, and repeat the test procedure.

Include in the test results:

- Type and model number of the equipment used (must be ohmmeter having a high resistance scale of R x 10 KW or greater)
- The last calibration date of the equipment and the scale used

Check the loop using an impedance tester to determine the natural operating frequency and impedance.

Ensure that the completed units detect all motor vehicles. If the loop detection system does not meet the above test requirements, payment will not be made for work on the signal installation until corrections are completed.

Table 647-8
Loop Installation Data Sheet

Conditions	
Project Number:	
Date:	
Contractor:	
Weather:	
Temperature:	
Pavement Condition - Wet ( ) or Dry ( )	
Location	
City or County:	Phase:
Intersection Name or Number:	Function:
Route Number(s) or Name (s):	Lane Location:
Installation or Plan Sheet Number:	No. of Turns:
Size and Type of Loop:	Downstream/Upstream: Down ( ) Up ( )
Distance from Stop Bar:	Distance E.O.P/Curb to Lead-in:
Distance Lead-in Cable:	
Material	
Loop Wire Color/Insulation Type/Gauge:	
Loop Lead-In Wire Color/Insulation Type/Gauge:	
Splice Point:	
Conduit Length from Curb/E.O.P. to Splice Point:	
Conduit Length from Splice Point to Cabinet:	
Sealant Type and Part Number:	
Sealant Manufacturer and Lot No.:	

Interconnect Wire Type and Length:	
Loop Tests	
1. Induced Voltage _____ 2. Inductance _____ microhenries 3. Leakage Resistance to Ground _____ megohoms 4. Loop Resistance _____ ohms 5. Loop Q (Quality) _____ Q	
Comments	
Inspector's Name, and Title	

B. Field Tests

In addition to performing tests during installation and before turning on the equipment, perform the following tests on traffic signal circuits in the presence of the Engineer:

- Test each circuit for continuity
- Test each circuit for grounds

If a test fails, repair the circuit immediately. New signals shall operate in the flash mode for three (3) days prior to beginning stop-and-go operation unless otherwise directed by the Engineer.

C. Operational Tests

After the equipment is installed and the system checkout is complete:

1. The Engineer will notify the District Traffic Operations Engineer in writing to request final inspection.
2. The District Signal Technicians will conduct an in-depth inspection and will give the Engineer a written punch list of items that the Contractor needs to correct within three weekdays of the notification.
3. When defects are resolved, the District Traffic Operations Engineer will begin an operational test period to demonstrate that every part of the system functions as specified.
   a. The operational test for the traffic signal system shall be at least thirty (30) days of continuous, satisfactory operation.
   b. If a component or system fails or shows unsatisfactory performance, the condition must be corrected and the test repeated until thirty (30) days of continuous satisfactory operation is obtained.
   c. The District Traffic Operations Engineer will send the Engineer and Construction Office a letter showing the start, termination, suspension, or successful completion of the operational test period.
4. The District Traffic Operations Engineer may recommend payment only after the successful completion of the test period.
5. The Contractor shall obtain written acceptance of the signal installation from the District Traffic Operations Engineer before Final Acceptance.

Costs incurred during operational tests, including power consumption, shall be at the Contractor's expense and included in the price bid for Contract Items.

647.3.07 Contractor Warranty and Maintenance

A. Traffic Signal Equipment Maintenance

Perform an inspection with the Engineer to determine the operational status of existing field equipment and finalize materials and equipment is to be removed due to the project.

Prepare written directions identifying what equipment was operational and non-operational and responsibility for repair.

Functional responsibility for new traffic signal equipment installed will become the responsibility of the contractor until successful completion of a 30 day Acceptance Test Period.

Contractor responsibility for operation and maintenance for newly installed signal material at the intersection begins from the first day of construction activity at the intersection, including modification of existing equipment due to construction activity, until Final Acceptance of the traffic signal.

Measure and document existing vertical signal head clearance during the inspection. Maintain existing vertical clearances until Final Acceptance.

Failure to measure and document vertical clearances as part of the inspection will require that all signals be maintained with a vertical clearance of 17 feet (5.1 m) until Final Acceptance. Maintain newly installed signals continuously as detailed in following sections, until Final Acceptance.

Provide a telephone number where the Worksite Traffic Control Supervisor (WTCS) responsible representative of the contractor can be reached twenty four (24) hours a day seven (7) days a week in the event of an emergency.

If a signal is not functioning properly:

1. Non-Emergency

   Commence work on this signal within one (1) day of the written notice from the Engineer requesting per calendar day charged against monies due or that may become due until the maintenance work is started.

   Liquidated damages are in addition to those specified in Subsection 108.08, "Failure or Delay in Completing Work on Time," for delay or failure in completing the Work within the specified time and to the satisfaction of the Engineer.

   The contractor shall be responsible for all materials and equipment necessary to correct signal malfunction or repair.

2. Emergency

   If the District Traffic Operations Engineer determines that the signal malfunction or failure is an operational hazard, the contractor is to take corrective action within three (3) hours of notification.

   Failure to respond within three (3) hours will result in a non-refundable deduction of money of $1,000.00 with an additional charge of $500.00 per hour after the first three (3) hours until a work crew arrives on site and begins corrective action.

   In addition, the cost of labor and material will be charged if the Department takes corrective action using its own forces or local municipality forces.

   Total charges will not exceed $5,000.00 (per emergency call) in addition to the material cost and labor incurred to make repairs by the Department or local municipality forces.

   The Department will not be held responsible or liable for any alleged damage to the signal or as a result of the signal malfunction due to problems that may occur after Department or local municipality forces make emergency repairs.

   The contractor shall be responsible for all materials and equipment necessary to correct signal malfunction or repair.

   In the event of failure to replace or repair to original condition any equipment or material within seven (7) calendar days from the Engineer's notice, the Engineer may have the work done by others and charge the cost of money due from the contract work.

   Final Acceptance will not be given until payment for such work is received.

B. Warranties

Provide manufacturer's warranties or guarantees on electrical, electronic, or mechanical equipment furnished, except state-supplied equipment.

Ensure that warranties and/or guarantees are consistent with those provided as customary trade and industry standard practices; or as otherwise specified in the Plans, Standard Specifications, or Special Provisions.

Upon Final Acceptance, transfer the manufacturer and Contractor warranties or guarantees to the Engineer. Ensure that warranties are continuous and state that they are subject to transfer.

Acceptance or approval of the Work does not waiver warranties or guarantees where required by the Specifications. Final Acceptance will not be granted until all warranties and guarantees are received.

C. Guaranties

Repair and/or replace all equipment and material supplied under these Contract Documents which has been determined by the Engineer to not meet Specifications.

The Engineer reserves the sole right to determine suitability or unsuitability of the supplied equipment and material. Bear the total cost of delivery and transportation related to the repair and replacement of equipment and material throughout the duration of the Contract unless otherwise approved by the Engineer.

Transfer to the Engineer any warranties and guaranties remaining on all items after Final Acceptance. Perform transfer at 12:01 AM of the day following Final Acceptance.

647.4 Measurement

Traffic signal items complete, in place, and accepted of the kind, size, and type specified are measured as follows:

A. Traffic Signal Installation

Signal installation will be paid for by lump sum, including furnishing labor, materials, tools, equipment, and incidentals required to compete the work unless otherwise specified in this Subsection.

B. Communications Wire, Fiber Optic Cable

The number of feet (meters) of communications cable, wire or fiber optic cable, is the actual number of linear feet (meters) of the size installed and accepted. Communications cable shall be paid for under Section 935.

C. Strain Poles, Traffic Signs

Highway signs are measured and paid for under Section 636. Strain poles are measured and paid for under Section 639.

D. Miscellaneous

Miscellaneous items will be measured as specified in the pay item.

No measurement will be made for individual items unless a pay item is included in the plans for the specific item.

647.4.01Limits

General Provisions 101 through 150.

647.5 Payment

The lump price bid for Traffic Signal Installation covers all Items of work in this Specification including furnishing labor, materials, tools, equipment, and incidentals required to complete the work.

Costs for installation, operation, maintenance, and removal of the traffic signal equipment are included under this Item.

Include payment for removal; disposal of existing pavement, shoulder surface, base and sub-grade; and restoration to original condition in the Contract Price for the items to which they pertain. They will not be paid for separately.

Furnishing, installing, and removing sheeting, bracing, and supports will not be paid for separately, but is included in the Contract Prices for other items.

No additional payment will be made for testing and storing State-supplied or contractor-furnished traffic signal equipment.

No payment will be made for individual items unless a pay item is included in the plans for the specific item.

Payment will be made under:

Item No. 647-Traffic signal installation no-	Per lump sum

Payment for various elements of traffic signals will be as shown on the plans.

A. Partial Payment

The Contractor may initiate a partial payment process for the lump sum traffic signal Items by submitting a written request to the Engineer. If the Engineer approves this request, payment will be made as follows:

Underground (loops, pull boxes, and conduits)	20%
Overhead (span, heads, poles, push buttons)	30%

Cabinet, contents, and base	30%
Successful completion of operational test	20%

B. Additional Items

Payment Items related to Section 647 are described in the following sections:

Strain Poles	Section 639
Highway Lighting	Section 680
Lighting Standards and Luminaries	Section 681
Electrical Wire, Cable, and Conduit*	Section 682
Grassing	Section 700
Timber Poles	Section 639 and Subsection 861.2.02
Sign Blanks	Section 912
Reflectorization Materials	Section 913
Traffic Signal Equipment	Section 925
* Payment for conduit installation shall be as described in Section 682 unless conduit installation is performed as part of a traffic signal installation, in which case measurement and payment is a part of the complete traffic signal installation. Payment is Lump Sum, unless listed as a separate pay item.	

647.5.01Adjustments

General Provisions 101 through 150.

Section 937—Detection Systems

937.1 General Description

This work includes the procurement and installation of a detection system as shown in the plans. Ensure the detection system is capable of traffic data collection meeting the general and specific requirements of this specification. Ensure the firmware and software furnished and installed as part of an Intelligent Transportation System (ITS) or traffic signal project are the most current and approved releases or versions, unless otherwise requested by the Department. Provide all equipment, materials, and work in accordance with all manufacturers' recommendations. All equipment, cables, and hardware must be part of an engineered system that is designed by the manufacturer to fully interoperate with all other system components.

A. Video Detection System (VDS)

Provide an IP/Ethernet video detection system which provides presence detection, vehicle counts, roadway occupancy, vehicle classification, and speed information to the Department's central ITS management software. The video detection system shall be able to provide a minimum of three programmable vehicle classifications. The video detection system shall be able to detect in both high speed freeway and intersection presence modes. The video detection system includes, but is not limited to, camera image sensor(s), including the detector housing, mounting hardware, an application programming interface (API) and protocol for system communications, a video detection system processor, central and local system management software, cabling between the detector and the cabinet, surge suppressors, terminations, output expansion modules which mount in the traffic signal controller cabinet input files, vertical conduit, weather heads and related equipment. The video detection system processors shall communicate through an Ethernet interface and TCP/IP (transmission control protocol/Internet protocol) connection to multiple Transportation Management Center (TMC) computers. The detection video shall be encoded within the VDS processor to MPEG4 digital video format and be able to be viewed at the TMC without the use of external encoders.

B. Microwave Vehicle Detection System (MVDS) – ITS Applications

Provide a high resolution microwave radar detection system which provides presence detection, vehicle counts, classification, occupancy, and speed information to the Department's central ITS management software. The microwave radar detection system includes, but is not limited to, microwave/ radar detectors, including detector housing, mounting hardware, an application programming interface (API) and protocol for system communications, system management software, cabling between the microwave detector(s) and the cabinet, surge suppressors, terminations, and related equipment. The high resolution Microwave Vehicle Detection System shall be able to emulate single or dual zone loop detectors and be able to detect a minimum of 10 lanes with a range of up to 250 feet away. These microwave detection systems are typically used for gathering near real-time information about the flow of traffic on freeways, highways, or other designated roadway types. The MVDS shall be provided with all necessary cabling, surge protection devices and modules for local serial and IP/Ethernet communications.

C. Wireless Magnetometer Vehicle Detection (WMVD)

Provide a wireless in-pavement magnetometer system for use in both freeway and intersection applications. The detection system shall provide accurate vehicle count, occupancy and speed information, as well as presence/stop bar applications, as needed. The battery-powered wireless sensor shall consist of a magnetometer capable of low-power radio communications to a roadside transceiver, packaged in a small, hardened plastic case, suitable for in-pavement mounting. The sensors shall detect changes in the earth's magnetic field to determine the presence or absence of vehicles, relative to the detection zone. Detection 'events' are transmitted via wireless radio communications to a wired access point connected to the control cabinet. The wired access point shall utilize IP/Ethernet communication. The system includes, but is not limited to battery operated wireless sensors, battery operated wireless repeaters, antennas, wired access points with respective radios, mounting hardware, cabling, surge protection devices, jumper cables and all items necessary for a complete WMVD installation

D. Short-Range Radio Device Detection System

Provide a Short-Range Radio Device detection system in which a roadside monitoring unit continually and passively listens for Short-Range Radio enabled devices that broadcast their BDADDR (or BADDR), also referred to as the MAC address. The addresses shall be passively collected in order to get vehicle probe data for use in determining travel time along a route. These devices shall not have the ability to correlate a MAC address with personal information, such as subscriber names and/or vehicle ownership information. This type of detection system shall not be used to collect highly accurate volume and occupancy of a roadway, but rather collect a sampling of vehicles in order to derive approximate speeds and travel time for a corridor. Provide separate, powered and surge protected enclosures for Short-Range Radio Device modules so that they may be installed in various cabinet types. All modules shall utilize IP/Ethernet communications, or cell modem by Type. The system includes, but is not limited to the Short-Range Radio Device processor, antenna, power supplies, mounting hardware, cabling, surge protection devices, jumper cables and all items necessary for a complete installation.

