Submitted: August 10, 2012
(DESIGN BUILD)

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SPECIAL PROVISION

P.I. No.: 0010782
District 7

SECTION 999 – DESIGN-BUILD PROJECT

999.1 GENERAL DESCRIPTION

A. Project Location: The location of the Work included in this Project is along I-285 in both directions. This Project is located along the entirety of I-285 in Cobb, Clayton, DeKalb, and Fulton Counties.

B. Design-Build Concept: The Contractor and a design consultant (or design consultant team) will work together to design and build the Project. The design consultant will either be acting as a subconsultant to the Contractor or as a joint-venture member with whom this agreement has been executed. In this document (Section 999), the words "design consultant" or "design consultant team" will refer to the consultant firm or consultant team acting as a subcontractor or joint-venture team member to the Contractor. The design consultant or design consultant team will not be required to fill out Department subcontractor forms for Department use.

The words "Engineer" (with a capital "E") will refer to those personnel of the Department that are acting in the capacity of an engineer for the Department. When the word "engineer" is used the designation will refer to those persons acting on behalf of the Contractor. The Department will have oversight responsibilities only, which include performing reviews and granting acceptance of the design work.

Notice to Proceed (NTP) 1 is the Department's issuance of NTP for preliminary design activities. Title 23, CFR, Section 636.103 (23 CFR Section 636.103) defines preliminary design to include but is not limited to preliminary engineering and other activities and analyses, such as topographic surveys, metes and bounds surveys, geotechnical investigations, hydrologic analysis, hydraulic analysis, utility engineering, traffic studies, financial plans, revenue estimates, hazardous materials assessments, general estimates of the types and quantities of materials, and other work needed to establish the parameters for the final design. Prior to completion of the National Environmental Protection Act (NEPA) review process, any such preliminary engineering and other activities and analyses must not materially affect the objective consideration of alternatives in the NEPA review process.

NTP 2 is the Department's issuance of NTP for final design activities. NTP 2 will not be issued prior to the NEPA approval. Title 23, CFR, Section 636.103 (23 CFR Section 636.103) defines final design as any design activities following preliminary design and expressly includes the preparation of final construction plans and detailed specifications for the performance of construction work.

NTP 3 is the Department's issuance of NTP for land disturbing activities. Purchase of construction materials or rolling stock and project construction will not begin until issuance of NTP 3.

Ensure no land disturbing activities until the following have been accepted by the Department for the entire project or for any portion(s) of the project as approved by the Department; and the Department provides written authorization through the issuance of NTP 3:

1. **Basis of Design**
2. **Environmental certification**
3. **Approved Permits (as applicable)**
4. **Final construction schematics and details**
5. **QC/QA Plan**
6. **Traffic Control Plan**

After the Department has provided written authorization and the final schematics and details are Released for Construction, it shall be the Contractor's responsibility to continue to properly coordinate the Work during the land disturbing phase(s) of the project including but not limited to right of way requirements, utility relocations, and/or environmental requirements. Any additional project costs involving subsequent utility relocations that is

determined to be no fault of the Utility shall be at the Contractor's cost with no additional cost to the Department. Any additional project costs associated with additional right of way or environmental impacts shall be at the Contractor's cost with no additional cost to the Department.

Bids on the Project will reflect designing and constructing the Project as shown in the Scope (999.1.C) and close conformity to applicable portions of the Costing Plans Package (999.2.A). No design exceptions and no design variances will be assumed by the Contractor unless otherwise stated.

Ensure use of those entities prequalified in related disciplines (design, traffic analysis, geotechnical, NEPA, construction, etc.) as presented in the Statement of Qualifications (SOQ). Any proposed changes to the team must be approved by the Department. All Work must be performed by entities which are prequalified by the Department.

C. General Project Scope: The Project includes the installation of Variable Speed Limit Signs on I-285 from approximately I-20 to I-20 on the northern portion located within Cobb, DeKalb, and Fulton Counties. In addition, install new static speed limit signs on I-285 from approximately I-20 to I-20 on the southern portion located within Clayton, DeKalb and Fulton Counties.