E. Microwave Vehicle Detection System (MVDS) – Intersection Applications

Provide a high resolution microwave radar detection system which provides presence detection, vehicle counts, classification, occupancy, and speed information. The microwave radar detection system includes, but is not limited to, microwave / radar detectors, including detector housing, mounting hardware, an application programming interface (API) and protocol for system communications, system management software, cabling between the microwave detector(s) and the cabinet, surge suppressors, terminations, and related equipment. The high resolution Microwave Vehicle Detection System shall be able to emulate single or dual zone loop detectors and be able to detect a minimum of 8 lanes with a minimum range of 100 feet. These microwave detection systems are typically used for detecting vehicles at signalized intersections and inputting service calls to the signal controller. The MVDS shall be provided with all necessary cabling, surge protection devices and modules for local serial and IP/Ethernet communications.

937.1.01 Definitions

General Provisions 101 through 150

937.1.02 Related References

A. Standard Specifications

Section 150 – Traffic Control

Section 639 – Strain Poles for Overhead Sign and Signal Assemblies

Section 647 – Traffic Signal Installation

Section 922 – Electrical Wire and Cable

Section 925 – Traffic Signal Equipment

Section 939 – Communication and Electronics Equipment

Section 940 – NaviGAtor Advanced Transportation Management System Integration

B. Referenced Documents

American National Standards Institute (ANSI)

American Society of Testing and Materials (ASTM)

EIA-170A

Electronic Industries Association (EIA) – 170A

FCC Part 15, Subparts J and B

National Electric Code (NEC) 210-19a., FPN No. 4

National Electrical Manufacturers Association (NEMA) TS1-1989 (R1994, R2000, R2005), Section 2.1.5.2, Section 2.1.12

NEMA TS-1-1989 (R1994, R2000, R2005)

NEMA TS2-2003 Type 2, Type 170 and Type 179 Standards

NEMA 250 Type 4 enclosure standards

Underwriter's Laboratory Incorporated (UL) Submittals

937.1.03 Submittals

Use only equipment and components that meet the requirements of these minimum specifications and the Department's Qualified Products List (QPL).

Provide submittal data for all equipment, materials, test procedures, and routine maintenance procedures required for these items as required in these Specifications.

For training, submit to the Engineer for consideration and approval a training schedule and all training materials within 60 calendar days from the NTP.

For each applicable vehicle detection system, submit to the Engineer for approval, two (2) hard copies and one (1) electronic copy of the manufacturer's descriptive literature (catalog cuts), technical data, operational documentation, service and maintenance documentation and all other materials required within these specifications. Electronic documents shall be placed on a CD as Adobe® pdf documents and delivered to the Engineer.

Provide as-built documentation of all detector installations after the completion of acceptance testing.

937.2 Materials

937.2.01 Video Detection System

Use a video camera sensor that is compatible with the video detection system processor and meets the following technical and functional requirements:

A. Requirements

1. Video Camera Sensor Type A

   Furnish and install a video camera sensor that is compatible with both freeway and arterial video applications, and compatible with the required detection processor type. Send a video signal from the video camera sensor to the processor, using high resolution, video camera sensors as the primary video source for real-time vehicle detection. Utilize high-sensitivity optics in the video camera sensor to compensate for variations in lighting conditions, including blooming at night caused by headlights and minor vibration caused by wind. Include a heater at the front of the enclosure, or alternate method, to prevent the formation of ice and condensation in cold weather. Ensure that the heater does not interfere with the operation of the video camera sensor electronics, or cause interference with the video signal, where applicable. As a minimum, meet the following requirements for each video camera sensor assembly installation:

   a. Use a 1/4" to 1" color interline or frame transfer charge coupled device (CCD) or CMOS sensor.

   b. Signal to Noise Ratio shall be greater than 47 dB

   c. If using analog video, the video standard should be compliant with National Television System Committee (NTSC) Standard, RS-170A Compliant (available as EIA-170A specification)

   d. If using digital video, the video standard should be compliant with ATSC Standard H.264

   e. Provide a lens with a minimum 18X digital or optical zoom. Zoom and camera controls shall be over the camera coaxial video connector

   f. A minimum resolution of 380 Horizontal Television Lines (TVL), 350 Vertical TVL

g. For Electromagnetic interference, ensure compliance with FCC Part 15, Subpart J, Class A device requirements, which apply to the video camera sensor and associated connected equipment in their installed condition

h. Power the video camera sensors with 115 VAC+/-10%, 60 Hz nominal +/-3 Hz. Size the power conductors from the power source to the camera input so that no more than a 3% voltage drop is experienced (NEC 210-19 a., FPN No. 4). Include a provision at the rear of the camera enclosure for a waterproof connection of power and video signal cables over a single weather-tight MilSpec connector. Provide power from the cabinet power source through a surge suppressor and then to the video camera sensor.

i. The Video camera sensor enclosure shall be installed in a light colored enclosure to limit solar heating. Meet NEMA 250 Type 4 enclosure standards for the enclosure and seal the enclosure to prevent sand, dirt, dust, salt and water from entering. Affix a sun shield visor to the front of the enclosure which is sufficiently adjustable to divert water away from the video camera sensor lens and also prevent direct sunlight from entering the iris when mounted in its installed location.

j. Provide a single run of non-spliced outdoor-rated power and coaxial video cabling from the sensor enclosure to the cabinet in accordance with the manufacturer's recommendations. Interruptions in cable runs shall only be allowable for interfacing necessary surge protection devices. All connectors shall be professionally sealed to manufacturer recommendations.

k. Environmental: Ensure that temperature and humidity limits of the sensor adhere to NEMA TS2-2003 requirements.

l. Shock and Vibration: Ensure that shock and vibration of the sensor adheres to NEMA TS2-2003 requirements

2. Video Camera Sensor Type B

Furnish and install a thermal video camera sensor that is compatible with both freeway and arterial video applications, and compatible with the required detection processor type. Send a thermal video image from the thermal video camera sensor to the processor for real-time vehicle detection. Utilize thermal imaging to compensate for variations in lighting conditions, including blooming at night caused by headlights, rain and ice glare, and daytime cloud and sun position shadowing where a normal video camera sensor may not function as intended. Include a heater, or alternate method, to prevent the formation of ice and condensation in cold weather. Ensure that the heater does not interfere with the operation of the video camera sensor electronics, or cause interference with the thermal video signal. As a minimum, meet the following requirements for each thermal video camera sensor assembly installation:

a. Use a long-life, uncooled Vanadium Oxide (VOx) Microbolometer for the detector sensor, with a spectral range of 7.5 – 13.5 µm.

b. If using analog video, the video standard should be compliant with NTSC Standard and shall have a minimum NTSC array format of 320 x 240, with a 76,800 effective resolution

c. If using digital video, the video standard should be comliant with ATSC Standard H.264

d. For Electromagnetic interference, ensure compliance with FCC Part 15, Subpart B, Class B device requirements.

e. Power: Input voltage shall be 90 – 240 VAC single phase, with standard operating voltage at 110 VAC. Power consumption shall be 1.7 Watts nominal at 110 VAC with a maximum of 18 Watts.

f. The thermal video camera sensor enclosure shall be installed in a light colored enclosure to limit solar heating and prolong equipment life.

g. Provide a single run of non-spliced outdoor-rated power and coaxial video cabling from the sensor enclosure to the cabinet in accordance with the manufacturer's recommendations. Interruptions in cable runs shall only be allowable for interfacing necessary surge protection devices. All connectors shall be professionally sealed to manufacturer recommendations.

h. Environmental: -50° C to + 75° C (-58° F to 167° F) operating ambient temperature rated, in 0% - 95% relative humidity, with an IP66 rating.

3. Video Detection System Processor

Freeway Cabinet Mounting

The IP addressable, MPEG4 encoded video detection system processor shall be either shelf or rack mountable in a standard 19-inch rack assembly space conforming to Standard CEA-310, 2005, latest version/addendum. If the video processor is shelf mounted, the Contractor shall provide the shelf and the processor unit housing for each processor type. If the video detection system requires a 19" rack with powered backplane, the contractor shall provide the 19" rack and attach all power and communications cables according to manufacturer specifications. The video detection system processor shall be designed for mounting in an enclosed cabinet and/or Hub building without blower fans and mounting without insulation from other electronic devices such as power supplies, communications equipment, etc. The video detection system shall meet NEMA TS-2 temperature requirements.

Power the video detection system processor by 120 VAC, 60 Hz, single phase. If a transformer is required for a 12 or 24 VDC power requirement, the Contractor shall supply the transformer and/or enclosure and size it appropriately for the installation. Size power conductors from the power source for the video detection system processor input so that no more than a 3% voltage drop is experienced (NEC 210-19 a., FPN No. 4). The video detection system processor shall have transient protection that meets the requirements of NEMA TS1-1989 (R1994, R2000, R2005) and NEMA TS2-2003 standards.

- Video Detection System Processor, Type A

  Provide one (1) video inputs on the video detection system processor such that signals from one video camera sensor or other synchronous or non-synchronous video source can be processed in real time. Use BNC connectors on the processor for all video inputs. Use a BNC connector or RCA connector on the front of the video detection system processor for video output.
- Video Detection System Processor, Type B

  Provide at least two (2) video inputs on the video detection system processor such that signals from up to two (2) video camera sensors or other synchronous or non-synchronous video sources can be processed in real time in one cabinet. Use BNC connectors on the back of the video detection system processor for all video inputs. Use a BNC connector on the front or back of the video detection system processor for video output.
- Video Detection System Processor, Type C

  Provide at least four (4) video inputs on the video detection system processor such that signals from up to four (4) video camera sensors or other synchronous or non-synchronous video sources can be processed in real time in one cabinet. Use BNC connectors on the back of the video detection system processor for all video inputs. Use a BNC connector on the front or back of the video detection system processor for video output.

4. Signal or Ramp Meter Cabinet Mounting

Provide an IP addressable processor module, which performs video image processing and MPEG4 encoding, that completely fits within the loop detector slots of the traffic signal or ramp meter controller cabinet input file and that provides a standard relay closure detector input to the controller. Provide from one to four detector outputs through the processor module which communicate through the edge card connector. Use a module that is not wider than two standard input file slots. Include detection indicators on the front panel of the processor module for each channel of detection provided through that module to indicate detector output in real time when the system is operational. Include a BNC connector with gold plated center pin or RCA connector on the front panel for video output to a Monitoring device, and include a RJ-45 Ethernet port connector on the front panel to connect and communicate the Programming Device.

Provide power to the processor modules through the signal or ramp cabinet detector input file, or the Output Expansion Module.

- Video Detection System Processor, Type D

  Provide one (1) video inputs on the video detection system processor such that signals from one video camera sensor or other synchronous or non-synchronous video source can be processed in real time. Use BNC connectors on the processor for all video inputs. Use a BNC connector or RCA connector on the front of the video detection system processor for video output.
- Video Detection System Processor, Type E

  Provide at least two (2) video inputs on the video detection system processor such that signals from up to two (2) video camera sensors or other synchronous or non-synchronous video sources can be processed in real time

in one cabinet input file. Use BNC connectors on the back of the video detection system processor for all video inputs. Use a BNC connector on the front or back of the video detection system processor for video output.

- Video Detection System Processor, Type F

  Provide at least four (4) video inputs on the video detection system processor such that signals from up to four (4) video camera sensors or other synchronous or non-synchronous video sources can be processed in real time in one cabinet input file. Use BNC connectors on the back of the video detection system processor for all video inputs. Use a BNC connector on the front or back of the video detection system processor for video output.

- Environmental Requirements (All Types)

  Provide a video detection system processor that operates reliably in a typical roadside traffic cabinet environment. Provide internal cabinet equipment and a video detection system processor that meet the environmental requirements of NEMA TS1-1989 (R1994, R2000, R2005) and NEMA TS2 standards.

- Operating ambient temperature range: Ensure that temperature limits adhere to NEMA TS2-2003 requirements. Additionally, include a heater to prevent the formation of ice and condensation in cold weather. Do not allow the heater to interfere with the operation of the video camera sensor electronics, or cause interference with the video signal.
- Humidity range**:** Ensure that humidity limits adhere to NEMA TS2-2003 requirements.

B. Functional Requirements for Video Detection Systems (all Types)

This section defines the minimally required functional aspects of the system as well as the required accuracy levels. It also outlines the testing process that will be used to determine whether a proposed video detection system product meets these specifications.

1. Ensure that Video Detection Systems provides vehicle presence, speeds, vehicle counts and roadway occupancies on a lane-by-lane basis. Video detection systems operating in a traffic signal installation shall not be required to provide occupancy or classification data. Verify that the system can, at a minimum, emulate the output of a pair of 6 ft. by 6 ft. in-pavement loops spaced 16 ft. apart. Ensure that the Video Detection Processor is capable of providing a minimum 24 detection zones with one video camera sensor. Verify that the system responds with the accumulated traffic data as collected since the last request.
2. Verify that the detection system is IP-addressable and that all communication addresses are user programmable. Ensure the setup program assigns an IP address to the detection processor. Ensure that configuration to the system are either in serial format using an Electronic Industries Alliance (EIA) standard EIE-232 communication or an Internet Protocol (IP) interface as approved by GDOT's Information Technology group.
3. Verify that the traffic data collected by the Video Detection System and the system configuration is stored within internal non-volatile memory within the video detection system processor. Perform software updates through an Ethernet, serial, or USB port. Verify that data can be retrieved from the system either locally or via requests from computers at the central Transportation Management Center (TMC) over the communications network.
4. Ensure the video detection system processor front panel includes a visual display of the status of each video input. Indicators shall display, at a minimum, the status of video detection system processor communications, the status of the video detection system processor, the status of communications, and whether or not each video camera sensor is actively detecting. The Video Processor shall allow a remote user with a standard web browser to gain remote access, collect data, control, and configure the VDS.
5. Ensure the Video Detection System includes computer software, which enables the user to program, calibrate, operate and view current status of all system features using a laptop computer, or network-connected workstation at the central TMC. Ensure the system allows the user to view live MPEG4 video from the image sensor with the programmed detectors overlaying the image. Ensure individual vehicle actuations can be viewed while observing the live MPEG4 encoded video.
6. Ensure the Video Detection System configuration data can be uploaded and saved to a laptop or TMC workstation computer for later re-loading to the video detection processor if necessary.
7. Ensure that the system offers an open Application Programming Interface (API) and software development kit (SDK) for GDOT developers and their consultants to integrate the Video Detection System with Central Software or other third-party software and systems. Furnish needed software licenses for the system.
8. Ensure the system user can use a laptop to reprogram, calibrate, adjust or alter any previously defined detector configurations in the field and also reprogram any detector configurations over the network or from a TMC workstation.

9. Provide software that can communicate concurrently between multiple users and multiple video detection processors on the same network without any interruption or conflict with the normal polling cycle.

C. Additional Functional Requirements for Signal and Ramp Meter Video Detection Systems (Type D, E, F)

1. System Hardware: Provide a detection system that does not require any equipment external to the traffic signal/ramp meter controller cabinet input file (excluding the video camera sensor, video camera sensor power connection, circuit breakers and surge protection for video or data). Mount the processor and expansion modules in the traffic signal/ramp meter controller cabinet input files, using the edge card connector to obtain power and provide contact closure outputs. Rewiring of the backplane or any other cabinet panel for the system is not permitted except for power and grounding for the interface panel, wiring from the video camera sensor to the loop detector panel for the video signal and wiring to obtain power for the video camera sensor.
2. Provide a system capable of providing a minimum of eight detector outputs per video camera sensor. Provide all detector outputs through edge card connectors of the processor module and output expansion module(s). Rewiring external to the edge connectors is not permitted for obtaining a minimum of eight outputs for one video camera sensor.
3. System Software System Processing Software: On the processor module that mounts in the traffic signal/ramp meter controller cabinet input file, include the software that processes the video camera sensor signals and converts the signals into detector outputs. Detect either approaching or receding vehicles in multiple lanes within the field of view (FOV) of each video camera sensor. Provide the capability of detecting vehicles in up to 24 detection zones per video camera sensor with the detection system. Allow the detection zones to be combined to form one output.
4. Detection Compensation: Provide the capability for the processor to compensate for camera movement attributable to temperature effects, wind shifting, pole sway, pole expansion, or vibration.
5. System Configuration Software: On the processor module, include the configuration software to program the detection system, including the detection zones.
6. On a monitoring device, display the detection zones superimposed on the video camera sensor's images. Provide the capability to create detection zones of varying size and shape to allow best coverage of the viewable roadway lanes and ramps. Provide the capability to save the detection zone format on the processor module card once drawn for a particular video camera sensor image. Provide the following capabilities for the user to view the currently active detector zone format of the MPEG4 encoded processor module via a monitoring device:
7. Confirmation: When viewing vehicle actuations in real time on the monitoring device, indicate the passage or presence of each vehicle detected by each detection zone by changing the color or intensity of that particular zone.
8. Detection During Reconfiguration: Provide the capability for the detection system to continue detecting vehicles on all existing zones during reconfiguration, except on the zone that is being reconfigured.
9. I-VDSn designation: I-VDSn refers to all of the specific VDS components necessary for operation and detection on one approach leg of an intersection. The "n" denotes the approach's through-movement controller phase in the nomenclature of a typical 8-phase dual-ring intersection operation (e.g., I-VDS2, I-VDS4, I-VDS6, I-VDS8) when four video camera sensors are installed. If more than four video camera sensors are installed, the "n" denotes the controller phase being detected in the nomenclature of a typical 8-phase dual ring intersection operation. I-VDSn is also used as a prefix to identify the individual VDS components of the "n" approach as follows:
    - I-VDSnVCS: the video camera sensor for approach "n"
    - I-VDSnCC: the coaxial cable from the video camera to the controller cabinet for approach "n"
    - I-VDSnPC: the video camera sensor power cable from the video camera to the controller cabinet for approach "n"
    - I-VDSnCSS: the coaxial cable surge suppressor in the controller cabinet for approach "n"
    - I-VDSnCJ: the coaxial jumper cable from the coaxial surge suppressor in the controller cabinet to the processor module or detector panel for approach "n"
    - I-VDSnPM: the processor module for approach "n", where a Processor Module, Type A is installed
    - I-VDSpn/snPM: the processor module for approach "pn" and "sn", where "pn" is the primary approach and "sn" is the secondary approach, where a Processor Module, Type B is installed.
    - Occupancy: individual lane occupancy measured in percent of time
10. Ramp Meter Controller Cabinet Input File: A Ramp Meter Controller Cabinet Input File is a chassis within a traffic signal cabinet rack that has slots where a detector card provides detector output to the traffic signal controller

through its edge card connectors. The backplane connector pin output of the edge connectors conforms to Georgia traffic signal controller cabinet standards for the cabinet type specified in the plans.

11. I-VDSnnn: I-VDSnnn refers to all of the specific VDS components necessary for operation and detection related to ramp metering installations based on direction, type of detection and lane assignments The first “n” denotes the approach direction (north, south, east or west) and the second “n” denotes the type of detection, P=Passage Detection Zones, D=Demand Detection Zones, Q=Queuing Detection Zones, ML=Mainline Detection Zones, the third “n” denotes the lane assignment (lane 1=L01, lane 2=L02,lane =L03, lane= L04), the (e.g., I-VDSnPL01, I-VDSsDL02, I-VDSeQL03, I-VDSwMLAL04). The typical ramp metering layout is shown below:

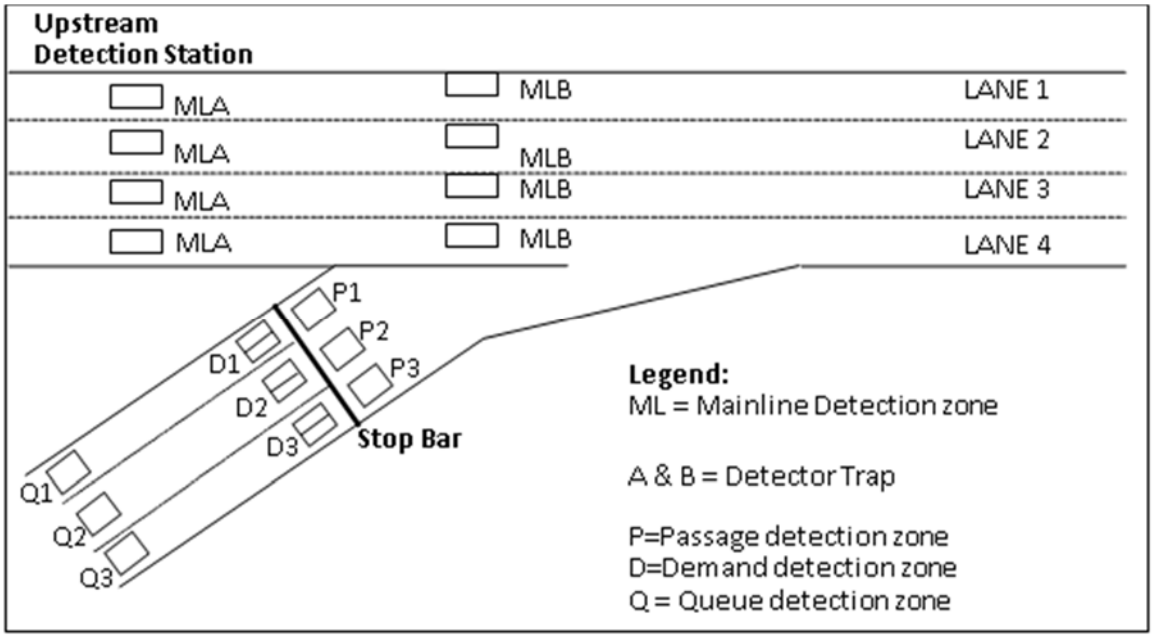

Figure 1: Typical Ramp Meter Layout

Lane numbering shall began at the median for mainline travel lanes. Lane numbering for ramp meter lanes shall began with the lane adjacent to the mainline travel lanes,

I-VDS is also used as a prefix to identify the individual I-VDS components used for signal and freeway ramp metering as follows:

- I-VDSnnnVCS: the video camera sensor for “nnn” direction, type of detection and lane assignment
- I-VDSnnnCC: the coaxial cable from the video camera to the controller cabinet for approach “nnn” direction, type of detection and lane assignment
- I-VDSnnnPC: the video camera sensor power cable from the video camera to the controller cabinet for approach “nnn” direction, type of detection and lane assignment
- I-VDSnnnCSS: the coaxial cable surge suppressor in the controller cabinet for approach “nnn” direction, type of detection and lane assignment
- I-VDSnnnCJ: the coaxial jumper cable from the coaxial surge suppressor in the controller cabinet to the processor module or detector panel for approach “nnn” direction, type of detection and lane assignment
- I-VDSnnnPM: the processor module for approach “nnn” direction , type of detection and lane assignment

D. Accuracy Requirements for Video Detection Systems

Provide a Video Detection System that meets the below minimum accuracy requirements for both daytime and night time conditions:

1. For volume (vehicle counts): 85% (no more than +/- 15% missed actuations).
2. For speed measurement: 85% (no more than +/- 15% error in speed calculation)
3. For occupancy measurement: 85% (no more than +/- 15% missed actuations)

4. For presence detection: 85% (no more than +/- 15% error in missed actuations)

E. Testing

Vendors are required to submit an independent test evaluation report from a third party which verifies the accuracies stated within their specifications.

Develop and submit plans for post-installation testing to the Engineer for consideration and approval. Ensure the plans test all functional requirements outlined in Section 937.2.01, and the accuracy requirements stipulated in Section 937.2.01 D. Provide the Engineer with Application Protocol Interface (API) documentation and Software Development Kit (SDK) for the video detection system, as requested by the Department. GDOT will have 30 days from receipt of the API and SDK to make a determination if it can be integrated. If the device cannot be integrated, the Engineer will give notice that the Contractor must submit a device that can be integrated into the central system software.

1. Post Installation Test Requirements

   Utilize the following test procedures after the video detection system has been installed in its entirety as shown on the Plans. Commence no post-installation testing until all video detection systems in the project have been configured and/or calibrated to gather speed, volume, occupancy and/or presence detection, and programmed to communicate on the GDOT network. Including the accuracy testing requirements, at a minimum, provide the following on the test plan to be submitted and approved by the Engineer:

2. Inspect all vehicle detection system field components to ensure proper installation and cable termination.
3. Verify that field construction has been completed as specified in the plans.
4. Inspect the quality and tightness of ground and surge protector connections.
5. Check power supply voltage and outputs and ensure device connections are as specified in the Plans.
6. Verify that the installation of cables and connections between all detectors and field cabinets are as specified in the Plans
7. Demonstrate that each Video Detection System is fully operational and gathering the required data types at the specified interval. Perform this test from the hub building through which the detection system is connected.
8. Upon satisfactory completion of step f, GDOT will add the new video detection system(s) into the central system.