1. Design and construct/install double indicated (median and along outside shoulder) Variable Speed Limit Signs (VSLS) in both travel directions on I-285 from I-20 to I-20 on the northern arc of I-285. VSLS to be spaced no more than 1.5 miles apart. Refer to Appendix A for additional requirements for the VSLS and Appendix B for detailed spacing requirements.
2. Remove all existing speed limit signs and posts from I-285. Remove minimum speed limit signs and posts from the northern portion of I-285 within the limits of the VSLS system. Removal of existing speed limit signs should be concurrent to the VSLS being activated. Return all removed signs to the District Seven Sign Shop, 25 Kennedy Drive, Forest Park, GA 30297.
3. Cooperate with the Department and Department's contractor for the integration of VSLS to the Department's Transportation Management Center (TMC) using the Department's NAV2 traffic management software.
4. A field engineer's office will be required on this Project. Refer to Special Provision 153 for specific requirements.
5. Coordinate with Georgia Power Company and TMC to connect all VSLS to a power source.
6. Install static speed limit signs including new post assemblies along the southern arc of I-285 in both travel directions from I-20 to I-20. These signs shall read "SPEED LIMIT 65". Install new signs in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) and GDOT's Signing and Marking Guidelines. Place signs in accordance with Figure 4-2 "Post Interchange Sign Sequence" in the GDOT Signing and Marking Guidelines. Submit an unveiling plan for the static sign system.
7. Install eight Type III sign structures with LED Pixel Changeable Message Signs, Non-Walk-In, 3 x 15, 18 In, Type B, on the right shoulder within 1000' of the approximate locations below. All locations shall be approved by TMC prior to installation.:
    a. Northbound mile marker 10.7
    b. Southbound mile marker 19.0

c. Eastbound mile marker 22.3

d. Westbound mile marker 25.4

e. Eastbound mile marker 28.0

f. Westbound mile marker 30.1

g. Southbound mile marker 33.6

h. Northbound mile marker 44.8

8. Replace existing impacted facilities in kind or better. Possible affected resources include, but are not limited to the following: GDOT ITS system, traffic count stations, signing and marking, utilities, concrete barrier, pavement, guardrail and any utility prescriptive access and ingress to easement or right of way

9. Do not use any salvaged ATMS/ITS equipment on the Project. Coordinate return of salvageable equipment to the Department's Transportation Management Center; contract NaviGAtor Systems Engineer, at 404-635-2849.

10. Replace disturbed limited access fence in kind.

11. Install advisory speed plaques with an advisory speed of 55 mph on left-hand and right-hand side of the roadway (double indicated) on the approaches for the following horizontal curves:

    a. On northbound I-285 at the interchage of I-285 and I-85.

    b. On eastbound I-285 at the interchange of I-285 and I-85.

12. Identify additional areas that do not appear to meet a speed design of 65 mph within project limits. Additional posting required to mitigate areas that do not meet a 65 mph speed design will be treated as Extra Work.

13. Install Entering Variable Speed Limit Zone sign on right-hand side of roadway on northbound I-285 and on entrance ramps from I-85, I-75, I-20, SR 400 and US 78 (Stone Mountain Freeway) when entering the VSLS system. .

14. Ensure horizontal clearance for standard highway signs is 32 feet from the normal edge of pavement to the nearest edge of the sign(s). Ensure horizontal clearnace for standard highway signs mounted behind guard rail shall be 6 feet from the face of the guard rail to the nearest edge of the sign(s).

15. Ensure all signs installed by this project have a minimum sight distance of 1000 feet. Clearing of obstacles to obtain the minimum sight distance shall be done in accordance with Section 201 of the Georgia Standard Specifications.

16. Signs shall comply with the current MUTCD as well as GDOT Signing and Marking Guidelines, specifications, standards and details.

17. Coordinate with the Department's Office of Communications. Provide outreach materials as requested which may include but is not limited to lane closures, schedule information, VSLS vendor information, and location implementation.

18. Ensure continuing service is provided to all waterline, gas line, and transmission lines as per Standard Specification Section 107.21, all other Special Provisions, and Standard Specifications. Contractor is responsible for any and all interruption to service liabilities due to failure to maintain continuing service.

19. Conduct all work to minimize disruption to the travel public. Coordinate and perform the respective changeover to new signs while maintaining posted speed limit on I-285 at all times.