937.2.02 Microwave Vehicle Detection System (MVDS)

A. Requirements

1. Microwave Detector Type A

   Provide a microwave detection system for ITS installations that meets the following minimum requirements:

   a. Microwave Transmission: The microwave radar detector shall transmit on a frequency band of 24 (twenty-four) GHz or another approved spectral band. It shall comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules or the appropriate Spectrum Management Authority. The Microwave Unit shall not interfere with any known equipment.

   b. Area of Coverage

      The Microwave Unit's field of view shall cover an area defined by an oval shaped beam and its maximum detection range shall be as follows:

Elevation Beam Width	50 degrees or more
Azimuth Beam Width	12 degrees or less
Range	up to 250 feet

   c. Detection Zones

      The minimum number of detection zones defined shall be no less than ten (10) for side-fired configuration.

   d. Capabilities

Ensure that Microwave Detection Systems Type A proposed for use provide vehicle presence, classification, speeds, vehicle counts and roadway occupancies on a lane-by-lane basis at a user definable reporting period and can detect a minimum of 10 detection zones where the farthest lane at ideal mounting height can detect at a maximum distance of 250 feet.

The Microwave Unit shall be a presence detector. It shall be suitable for mounting on roadside poles or on overhead structures at a mounting height determined by the manufacturer, to provide the following:

- Presence indication of vehicles in its detection zones.
- Traffic data, periodically accumulated over user defined time intervals in a 10 to 600 sec range, shall be transmitted via serial RS-485 communications lines to a serial port on the terminal server.
- Traffic data shall be available simultaneously with detection zone contact closures and serial communications. Supply all modules as necessary for simultaneous communications.
- Vehicle classification by length in a minimum of 3 user defined classes.
- MVDS shall allow the user to define the contents of transmitted data.
- Furnish the unit with the required software for data collection, processing, configuration and set-up, and data logging and retrieval. An operator shall be able to use the software to set detector count periods, sensitivities, and other operational features and parameters. The software must be capable of providing both manual and automatic setup and calibration.

Side-fired configuration data shall include the following in each of up to ten (10) detection zones (lanes):

- Volume
- Lane occupancy
- Average speed

e. Environmental Conditions and Protection

Except as stated otherwise herein, the equipment shall meet all its specified requirements during and after subjecting to any combination of the following:

- Temperature and humidity limits per NEMA TS2-2003 requirements
- Power surge of ± 1kV (rise time = 1.2 μsec, hold = 50μsec) applied in differential mode to all lines, power and output, as defined by IEC 1000-4-5 and EN 61000-4-5 standards or 300v TS2
- The microwave radar detector shall be resistant to vibration in accordance with IEC 68-2-30 (test Fc), NEMA TS-1 (Section 2.1.12), or approved equivalent
- The microwave detector shall be resistant to shock in accordance with IEC 68-2-27 (test a), NEMA TS-1 (Section 2.1.13), or approved equivalent

f. Mechanical

The microwave radar detector shall be enclosed in a rugged weather proof box and sealed to protect the unit from wind up to 90 mph, dust and airborne particles, and exposure to moisture (NEMA Type 3R or 4x enclosure).

The mounting assembly shall have all coated steel, stainless steel, or aluminum construction, and shall support a load of 20 pounds. The mounting assembly shall incorporate an approved mechanism that can be tilted in both axes and then locked into place, to provide the optimum area of coverage.

g. Electrical

The MVDS unit shall be operable from 12 - 24 VDC. Power supply shall be obtained from the MVDS communications wiring module in the device cabinet. Alternative power sources and adapters shall be submitted and approved by the Engineer.

The MVDS unit shall include Power Management features, allowing remote shutdown or cyclical shutdown of the unit.

h. Cables

Connection between the MVDS and the cabinet equipment shall be provided by a single MVDS unit harness cable that is MS-connector terminated at the MVDS detector and terminated to the MVDS communications wiring

module in the equipment cabinets. No splices are permitted in the cable. The cable shall at a minimum provide power and the RS-485 serial data interface to the MVDS unit.

The MS connector pins must be crimped to the cable conductors and assembled and tested by the manufacturer prior to installation and pulling of cable on site. RS-485 signal ground shall be provided by the shield drain wire, an additional conductor, or an additional shielded pair, in accordance with the MVDS unit manufacturer's recommendations. Twisted pairs shall be identified by separate insulation colors. Communications pairs shall be individually or commonly shielded. Low voltage power conductors shall not be shielded in common with the communications pairs.

i. Electrical Isolation and Surge Protection

All power lines, contact closures and the serial port shall be surge protected within the unit. Contact closures and the serial port shall be isolated. Ensure that the surge protection of all cables and connections meets the minimum requirements of Section 925.2.02 A, part 14, Surge Protection.

j. Data Interface

- Data communications shall be full duplex asynchronous, configurable as:
- Opto-isolated RS-485 port at rates from 9600 up to 115200 bits per second
- Separate, local control RS-232 or RS-485 ports
- Serial data format shall be standard binary NRZ 8 bits data, 1 stop bit, No parity
- Both point-to-point and multi-dropped configurations shall be supported.

2. Microwave Detector Type B

Provide a microwave detection system for traffic signal installations that meets the following minimum requirements:

a. Microwave Transmission: The microwave radar detector shall transmit on a frequency band of 24 (twenty four) GHz or another approved spectral band. It shall comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules or the appropriate Spectrum Management Authority. The Microwave Unit shall not interfere with any known equipment.

b. Area of Coverage

The Microwave Unit's field of view shall cover an area defined by an oval shaped beam and its maximum detection range shall meet manufacturer's specification and provide accurate detection to the controller.

c. Detection Zones

The minimum number of detection zones defined shall be no less than eight (8).

d. Capabilities

Ensure that Microwave Detection Systems Type B proposed for use provides vehicle presence on a lane-by-lane basis and can detect a minimum of 8 detection zones where the farthest lane at ideal mounting height can detect at a minimum distance of 100 feet.

The Microwave Unit shall be a presence detector. It shall be suitable for mounting on roadside poles or on overhead structures at a mounting height determined by the manufacturer, to provide the following:

- Presence indication of vehicles in its detection zones.
- Traffic data shall be transmitted to the controller. Supply all modules as necessary for simultaneous communications.
- MVDS shall allow the user to define the contents of transmitted data.
- Furnish the unit with the required software for data collection, processing, configuration and set-up, and data logging and retrieval. An operator shall be able to use the software to set detector count periods, sensitivities, and other operational features and parameters. The software must be capable of providing both manual and automatic setup and calibration.

- Volume
- Travel direction
- Per vehicle speed and direction (in forward looking configuration)

e. Environmental Conditions and Protection

Except as stated otherwise herein, the equipment shall meet all its specified requirements during and after subjecting to any combination of the following:

- Temperature and humidity limits per NEMA TS2-2003 requirements
- Power surge of ± 1kV (rise time = 1.2 μsec, hold = 50μsec) applied in differential mode to all lines, power and output, as defined by IEC 1000-4-5 and EN 61000-4-5 standards or 300v TS2
- The microwave radar detector shall be resistant to vibration in accordance with IEC 68-2-30 (test Fc), NEMA TS-1 (Section 2.1.12), or approved equivalent
- The microwave detector shall be resistant to shock in accordance with IEC 68-2-27 (test a), NEMA TS-1 (Section 2.1.13), or approved equivalent

f. Mechanical

The microwave radar detector shall be enclosed in a rugged weather proof box and sealed to protect the unit from wind up to 90 mph, dust and airborne particles, and exposure to moisture (NEMA Type 3R or 4x enclosure).

The mounting assembly shall have all coated steel, stainless steel, or aluminum construction, and shall support a load of 20 pounds. The mounting assembly shall incorporate an approved mechanism that can be tilted in both axes and then locked into place, to provide the optimum area of coverage.

g. Electrical

The MVDS unit shall be operable from 12 - 24 VDC. Power supply shall be obtained from the MVDS communications wiring module in the device cabinet. Alternative power sources and adapters shall be submitted and approved by the Engineer.

The MVDS unit shall include Power Management features, allowing remote shutdown or cyclical shutdown of the unit.

h. Cables

Connection between the MVDS and the cabinet equipment shall be provided by a single MVDS unit harness cable that is MS-connector terminated at the MVDS detector and terminated to the MVDS communications wiring module in the equipment cabinets. No splices are permitted in the cable. The cable shall at a minimum provide power and the RS-485 serial data interface to the MVDS unit.

The MS connector pins must be crimped to the cable conductors and assembled and tested by the manufacturer prior to installation and pulling of cable on site. RS-485 signal ground shall be provided by the shield drain wire, an additional conductor, or an additional shielded pair, in accordance with the MVDS unit manufacturer's recommendations. Twisted pairs shall be identified by separate insulation colors. Communications pairs shall be individually or commonly shielded. Low voltage power conductors shall not be shielded in common with the communications pairs.

i. Electrical Isolation and Surge Protection

All power lines, contact closures and the serial port shall be surge protected within the unit. Contact closures and the serial port shall be isolated. Ensure that the surge protection of all cables and connections meets the minimum requirements of Section 925.2.02 A, part 14, Surge Protection.

j. Data Interface

Data communications shall be full duplex asynchronous, configurable as:

- Opto-isolated RS-485 port at rates from 9600 up to 115200 bits per second
- Separate, local control RS-232 OR rs-485 ports

- Serial data format shall be standard binary NRZ 8 bits data, 1 stop bit, No parity
- Both point-to-point and multi-dropped configurations shall be supported.

B. Functional Requirements for Microwave Detection Systems Type A and B

This section defines the minimally required functional aspects of the microwave detection system as well as the required accuracy levels. It also outlines the testing process that will be used to determine whether a proposed microwave detection system product meets these specifications.

1. Verify that the traffic data collected by the Microwave Detection System is stored within internal non-volatile memory. Verify that data can be retrieved from the system either locally or via requests from computers at the central Transportation Management Center (TMC) over the communications network. Verify that the system configuration data and system software is also stored within internal non-volatile memory.
2. Ensure the Microwave Detection System includes computer software for the user to program, calibrate, operate and view current status of all system features using a laptop computer or network-connected workstation at the central TMC. Ensure the system allows the user to view live actuations from the microwave detector with the programmed detectors overlaying a representation of the roadway.
3. Ensure the Microwave Detection System configuration data can be uploaded and saved to a laptop or TMC workstation computer for later re-loading to the video detection processor if necessary. Ensure the system user can use a laptop or TMC workstation to reprogram, calibrate, adjust or alter any previously defined detector configurations. Ensure no periodic adjustments or fine-tuning is required except in the case of physical roadway changes such as lane-shifts, new construction or closures.
4. Ensure that the system offers an open Application Programming Interface (API) and software development kit (SDK) for GDOT developers and their consultants to integrate the Microwave Detection System with GDOT Central Software or other third-party software and systems. Furnish needed software licenses for the system.

C. Accuracy Requirements for Microwave Detection Systems

Provide a Microwave Detection System that meets the below minimum accuracy requirements for all conditions. Accuracy measurements for the testing shall be done with an appropriate sample size of vehicles, over a specific time period. Submit to the Engineer the Test plan for accuracy testing at the location that is site specific to the plans. The test plan shall take into account the roadway type (freeway, arterial), location (urban, rural), and traffic conditions in order to determine appropriate testing length and sample size. The following conditions shall be met for each sensor installed:

Measurement Accuracy

The following error levels shall be achievable and demonstrated during testing:

Parameter (For Type A and B)	**Error Percentage**
Presence	±5%
Time event	10ms
Input Voltage	±2%
Parameter (For Type A)	**Error Percentage**
Volume	±8%
Lane Occupancy	±10%
Average Speed	±10%
Length Classification limits	±10%

D. Testing

Develop and submit plans for post-installation testing to the Engineer for consideration and approval. Ensure the plans test all functional requirements outlined in Section 937.2.02 B and the accuracy requirements stipulated in Section 937.2.02 C. Provide the Engineer with Application Protocol Interface (API) documentation and Software Development

Kit (SDK) for the microwave detection system. GDOT will have 30 days from receipt of the API and SDK to make a determination if it can be integrated. If the device cannot be integrated, the Engineer will give notice that the Contractor must submit a device that can be integrated into the central system software.

1. Post-installation test requirements
2. Utilize the following test procedures after the microwave detection system has been installed in its entirety as shown on the Plans. Commence no post-installation testing until all microwave detection systems in the project have been configured and/or calibrated to gather speed, volume, classification, and occupancy and programmed to communicate on the GDOT network. Including the accuracy testing requirement, at a minimum, provide the following on the test plan to be submitted and approved by the Engineer.
3. Inspect all microwave detection system field components to ensure proper installation and cable termination.
4. Verify that field construction has been completed as specified in the plans.
5. Inspect the quality and tightness of ground and surge protector connections.
6. Check power supply voltage and outputs and ensure device connections are as specified in the Plans.
7. Verify that the installation of cables and connections between all detectors and field cabinets are as specified in the Plans and in accordance with the manufacturers' recommendations.
8. Demonstrate that each Microwave Detection System is fully operational and gathering the required data types at the specified interval. Perform this test from the hub building through which the detection system is connected.
9. Upon satisfactory completion of step f, GDOT will add the new microwave detection system(s) into the central system

937.2.03 Wireless Magnetometer Vehicle Detector System (WMVD)

This specification sets forth the minimum requirements for a system to detect vehicles on a roadway by using battery-powered magnetometer-type sensors that communicate their detection data by radio to a roadside communications hub before the data is relayed to a freeway cabinet, a local traffic controller cabinet, a central software system, and/or a data server as required by the application. The application of the WMVDS and equipment specified shall be as shown in the plans. These specifications cover both intersection presence based vehicle detection used for traffic controller input, as well as freeway system or advanced system detection data collection of volume, occupancy and speed.

A. Requirements

The detection system shall provide accurate roadway information as needed to support the traffic management application.

1. The Wireless Battery-Powered Magnetometer Vehicle Detection System shall consist of one or more of the following
    a. Battery-powered wireless sensors installed in-pavement in each traffic lane w/ reuse enclosure.
    b. Serial Port Protocol (SPP) Digital Radios mounted on the side of the roadway w/ cable and mount.
    c. Wireless battery-powered Repeaters (RPs) mounted on the side of the roadway, serving to extend the radio range of an SPP w/ mount.
    d. Access Point Contact Closure Interface (APCC) cards to provide sensor information processing and support the interface between an SPP and a standard traffic controller using contact closure signals, or mounted in a stand alone cabinet w/ direct IP communications.
    e. Extension (EX) contact closure cards to provide additional detector outputs to a traffic controller
    f. Isolation (ISO) Modules to provide surge protection and isolation, as well as providing signal conditioning to enhance the communication distance from the SPP and the APCC.
    g. Input/Output (I/O) Modules used to provide additional communication options, memory options and a battery backed real time clock.
    h. Software to control and configure the sensors, APCC, SPP's and RPs.

i. Communications between a sensor and SPP can be direct, via a single repeater, or via two repeaters operating in tandem. Communications between the sensors and the SPP or RP and between the RP and SPP or another RP shall be via radio.

j. Detection data shall be capable of being relayed from each AP to a local traffic controller for real-time vehicle detection using contact closure signals. Data shall also be capable of being relayed directly from each AP to a central software system or central server over standard IP (Internet Protocol) networks.

k. Antenna mounted on the side of the roadway, serving to extend the radio range of the AP.

2. WMVD Sensor Type

   a. All sensor components shall be contained within a single housing.

      - The sensor housing shall conform to NEMA Type 6P and IEC IP68 standards.
      - The sensor components shall be fully encapsulated within the housing to prevent moisture from degrading the components.

   b. Sensor shall be capable of operation within the temperature and humidity limits set forth in NEMA TS2-2003.

   c. A sensor shall be battery-powered with a minimum lifetime of seven (7) years when the sensor is configured for and operating under normal traffic conditions.

   d. Two configurations of sensors shall be available from the manufacturer:

      - Type A: shall provide all sensor functions, including data collection functions
      - Type B: shall support presence detection only
      - The drawings and/or plans shall dictate the sensor type required.

3. Serial Port Protocol (SPP) Device

   a. An SPP shall support at least 48 sensors with a 0.125 second latency.

   b. An SPP shall operate within the temperature and humidity limits set forth in NEMA TS2-2003.

   c. All SPP components shall be contained within a single housing.

   d. The SPP housing shall conform to NEMA Type 4X and IEC IP67 standards.

   e. The SPP shall communicate to the APCC utilizing a standard CAT5e or higher Ethernet cable.

   f. The SPP shall have a weatherproof Ethernet connector on the bottom.

   g. The Ethernet connector shall be shipped with a cover firmly attached to provide protection from the elements prior to cable connection.

   h. The weatherproof connector shall not require any specialized tools for installation.

4. WMVD Repeater (RP)

   a. An RP communicating directly to an AP shall support at least 10 sensors.

   b. An RP communicating to an AP via an intermediate RP (i.e., tandem operation) shall support at least 6 sensors.

   c. An RP shall be battery-powered and battery shall last for a minimum of seven years when operating in normal traffic conditions.

   d. The RP battery shall be field replaceable.

   e. An RP shall operate within the temperature and humidity range set forth in NEMA TS2-2003.

   f. All RP components shall be contained within a single housing.

   g. The RP housing shall conform to NEMA Type 4X and IEC IP67 standards.

5. WMVD Access Point Contact Closure (APCC) Card Type

   a. Each APCC card shall be capable of communicating with at least 2 SPP modules.

b. Optional Extension (EX) cards shall provide additional contact closures in a signal cabinet (user configurable form 1 to 4 outputs each).

c. The APCC shall provide all the higher level processing and interface functions of the system.

d. Each APCC card shall provide detector data as contact closure signals to the traffic controller.

- Type A: An APCC card shall directly plug in to standard 170/2070 input files.
- Type B: An APCC card shall be supplied within a standard enclosure to supply power for use in freeway applications.

e. The APCC and EX cards front panel shall be either software or via front panel switches configurable to provide:

- Presence or pulse mode
- Delay timing
- Extension timing

f. An APCC and EX card shall operate within the temperature limits set forth in NEMA TS2-2003.

g. An APCC and EX card shall operate in humidity up to 95% (non-condensing).

6. Isolator module

a. An Isolator module shall be used between each SPP and APCC to extend communications range and protect the APCC card from transient surges.

b. The isolator module shall extend the communication range between the APCC and SPP from 33 feet (10 m) to 2000 feet (600 m).

c. The isolator module shall provide electrical isolation of 1500V.

d. The isolator module shall provide surge protection of up to 1500V.

e. The isolator module shall provide AC power cross protection.

7. Input/Output (I/O) Module Type

An I/O module shall expand the capabilities of an APCC by adding a SD Memory Card Slot and battery backed up real time clock. The module shall be of the following types.

a. Type A: RS232 port for serial communications

b. Type B: Detection data shall be communicated as IP data over GSM-based cellular data services via a GPRS cellular modem.

c. Type C: Detection data shall be communicated as IP data over CDMA-based cellular data services via a 1xRTT cellular modem.

The I/O module shall be physically mounted to the APCC and shall be the same width. The combined APCC with I/O module shall be the width of a standard 2 slot wide detector amplifier.

8. Antenna

a. Antenna shall meet the environmental requirements set forth in NEMA TS2-2003.

b. Antenna shall operate in an approved frequency band that is compatible with the detection equipment and shall not interfere with any known equipment.

c. Furnish an antenna that will interface with associated detection equipment. Include all necessary cables and connectors per manufacturer's specification.

d. Furnish mounting hardware to secure the antenna to the pole as recommended by the manufacturer of the antenna and as approved by the Engineer.

e. All antenna cable attenuation shall be respective and appropriately sized to the frequency being attenuated at industry standard.

B. Functional Requirements for Wireless Magnetometer Vehicle Detection

1. Sensors

Each sensor shall detect a vehicle by measuring changes in the earth's magnetic field near the sensor as caused by a stopped or passing vehicle (i.e., magnetometer-type detection)

a. The sensor shall communicate time-stamped ON and OFF vehicle detection events

b. Each sensor shall automatically recalibrate in the event of a detector lock

c. Each sensor shall communicate by radio to a nearby SPP, AP, antenna, or RP

d. Each sensor shall automatically re-transmit a detected event if no acknowledgement is received from the AP

e. Each sensor shall respond within 100 seconds when the AP is powered on and transmitting

2. The radio links between each sensor and associated communication link shall conform to the following:

a. The center frequencies, bandwidths, and transmit power levels of the radio links shall allow operation in an unlicensed frequency band

b. Frequency channels shall be employed by the sensors, APs, antenna and RPs to avoid interference with other devices operating in the unlicensed band

c. Frequency channels shall be user-configurable when using 2.4GHz

d. At least 16 frequency channels shall be supported

3. If detection data is relayed to a central software system or central server, each installation of the Wireless Battery-Powered Magnetometer Vehicle Detection System shall provide the following measurements, as required by the application:

a. Vehicle volume (count) per lane over a specified time interval

b. Lane occupancy (percent) over a specified time interval

c. Vehicle speed (mph or kph) when more than one sensor is deployed in a lane

d. Per-vehicle speed

e. Median speed over a specified time interval

f. Mean speed over a specified time interval

g. Distribution of speeds over a specified time interval

h. Vehicle classification when more than one sensor is deployed in a lane

i. Per-vehicle length

j. Report distribution of vehicle lengths over a specified time interval

k. The time interval for measurements shall be selectable from 30 seconds to 24 hours

4. Each sensor in an installation shall be capable of being individually configured with its own sensitivity level.

a. A single sensor shall be capable of being configured with a sensitivity level that approximates the detection zone of a standard 6' x 6' inductive loop

b. Each sensor shall be capable of being configured with relatively higher or lower sensitivity levels as may be required to detect bicycles, motorcycles, or light rail

c. An APCC shall support the relay of sensor detection data through several interfaces as required by the application. The APCC shall be capable of simultaneously communicating detection data via the contact closure interface, Ethernet interface, and cellular data modem interface, as applicable.

C. Accuracy Requirements for the Wireless Magnetometer Vehicle Detection System

Provide a WMVD system that meets the below minimum accuracy requirements for all conditions. Accuracy measurements for the testing shall be done with an appropriate sample size of vehicles, over a specific time period. Submit to the Engineer the Test plan for accuracy testing at the location that is site specific to the plans. The test plan shall take into account the roadway type (freeway, arterial), location (urban, rural), and traffic conditions in order to determine appropriate testing length and sample size. The following conditions shall be met for each sensor installed:

D. Measurement Accuracy

The following error levels shall be achievable and demonstrated during testing for the parameters relevant to each installation.

Parameter	Error Percentage
Presence	±5%
Volume	±8%
Lane Occupancy	±10%
Average Speed	±10%
Length Classification limits	±10%

E. Testing

Develop and submit plans for post-installation testing to the Engineer for consideration and approval. Ensure the plans test all functional requirements outlined in Section 937.2.03B and the accuracy requirements stipulated in Section 937.2.03C. Provide the Engineer with Application Protocol Interface (API) documentation and Software Development Kit (SDK) for the WVDS detection system. GDOT will have 30 days from receipt of the API and SDK to make a determination if it can be integrated. If the device cannot be integrated, the Engineer will give notice that the Contractor must submit a device that can be integrated into the central system software. The testing shall prove that all in-pavement sensors are configured and collecting data as required in this specification and as shown on the plans.

1. Post-installation test procedures: Utilize the following test procedures after the WVDS system has been installed in its entirety as shown on the Plans. Commence no post-installation testing until all WVDS systems in the project have been configured and/or calibrated to gather speed, volume, classification, occupancy, and/or presence and programmed to communicate on the GDOT network as required per installation. Including the accuracy testing requirement, at a minimum, provide the following on the test plan to be submitted and approved by the Engineer:
    a. Inspect all detection system field components to ensure proper installation and cable termination.
    b. Verify that field construction has been completed as specified in the plans.
    c. Inspect the quality and tightness of cable, ground and surge protector connections.
    d. Check voltage and outputs and ensure device connections are as specified in the Plans and manufacturer recommendations.
    e. Verify that the installation of cables and connections between all APCC's and field cabinets are as specified in the Plans
    f. Demonstrate that each Wireless In-Pavement Vehicle Detection System is fully operational, communicating and gathering the required data types at the specified interval.

937.2.04 Short-Range Radio Device Detector System

The Short-Range Radio Device Detection System shall be capable of monitoring and measuring vehicular and pedestrian movement by identifying and comparing unique MAC (Media Access Control) addresses associated with Short-Range Radio enabled electronic devices. The system can be used to collect high quality, high-density travel times by sampling a portion of actual travel activity from the traffic stream of a predetermined route. The MAC address received by a sequence of two or more Short-Range Radio Device receivers shall be matched and used to develop a sample of travel time for that particular segment of the roadway, based on the relative detection times recorded by the adjacent units.

The Short-Range Radio enabled device (sensor) shall be an anonymous Short-Range Radio Device MAC address, which is a hardware identifier for the manufacturer and specific electronic device type. MAC addresses are not associated with any specific user account or any specific vehicle. The MAC address shall not be linked to a specific person through any type of central database, but is assigned by the Short-Range Radio Device electronic chip manufacturer and shall not be tracked through the sales chain. Privacy concerns typically associated with alterative probe systems shall be eliminated.

A. Requirements (Type A, Type B, and Type C)

The Short-Range Radio Device Detection System shall be connected to, and work in conjunction with the support data processing system, located in a designated server at the TMC. All The Short-Range Radio Device Detection units shall adhere to the following requirements:

- Short-Range Radio Device: Class 1 Transceiver with 4 dB to 8 dB Omni Directional Antenna
- Environmental: - 30°C to +65°C, 5 – 90% humidity
- Connectivity: IP/Ethernet 10/100 Base-T (minimum)
- I/O ports: minimum one (1) RJ45 Ethernet port and one (1) RS-232 Configuration Serial Port

1. Short-Range Radio Device Detection System, Type A

   Provide a Short-Range Radio Device Detection System that can be installed in a typical signal or ITS cabinet. The unit shall be enclosed in its own housing and sit on a shelf within the cabinet. Utilize a conduit, as shown on the plans, for routing the antenna cable, and attach the antenna at the location shown on the plans. The power for the Short-Range Radio Device Detection System, Type A unit shall come from typical cabinet power (110 VAC) receptacles or terminal block. Supply all wiring for the Short-Range Radio Device Detection System Type A unit. Should the unit require a POE adapter or transformer to VDC, submit the adapter or transformer to the Department for review. The Contractor shall supply all surge protection devices for the external POE adapter or transformer.

2. Short-Range Radio Device Detection System, Type B

   Provide a Short-Range Radio Device Detection System that is self enclosed in a NEMA 4X enclosure that can be mounted to a pole, mast arm or cabinet structure. The voltage input shall be between 6 and 30 VDC, or be able to connect to 110 VAC with appropriate transformers and adapters, as determined by the Department. The Short-Range Radio Device Detection System Type B unit shall be wired to a cabinet or approved communication/power source, as shown on the plans. The unit shall not reside within the cabinet. Provide all grounding, wiring, adapters, transformers, and surge protection devices needed to support the Short-Range Radio Device Detection System Type B unit, as installed.

3. Short-Range Radio Device Detection System, Type C

   Provide a Short-Range Radio Device Detection System that is self enclosed in a NEMA 4X enclosure that can be mounted to a pole, mast arm or cabinet structure. Provide a Solar Power Array, which includes the solar panel, charging unit and batteries necessary for solar power. The Short-Range Radio Device Detection System Type C unit shall also include a GSM cellular modem with antennas, or approved equivalent. This Short-Range Radio Device Detection System type shall be a completely wireless installation. Provide all grounding, wiring, adapters, transformers, and surge protection devices needed to support the Short-Range Radio Device Detection System Type C unit, as installed.

4. Short-Range Radio Device Detection System Support Data System Software and Database

   Provide a Support Data System software package, including all necessary database 3rd party software required in order for the software to run as intended in support and conjunction of the Short-Range Radio Device sensor system. The software shall be installed on a server designated by the Department. It is the Contractor's responsibility to populate and configure the database for each field Short-Range Radio Device Detection System, and to test the accuracy of the data. The data shall be in an XML format compatible with the Department's central software. The software shall also display a real time chart or graph showing calculated travel time and speeds of the sampled vehicles and MAC address counts. The Short-Range Radio Device Detection System support software is required for all new Short-Range Radio Device Detection System installations, but shall not be required for additional Short-Range Radio Device Detection System sensor installations on an existing network.

B. Functional Requirements for the Short-Range Radio Device Detection System

The sensor shall be capable of delivering data from both an Ethernet connection and a GSM wireless modem. The Short-Range Radio Device Detection sensor working in conjunction with the network's support data processing system must deliver real-time speed and travel time information in XML format to the central software system for routes where the sensors are deployed. The system shall be able to add multiple pairs of Short-Range Radio Device Detection sensors to form a network of manageable travel routes. Each route will display the data for the first and last sensor in addition to the travel-time and speed information for that segment. The Short-Range Radio Device Detection sensor shall be able to detect, at a minimum, within a radius of 300 feet when mounted on a pole or mast arm. The data processing shall be able to filter and 'throw out' MAC addresses that do not supply accurate information when compared to other device time stamps of the segment between two Short-Range Radio Detection devices. The data shall be smoothed, and be able to

process median and mean average speeds. The following data shall be able to be compared and filtered, as needed, to deliver the most accurate information:

1. Pedestrians
2. Oversize Vehicles
3. Mass Transit (i.e. nearby trains or buses)

The Short-Range Radio Device Detection System equipment shall contain advanced features designed to allow the unit to operate efficiently in a remote environment. Diagnostic and configuration information shall be able to be viewed remotely, such that the health and operating status of the sensor is known. The system shall be designed to be able to automatically or remotely "reboot" if a condition is detected that requires such action.

C. Testing

Develop and submit plans for post-installation testing to the Engineer for consideration and approval. Ensure the plans test all functional requirements outlined in Section 937.2.03B. Provide the Engineer with the appropriate XML data interface, as necessary, for testing of the travel time accuracy and integration into the central software.

1. Post-installation test procedures: Utilize the following test procedures after the Short-Range Radio Device Detection System has been installed in its entirety as shown on the Plans. Commence no post-installation testing until all Short-Range Radio Device Detection sensors systems in the project have been configured, calibrated and programmed to communicate on the GDOT network to the support data system software. At a minimum, provide the following on the test plan to be submitted and approved by the Engineer:
    a. Inspect all Short-Range Radio Device Detection System field components to ensure proper installation and cable termination.
    b. Verify that field construction has been completed as specified in the plans.
    c. Inspect the quality and tightness of ground and surge protector connections.
    d. Check power supply voltage and outputs and ensure device connections are as specified in the Plans.
    e. Verify that the installation of cables and connections between all Short-Range Radio Device units, antennas and field cabinets and/or components are as specified in the Plans
    f. Demonstrate that each Short-Range Radio Device unit is fully operational and gathering the required data types at the specified and necessary interval.

937.3 Construction/Installation Requirements

This section shall include typical construction requirements for installing and configuring the vehicle detection systems. This specification only gives general requirements of installations. It is the Contractor's responsibility to be fully certified and trained in the detection technology application and the required installation of such devices by the manufacturer. All cable connections shall be manufacturer-rated and secured from outside elements. The Contractor shall be experienced and/or certified in proper cable/connector crimping and manufacturer sealing methods so as to ensure a water-tight and corrosion resistant installation. Wrap all other exposed cable connections with self sealing tape for weatherproofing and moisture seal.

Refer to Subsection 107.07 of the Specifications regarding proper conduct of The Work.

937.3.01 Personnel

All personnel shall be fully trained and manufacturer certified in the applicable vehicle detection installation application. When installing into a signal or ramp meter cabinet, the technician shall be minimum International Municipal Signal Association (IMSA) Level II certified.

937.3.02 Equipment

Use machinery such as trucks, derricks, bucket vehicles, saws, trenchers, and other equipment necessary for the work and approved by the Engineer prior to installation operations.

937.3.03 Preparation

Utility Permits

A. Application

Apply for, obtain, and pay for utility services, and pole attachment permits required in the Plans.

B. Maintenance

Maintain these utility services until Final Acceptance of each installation. After Final Acceptance, transfer these services and permits to the Department, local government or jurisdiction responsible for maintenance and operation. Ensure that the transfer does not interrupt service.

C. Utility Location

When installing aerial cable of any type, ensure that overhead clearance and separation requirements conform to local utility company standards, OSHA, the NEC and the NESC. Refer to the Standard Details Drawings for further information on utility clearances.

937.3.04 Fabrication

General Provisions 101 through 150.

937.3.05 Construction

A. Video Detection System Installation Requirements

1. General Installation Requirements:

    a. Install all video camera sensors, video detection system processors, output expansion modules, and associated enclosures and equipment at the locations specified in the Plans and per manufacturer recommendations. For traffic signal/ramp meter controller cabinets (Type D, E, and F processors), mount the processor and output expansion modules within the input files, or at a location as designated by the Engineer. Physical changes to the cabinet input files are not permitted. Make all necessary adjustments and modifications to the detection system prior to obtaining recommendation for system acceptance testing. For freeway applications (Type A, B and C processors), install all rack-mounted equipment with one rack unit space between adjacent equipment in the freeway ITS cabinet.

    b. Installation, surge protection and all cabling shall comply with manufacturer's recommendation, at a minimum, or as specified in these plans. All equipment, cables, and hardware must be part of an engineered system that is designed by the manufacturer to fully interoperate with all other system components and be fully protected from all surge potential. Connectors installed outside the cabinets and enclosures shall be manufacturer terminated and be corrosion resistant, weather proof, and watertight. Use a UL listed cable that is ozone and UV resistant and weather resistant. Label cables with permanent cable labels at each end.

    c. Wiring and cables must be continuous (without splices) between the VDS camera sensor and processor, except for surge protection connections between sensor and cabinet, so that both the camera and processor are appropriately protected. Coil a minimum of 6 feet of slack in the bottom of the controller or freeway cabinet. Tape ends of unused and spare conductors to prevent accidental contact to other circuits. Label conductors inside the cabinet for the functions depicted in the approved detailed diagrams of the cabinet and VDS documents.

    d. Furnish an as-built cabinet wiring diagram, identified by location, for each VDS cabinet. Include all wiring, cabling, connections, and camera mounting height. Place all documentation in a weatherproof holder in the cabinet.

    e. For freeway installations (Type A, B and C processors), install VDS power supply or transformer on a standard DIN rail using standard mounting hardware and power conductors wired to terminal blocks in the cabinet.

2. Camera Sensor Installation (all Types)

    Adjust the video camera sensor lens as recommended by the manufacturer, and as required to minimize vehicle occlusion. For Type A camera sensors, aim the camera so that no part of the horizon is in the video image so as to

protect it from the effects of the sun. Mount the camera on the specified pole or structure for that location as shown on the plans.

Mounting Bracket Assembly: Mount the video camera sensor on a mounting bracket such that its height and position provide a clear view of the approach or lanes. Mount the video camera sensor securely such that it is stable and steady. The mounting bracket assembly includes a video camera sensor mounting bracket, nipple pipe, cable-mount nipple clamp, and all associated hardware and materials. Mount the video camera sensor on a mounting bracket assembly which meets the following requirements unless otherwise specified in the plans:

a. Use stainless steel fastening hardware with lock washers on threaded fasteners

b. Use a video camera sensor enclosure mounting bracket that is non-rusting and is made from die cast aluminum, extruded aluminum, powder-coated galvanized steel or hot dipped galvanized steel. Provide a mounting bracket that permits vertical and horizontal adjustment of the video camera sensor. Provide a mounting bracket that securely fastens to the video camera sensor enclosure and mounts to the nipple pipe by threading onto the pipe or as a slip-fit, using a set-screw fastener in either above method.

c. Use a 1 ½" (38 mm) aluminum nipple pipe that is threaded on both ends.

d. Fasten the nipple pipe to the mast arm using a cable mount nipple clamp with minimum 2 5/16" (58 mm) U bolts. Use aircraft grade galvanized steel cables with stainless steel fastening hardware and that make at least two wraps around the mast arm. Do not use banding straps.

Install all VDS equipment into a cabinet type as shown in the plans with the following equipment:

3. Cabinet Equipment (All Types)

a. Wiring, Conductors and Terminal Blocks: Use stranded copper for all conductors, including those in jacketed cables, except for earth ground conductors, which may be solid copper. Neatly arrange all wiring, firmly lace or bundle it, and mechanically secure the wiring without the use of adhesive fasteners. Route and secure all wiring and cabling to avoid sharp edges and to avoid conflicts with other equipment or cabling. Route camera control wiring, and 120 VAC power wiring separately. Terminate all wiring on a terminal block, strip, bussbar, or device clamp or lug; do not splice any wiring. Use a minimum #12 AWG for all conductors of 120 VAC circuits, or as recommended by the manufacturer of the VDS device.

Label coaxial cables for VDS cameras. Number all terminal blocks, terminal strips, circuit breakers and bussbar breakers and have each item and each terminal position numbered and named according to function. Labels shall be weather and wear resistant.

b. Surge Protection: Protect all copper wiring and cabling entering the cabinet housing by surge protection devices as specified in these specifications and per Section 925.2.02 Section A, part 14. Terminate all wiring between cabinet devices and the transient surge protection devices, except for the video signal coaxial feed, on terminal strips. Use a minimum #16 AWG grounding of each surge protection device, or larger if recommended by the surge protection device manufacturer. Do not "daisy chain" with the grounding wires of other devices including other surge suppressors. Dress and route grounding wires separately from all other cabinet wiring. Install grounding wires with the absolute minimum length possible between the surge protection device and the ground bussbar. Label all surge protection devices with silk-screened lettering on the mounting panel.

Furnish and install a surge suppressor for each video signal coaxial line. Install a BNC connector, three stage surge protection device for the coax cable that employs gas discharge tubes, series current limiting components, and secondary 'fine' protection. The coax surge protection device shall have a surge current rating of 10 kA. For each cabinet housing, include surge protection devices for the VDS camera power lines installed on the terminal bloc.

All surge protection shall be furnished and installed by the Contractor to protect not only the cabinet processor, but the camera sensor itself from ground rise potential (i.e. surge up to the camera sensor).

c. Documentation: Provide the following documentation in a waterproof documentation pouch in each cabinet:

- One operation manual with programming instructions
- One maintenance manual with schematics
- Three legible wiring prints showing all VDS components, model and serial number and connections with the cabinet

4. Cabinet Equipment (Type A, B, and C)

   Component Installation: Fasten all components of the cabinet assembly to be mounted on cabinet side panels with hex-head or Phillips-head machine screws. Install the screws into tapped and threaded holes in the panels. These components include but are not limited to terminal blocks, bussbars, panel and socket mounted surge protection devices, accessory and equipment outlets, and DC power supply chassis. Fasten all other cabinet components with hex-head or Phillips-head machine screws insulated with nuts (with locking washer or insert) or into tapped and threaded holes. All fastener heads and nuts (when used) shall be fully accessible within a complete cabinet assembly, and any component shall be removable without requiring removal of other components, panels, or mounting rails. Do not use self-tapping or self-threading fasteners.

5. Cabinet Equipment (Type D, E, and F)

   a. Exercise extreme caution when installing VDS equipment and materials at traffic signal/ramp meter installations. Installation technicians accessing a signal cabinet shall be accompanied by a certified (minimum) International Municipal Signal Association (IMSA) Level II traffic signal technician. Repair any damage to existing traffic/ramp meter control equipment and materials which occurred during VDS installation to the Engineer's satisfaction at the Contractor's sole expense.

   b. In 336S cabinets, locate the VDS power termination panel on the equipment rail in the lower left portion of the rear of the cabinet as shown in the details and plans. Adjust the panel as far toward the cabinet sidewall as possible while still providing access to the circuit breaker. Notify the Engineer immediately if there is any conflict with existing cabinet equipment in this position. Ensure that there is no conflict with door-mounted components when the door is closed.

   c. In 332 and 334 cabinets, locate the VDS coax termination panel in the lower open section of the front of the cabinet equipment rack as shown in the details. Notify the Engineer immediately if there is any conflict with existing cabinet equipment in this position. Ensure that there is no conflict with door-mounted components when the door is closed. Dress, label, and secure all coaxial cabling to and from the coax termination panel such that the panel can be hinged open a minimum of 90 degrees without binding or stressing any coaxial cable.

B. Microwave Detection System Installation Requirements

1. General Installation Requirements

   Install all detectors and associated equipment at the locations specified in the Plans. Installation must comply with manufacturer's recommendation. All detector equipment, cables, and hardware must be part of an engineered system that is designed by the manufacturer to fully interoperate with all other system components for the Microwave Detection System. Surge protection devices must be approved by the manufacturer, and must be of quality or better than manufacturer recommendations.

2. Detector

   Furnish and Install the microwave radar detector on poles as shown in the plans using Contractor supplied materials and brackets. Install the microwave radar detector to achieve the field of coverage shown in the Plans. Aiming and alignment shall be per the manufacturer's recommendations. The Contractor shall verify height requirements based on manufacturer recommendations and shall notify the Engineer should the mounting height vary from the plans. It is the Contractor's responsibility to make all field adjustments to the locations shown in the Plans, in order to match manufacturer recommendations for operation. All field adjustments shall be approved by the Engineer. The Contractor shall use his laptop to setup the detection zones using detector manufacturer specific software. Use only the latest software that is compatible with the detector, as provided by the manufacturer. Use mounting hardware that meets hardware specifications as described in the Video Detection System Installation Requirements, mounting hardware assembly.

3. Cabinet Equipment

   a. Wiring, Conductors, and Terminal Blocks: Furnish and Install a manufacturer terminated cable of length necessary for the detector installation. Use only cables provided by the manufacturer of the detection system. The detector end-connector shall be manufacturer assembled and tested prior to installation. It shall be completely watertight and weather resistant. All cabling shall be UV rated for outdoor and underground use. Use only stranded copper for all conductors, including those in jacketed cables, except for earth ground conductors, which may be solid copper. Neatly arrange all wiring, firmly lace or bundle it, and mechanically secure the wiring without the use of adhesive fasteners. Route and secure all wiring and cabling to avoid

sharp edges and to avoid conflicts with other equipment or cabling. Route microwave radar detector control wiring and 120VAC power wiring separately so as no transient voltage bleeds over to the detector cable. Terminate all wiring on a terminal block, strip, bussbar, or device clamp or lug; do not splice any wiring from the detector unit to the terminal blocks.

Number and label all terminal blocks, terminal strips, circuit breakers and bussbar breakers and have each item and each terminal position numbered and named according to function. Label terminal blocks, terminal strips, circuit breakers and bussbars with weather and wear resistant labels.

b. Surge Protection Devices (SPD): Protect all copper wiring and cabling entering the cabinet housing by surge protection devices as specified in this specification and the minimum requirements of Section 925.2.02 Section A, part 14. Terminate all wiring between cabinet devices and the transient surge protection devices and between the microwave radar detection unit and the surge protectors on terminal strips. Use a minimum #16 AWG grounding for each surge protection device, or larger if recommended by the surge protection device manufacturer. Use insulated green wire and connect the ground wire directly to the ground bussbar. Do not "daisy chain" with the grounding wires of other devices including other surge protection devices. Dress and route grounding wires separately from all other cabinet wiring. Install grounding wires with the absolute minimum length possible between the suppressor and the ground bussbar. Label all surge suppressors with silk-screened lettering on the mounting panel.

Furnish and install all necessary transient surge protection devices for the microwave radar detection units such that the detector and cabinet equipment are protected.

c. Component Installation: Fasten all components of the cabinet assembly to be mounted on cabinet side panels with hex-head or Phillips-head machine screws. Install the screws into tapped and threaded holes in the panels. The components include but are not limited to terminal blocks, bussbars, panel and socket mounted surge protectors, terminal servers, Ethernet switches, circuit breakers, and accessory and equipment outlets. Fasten all other cabinet components with hex-head or Phillips-head machine screws installed with nuts (with locking washer or insert) or into tapped and threaded holes. Fasten stud-mounted components to a mounting bracket providing complete access to the studs and mounting nuts. All fastener heads and nuts (when used) shall be fully accessible within a complete cabinet assembly, and any component shall be removable without requiring removal of other components, panels, or mounting rails. Do not use self-tapping of or self-threading fasteners.

d. As-Built Drawings: Furnish an as-built cabinet wiring diagram, identified by location, for each cabinet. Include label names and numbering, surge protection devices (SPD's), wiring, cabling, and connections. Place all documentation in a weatherproof holder in the cabinet.

4. Cables, Conduit and Power Service

Furnish and install electrical cables used for control, communications signaling and power supply as required by the manufacturer. Do not splice any cable, shield or conductor used for control, communications signaling, or power supply. Identify all conductors of all cables by color and number. Identify the conductor function in as-built documentation included in the cabinet documentation. After termination and dressing the cables in the cabinet, neatly coil and store a minimum of 6 ft of cable slack in the bottom of the cabinet. Cut unused conductors to a length that can reach any appropriate terminal. Bend back unused conductors over their outer jackets and individually tape them.

Install cabling inside new hollow metal or concrete support poles unless otherwise specified. Where devices are installed on existing wood poles, install cabling on the wood poles in rigid metal conduit risers of minimum 2 inch (5.08 cm) diameter. Use weatherheads on all nipple and conduit openings. Neatly install and route cabling to minimize movement in the wind and chafing against the pole, device or bracket. Form a drip loop at the weather head and route cabling to minimize water entry into the cable connector. Use a 24" diameter drip loop where cables enter a weatherhead.

5. As-Built Drawings

Furnish as-built drawings that include the cabinet wiring diagrams as outlined in 2d above. As-built drawings shall include but not be limited to microwave radar detection locations, microwave radar detection mounting heights, and component lists with brand, model and serial numbers. Place one copy of the as-built drawings in the cabinet documentation pouch and submit another copy to the Engineer.

C. Wireless Magnetometer Vehicle Detection

1. General Installation Requirements

   Each installation of the Wireless Battery-Powered Magnetometer Vehicle Detection System shall consist of one or more sensors installed in the center of each traffic lane, avoiding sources of magnetic noise such as underground power cables, overhead high tension power cables, light rail or subway tracks, and power generation stations and sub-stations.

   a. The sensors shall be located as specified by the plans

   b. For count applications, sensors shall be placed in areas with minimum stop-and-go traffic flow

   c. If vehicle speeds are to be determined by the system, then at least two sensors are required in each lane, separated according to the anticipated average vehicle speed.

      - If the anticipated average vehicle speed is less than 25 mph / 40 kph, the spacing between sensors shall be approximately 10 feet / 3 meters (and measured precisely at the time of installation in order to properly configure the system)
      - If the anticipated average vehicle speed is greater than 25 mph / 40 kph but less than 45 mph / 75 kph, the spacing between sensors shall be approximately 10 to 12 feet / 3.1 to 3.7 meters (and measured precisely at the time of installation in order to properly configure the system)
      - If the anticipated average vehicle speed is greater than 45 mph / 75 kph, the spacing between sensors shall be approximately 20 to 24 feet / 6.1 to 7.3 meters (and measured precisely at the time of installation in order to properly configure the system)

   Prior to installation, the contractor shall provide personnel that have been certified by the manufacturer to test and pre-configure the components, including assigning channels and sensors to SPP, RP's, etc. The Contractor shall record all detection component ID numbers on a project plans drawing or intersection detail prior to installation, and supply all drawings showing the recordings as part of the as-builts at the end of the project. The Contractor shall install each sensor in the roadway per Manufacturer's recommendations. The contractor will install Type B sensors for stop bar detection only, where presence is only required, and Type A sensors will be deployed for all other detection applications.

2. Sensor Installation:

   For a sensor installed just below the roadway surface:

   a. The roadway shall be core drilled to provide a 4" diameter hole, a minimum 2.25" / 5.7 cm deep

   b. The sensor shall be placed inside a small, clear plastic shell formed to provide a tight fit around the sensor.

   c. A small layer of epoxy approximately 1.25" / 3.2 cm shall be applied to the bottom of the cored hole.

   d. The epoxy must adhere to the following requirements:

      - The epoxy shall be a two part poly-urea based joint sealant.
      - It shall have self-leveling characteristics.
      - The surface the epoxy will be bonding to shall be free of debris, moisture and anything else which might interfere with the bonding process.

   e. The epoxy shall be approved by the manufacturer of the detection system

   f. The sensor shall then be placed on top of this layer of epoxy in the correct orientation as clearly marked on the sensor

   g. The sensor shall be fully encapsulated with the epoxy to the lip of the cored hole

3. Sensor to Repeater, or Sensor to SPP Installation:

   The maximum distance between a sensor installed in the roadway and an SPP or an RP with a clear line-of-sight between devices shall be:

   a. At least 175 feet / 53 meters for an SPP or RP installed 30 feet / 9 meters above the roadway

   b. At least 150 feet / 46 meters for an SPP or RP installed 20 feet / 6 meters above the roadway

c. At least 125 feet / 38 meters for an SPP or RP installed 16 feet / 5 meters above the roadway

d. The maximum distance between an SPP and an RP or between an RP and another RP shall be at least 750 feet / 228.6 meters when both units are installed 18 feet / 5.5 meters above the roadway and with a clear line-of-sight between devices

4. Repeater to SPP Installation:

   Maximum wireless distances shall be based on the following:

   a. SPP or Repeater front of the housing shall be aimed directly at the device (SPP, RP or Sensor) it is communicating with

   b. Deviations from the centerline of the front of the SPP or RP shall reduce the effective distance of communication

D. Short-Range Radio Device Detection System Installation Requirements

1. General Installation Requirements
2. Install the Short-Range Radio Device Detection antenna and/or NEMA 4X enclosure on poles as shown in the plans using Contractor supplied materials and brackets. Install the Short-Range Radio Device Detector to achieve the field of coverage shown in the Plans. Make field adjustments to the locations shown in the Plans only with the Engineer's approval.
3. The minimum recommended mounting height for the Short-Range Radio Device sensor antenna shall be 10 feet above grade, unless otherwise approved by the Engineer. When using a solar power supply the panel shall be mounted in accordance with environmental and location geographic conditions, and as shown and noted in the plans. It shall be the Contractor's responsibility to tune the sensor for best coverage of the roadway vehicles being detected.
4. All mounting hardware shall be stainless steel or aluminum, and shall not be susceptible to weather and rusting. Use mounting hardware specifications as outlined in the Video Detection System Installation Requirements. Route all cabling within new conduit, unless otherwise approved by the Engineer. Protect the Short-Range Radio Device processor from the antenna with a surge protection device of specification recommended by the manufacturer.
5. It is the Contractor's responsibility to populate and configure the database and support data system software package and to test the accuracy of the data. Each Short-Range Radio Device Detector shall be configured in the software and show that it is taking a representative sample of vehicles from the traffic stream.

937.3.06 Quality Acceptance/Testing

The acceptance testing of the vehicle detection systems shall consist of two phases: 1) post installation detection system site testing, as outlined in the specific detection technology sections; and 2) burn-in period. Perform acceptance testing for all equipment, hardware and work as provided under this Contract. Perform all testing in the presence of the Engineer. Submit all testing plans and documents to the Engineer during the submittal phase of the vehicle detection equipment.

A. Burn-in Period

1. General Requirements
2. Provide a 30-day burn-in period for all work and equipment included in the Contract and associated with the vehicle detection equipment. The burn-in period shall consist of the field operation of the specific vehicle detection system in a manner that is in full accordance with the requirements of the Plans and Specifications.

3. Conduct only one (1) burn-in period on the entire Contract for all vehicle detection devices. Commence with the burn-in period only after meeting all of the following requirements:

- All work required in all Contract documents for the vehicle detection system project-wide has been completed and inspected by the Engineer.
- Successfully complete the Post-Installation Vehicle Detection System Site Testing.

4. Commence with the burn-in period upon written authorization by the Department to commence. Terminate the burn-in period 30 consecutive days thereafter unless an equipment malfunction occurs. Stop the burn-in period for the length of time any equipment is defective. After repairing the equipment so that it functions properly, resume the burn-in period at the point it was stopped.

5. Successful completion and acceptance of the burn-in period will be granted on the 31st day unless any equipment has malfunctioned. If any equipment has failed during the burn-in period, final acceptance will be withheld until all the equipment is functioning properly.

6. When one specific piece of equipment has malfunctioned more than three times during the 30 day burn-in period, replace that unit with a new unit at no cost to the Department. Multiple failures of detection devices in different locations shall be determined as a failure of the 30 day burn-in period. The Contractor shall investigate the detection system failure and shall give a full report to the Engineer. The Contractor shall replace the failed devices and shall restart the burn-in period at Day 1, once those devices have been replaced and retested.

7. Contractor Responsibilities

   During the burn-in period, maintain all work under this Contract in accordance with the Specifications. Restore any work or equipment to proper operating condition within 12 hours after notification.

8. Department Responsibilities

   Department responsibilities during the burn-in period will be as follows:

   - Expeditious notification of Contractor upon failure or malfunction of equipment
   - In the event that the Contractor does not provide the services enumerated above under his Contract responsibilities, the Department or its authorized agents may in the interest of public safety take emergency action to provide for adequate traffic control. Pay any costs incurred as a result of these emergency actions. Such action by the Department will not void any guaranties or warranties or other obligations set forth in the Contract.

9. Burn-In Period Acceptance

   The Department will make burn-in period acceptance after satisfactory completion of the required burn-in period and on the basis of a comprehensive field inspection of the complete vehicle detection system in accordance with the Specifications. Upon burn-in period acceptance but prior to Final Acceptance of the entire Contract, maintain the complete vehicle detection system in accordance with the specifications.

937.3.07 Contractor Warranty and Maintenance

Equipment provided under this specification shall be warranted by the manufacturer to be free from defects in materials and workmanship for a minimum of three (3) years from Maintenance Acceptance.

The manufacturer's and supplier's warranties shall be transferable to the agency or user that is responsible for maintenance and shall be continuous throughout their duration.

During the warranty period, the manufacturer shall repair or replace any faulty equipment without cost to the purchaser, State of Georgia, or maintaining agency for all incidentals to the repair or replacement, including but not limited to parts, labor, or shipping.

The manufacturer shall be responsible for providing firmware or software updates associated with the CCTV system at no cost to the State of Georgia or maintaining agency during the warranty period. Further, the manufacturer is also responsible for ensuring that any updates will not degrade the original functionality of the product warranted.

The manufacturer and/or supplier shall provide consultation to the Department or user that is responsible for maintenance as needed at no cost during the warranty period for operating questions or problems that arise.

937.3.08 Training

Provide a minimum of at least eight (8) hours of configuration and maintenance training. The persons to be trained will be determined by the Engineer. Configuration training should last a minimum of three (3) hours and must include instructions for programming, hands on training in programming detection zones, adjusting, and calibrating the detection system. One hands on unit shall be provided per attendee during training. Operation and Maintenance training should last a minimum of five (5) hours and must include instructions on troubleshooting, maintenance, and operation for all detection system components. Each class will have a maximum of eight (8) people. The contractor must provide a training notebook to each trainee and an electronic copy of the training notebook to the Engineer.

The contractor must provide a location for holding the courses and pay all costs associated with travel and accommodation of the trainees if training is conducted away from the project area.

Notify the Engineer 20 days before training and agree on a time and place to conduct the training. If agreement cannot be reached, the Engineer will determine the time.

937.4 Measurement

937.4.01 Video Detection System

A. Video Camera Sensor Assembly (All Types)

Video camera sensor assemblies are measured for payment per each actually installed, complete, functional, and accepted. Unless otherwise specified in the Plans, furnish and install the following minimum items for a video camera sensor assembly.

1. Camera, environmental enclosure, and mounting assembly with all associated hardware.
2. Cabinet equipment, including but not limited to wiring, conductors, terminal blocks, surge protection devices, and mounting panels
3. All weather heads, vertical conduit risers, and conduit hardware on the VDS support pole for power service, grounding, communications, and control. If VDS and CCTV are mounted on the same pole, install common weather heads, conduit risers, and conduit hardware under Section 936 of the Specifications.
4. All hardware and materials necessary to provide electrical power service to the VDS field location as shown in the Plans, including but not limited to vertical sections of conduit, conduit hardware, wire, circuit breakers, disconnect closures, and grounding. The Department will pay for horizontal sections of conduit separately.
5. All cables, connectors, hardware, interfaces, supplies, and any other items necessary for the proper operation and function of any VDS system component to carry video signals to the video detection system processor. All cables shall have manufacturer installed and tested connector ends at the detection side of the cable.

B. Video Detection System Processor (All Types)

Video detection system processors are measured for payment per each actually installed, configured, complete, functional, and accepted. Unless otherwise specified in the Plans, furnish and install a video detection system processor to include, at a minimum, the following:

1. Video detection system processor module
2. Appropriate power supplies, power and communication wiring.
3. Necessary housing and rack assemblies for processors that do not plug directly into signal cabinet input files
4. System software provided within the video detection system processor and configuration software

C. Output Expansion Module

Output expansion modules are measured for payment per each actually installed, complete, functional, and accepted. Unless otherwise specified in the Plans, furnish and install an Output Expansion Module to include, at a minimum, the following:

1. Output expansion module
2. Any cabling and hardware required to connect to the processor module or additional expansion modules to the cabinet and controller input pins

D. Testing

Testing is measured as a lump sum for full delivery of testing and acceptance requirements.

E. Training

Training is measured as a lump sum for all supplies, equipment, materials, handouts, travel, and subsistence necessary to conduct the training.

937.4.02 Microwave Radar Detection

A. Microwave Radar Detector Assembly

Microwave radar detection assemblies are measured for payment per each actually installed, complete, functional, and accepted. Unless otherwise specified in the Plans, furnish and install the following minimum items for a microwave detection assembly:

1. Microwave radar detector (including housing)
2. Field cabling surge protection devices, and cabinet equipment. Field cable shall have manufacturer installed end connector at the detection end
3. Power supply modules
4. Serial communication modules
5. Local communication modules
6. Mounting bracket(s)
7. All weatherheads, vertical conduit risers, and conduit hardware on the support pole for power and detector signal as shown in the plans
8. Configuration and Software

B. Testing

Testing is measured as a lump sum for full delivery of testing and acceptance requirements.

C. Training

Training is measured as a lump sum for all supplies, equipment, materials, handouts, travel, and subsistence necessary to conduct the training.

937.4.03 Wireless In-Pavement Vehicle Detection

A. Sensor (All Types)

Sensors are measured for payment per each actually installed, complete, functional, and accepted. Unless otherwise specified in the Plans, furnish and install the following minimum items for a sensor detection assembly:

1. Sensor
2. Epoxy
3. Core Drilling and Placement
4. Sensor plastic enclosure
5. Configuration and Software

B. Access Point Contact Closure (All Types)

Access Point Contact Closure assemblies are measured for payment per each actually installed, complete, functional, and accepted. Unless otherwise specified in the Plans, the APCC shall include all configuration, software, enclosures, surge protection devices and power supplies, as necessary for a full installation. Provide all modules and cabling with the APCC for connection directly into an Ethernet switch.

C. Wireless Repeater

Repeaters are measured for payment per each actually installed, complete, functional, and accepted. Unless otherwise specified in the Plans, furnish and install the following minimum items for a wireless repeater assembly:

1. Repeater including housing
2. 7-year battery
3. Mounting hardware
4. Configuration and Software

D. Serial Port Protocol Unit (SPP)

SPP's are measured for payment per each actually installed, complete, functional, and accepted. Unless otherwise specified in the Plans, furnish and install the following minimum items for a SPP assembly:

1. Radio unit including housing
2. Cabling, surge protection devices and connectors from unit to cabinet
3. Mounting hardware
4. Configuration and Software

E. Expansion Contact Closure Card

Expansion Contact Closure Cards (EX) are measured for payment per each actually installed, complete, functional, and accepted. The EX card shall include all configuration to provide a full contact closure detection system.

F. Isolator Module

Isolator Modules are measured for payment per each actually installed, complete, functional, and accepted. Unless otherwise specified in the Plans, furnish and install the isolation module at all locations the Wireless In-Pavement Detection System is called out in the plans. Ensure that the isolation module is installed per the manufacturer recommendation and is providing protection and amplification of the signal. This shall include all configuration of the unit.

G. Input/Output Module

Input/Output Modules are measured for payment per each actually installed, complete, functional, and accepted. Ensure that the Input/Output module is installed per the manufacturer recommendation and is providing the correct communications options necessary for the installation. This shall include all configuration of the unit.

H. Testing

Testing is measured as a lump sum for full delivery of testing and acceptance requirements.

I. Training

Training is measured as a lump sum for all supplies, equipment, materials, handouts, travel, and subsistence necessary to conduct the training.

937.4.04 Short-Range Radio Device Detection System (All Types)

A. Short-Range Radio Device Detection System (All Types)

Short-Range Radio Device Detectors are measured for payment per each actually installed, complete, functional, and accepted. Each type of system shall be complete, installed and in place and include all units necessary for full operation, as determined by Type. Unless otherwise specified in the Plans, furnish and install the following minimum items for a Short-Range Radio Device Detection assembly:

1. Short-Range Radio Device Detection assembly, including housing and necessary power supplies
2. Power and communications cabling
3. Antenna and mounting hardware
4. Surge Protection Devices
5. Cellular Modem (if applicable)
6. Solar Panel Array (if applicable)
7. Solar Battery charger (if applicable)
8. Batteries (if applicable)
9. NEMA 4X Enclosure (if applicable)
10. Configuration

B. Short-Range Radio Device Detection System Support Data System Software and Database Package

Short-Range Radio Device Detection System software and database packages are measured for payment per each package actually installed, complete, functional, and accepted. Each type of system shall be complete, installed and in place. Unless otherwise specified in the Plans, furnish and install the following minimum items for Short-Range Radio Device Detection System software:

1. Installation of the Software on a Department determined server
2. Installation of the Database software on a Department determined server
3. Configuration of the Short-Range Radio Device Detection System units and initial testing on the software
4. Testing of the XML data and interface to the central system

937.5 Payment

A. General

All Vehicle Detection assemblies, complete in place and accepted by the Department after a successful 30 day burn-in period, are paid for at the Contract Unit Price. Payment is full compensation for furnishing and installing the vehicle detection technology as shown on the plans.

B. Testing

The Department will pay for testing performed as prescribed by this Item, measured as provided under Measurement at the Lump Sum Contract bid price.

C. Training

Training is paid for as a lump sum for all supplies, equipment, materials, handouts, travel, and subsistence necessary to conduct the training, measured as provided under Measurement at the Lump Sum Contract bid price

Payment is full compensation for furnishing and installing the items complete in plans according to this Specification.

Payment will be made under:

Item No. 937	Video Camera Sensor Assembly, Type_	Per Each
Item No. 937	VDS System Processor, Type _	Per Each
Item No. 937	Output Expansion Module, Type _	Per Each
Item No. 937	Testing - Video Detection System	Lump Sum
Item No. 937	Training - Video Detection System	Lump Sum
Item No. 937	Microwave Radar Detection Assembly	Per Each
Item No. 937	Testing - Microwave Detection System	Lump Sum
Item No. 937	Training - Microwave Detection System	Lump Sum
Item No. 937	Wireless Magnetometer Sensor Type _	Per Each
Item No. 937	Access Point Contact Closure Type _	Per Each
Item No. 937	Wireless Repeater	Per Each
Item No. 937	Serial Port Protocol Unit	Per Each
Item No. 937	Expansion Contact Closure Card	Per Each

Item No. 937	Isolator Module	Per Each
Item No. 937	Input/Output Module	Per Each
Item No. 937	Testing – WMVD System	Lump Sum
Item No. 937	Training – WMVD System	Lump Sum
Item No. 937	Short-Range Radio Device Detection System Type _	Per Each
Item No. 937	Short-Range Radio Device Support Data Processing Software Package	Per Each
Item No. 937	Testing – Short-Range Radio Device Detection System	Lump Sum
Item No. 937	Training – Short-Range Radio Device Detection System	Lump Sum