20. . Install new 96 count fiber optic cable to support the VSLS system in both directions along I-285 from Roswell Road (Hub B) to I-85 (Hub C); terminate fiber at each Fiber optic Distribution Center. Install Type 3, 2" nonmetal conduit Westbound (outer loop) along I-285 from Hub B to Hub C. Install 10,000 Linear Feet of Type 3, 2" nonmetal conduit Eastbound. Additional conduit installed as needed will be paid for as Extra Work per SP 109.05. Ensure installation of conduit and fiber optic cable as required for the project in accordance with GDOT standards and specifications. Refer to applicable Special Provisions. Encase conduit in concrete with two (2) feet of cover or install conduit with four (4) feet of cover. Install network crossovers as necessary on this project in accordance with GDOT ITS Design Manual. Ensure fiber allocations provide a redundant loop design between all field switches of each field device network.

D. Right of Way: Ensure design and construction of the Project occurs within the existing Right of Way.

E. Environmental: Provide all material, labor, equipment, and other incidentals required to adhere to the "Commitments/Requirements" applying to the Contractor, design or construction of the Project. Key words such as "construction," "contractor," "work," etc., point to the areas for which the Contractor is responsible.

1. The NEPA document was approved on August 10, 2012. The Department is responsible for preparation and obtaining approval of any Environmental Reevaluations from the Federal Highway Administration (FHWA) since the Contractor is prohibited from being involved with the decision making responsibilities related to the NEPA process (23 CFR Ch 1, Section 636.109(b)(6)). .

2. The NEPA document and Special/Technical Studies are valid until project changes occur which would invalidate the original findings. Any and all design changes made by the Contractor, which are outside of the parameters of the approved Environmental documentation, may require one or more of the Special/Technical Studies (Air, Archaeology, Ecology, History, and Noise) to be updated. Please note, revising Special/Technical Studies may require review/approval coordination with the various agencies be reopened. Project changes may also require an Environmental Reevaluation of the NEPA document. Updates to the Special/Technical Studies and the Environmental Reevaluation will be completed by the Department.

3. Provide to the Department project change information, revised/final plan sheets, and any additional work product that may need to be considered in the NEPA analysis, in order to update Special/Technical Studies and complete the Environmental Reevaluation.

4. To proceed to Construction, the Special/Technical Studies and the NEPA document must have addressed all project changes affecting environmental resources.

5. Once it has been determined the environmental documentation is accurate and all NEPA related tasks (such as approval of an Environmental Reevaluation, all Preconstruction Environmental Commitments, including, but not limited to receipt of all permits, variances, and the purchase of mitigation credits) have been completed the Department will issue an Environmental Certification which will be provided to the Contractor. **No land disturbing activities will take place until this certification or conditional certification is issued.**

6. Provide the proposed impacts to streams and wetlands, which include impacts resulting from utility relocations, and temporary and/or permanent impacts, resulting from construction of the Project.

7. If the proposed design impacts waters of the US then an application for the Section 404 Nationwide Permit to the US Army Corps of Engineers will be completed by the Contractor. Verify the need for any Buffer Variances on this Project. Ensure the necessary design and construction needed to avoid or mitigate for the buffer(s) impact. If a Buffer Variance is identified then the Contractor is responsible for notifying the Department no later than the time of the preliminary plans submittal to the Department. Prepare the Buffer Variance application to the Department's satisfaction. The Department will transmit the Buffer Variance application to Georgia's Environmental Protection Division. Satisfactorily address Georgia's Environmental Protection Division comments. The Department anticipates approximately 120 days will be required from the time the Department transmits an acceptable Buffer Variance application to receipt of agency approval. Satisfactorily address the Georgia Environmental Protection Division's comments within 14 calendar days of receipt. The Buffer Variance cannot be granted prior to issuance of the Section 404 Nationwide permit.

8. Acquire all mitigation credits in the name of the Department as required under the approved permit. All mitigation credits obtained by the Contractor and applied to the project shall be approved by the USACE.

9. Erect orange barrier fencing within the Project area to establish and protect any Environmentally Sensitive Areas (ESA) within the Project to prevent any encroachment upon said area during construction activities. Within ESA buffers for which a variance was obtained, install orange barrier fence within the buffer at the limits of the construction for which the variance was obtained.

999.2 PLANS

A. General: The Costing Plans Package prepared on behalf of the Department includes multiple resources. Information will be made available to the short listed Contractors via a read only GDOT Sharepoint site and is considered for information only. These resources are to be used in preparing the bid and corresponding technical proposal (refer to Special Provision Section 102—Bidding Requirements and Conditions and Special Provision Section 999.6 – Technical Proposal) for this Project. Notify the Department of any resource in error or that would cause the design (as presented in the Costing Plans Package) to not be constructible.

The Georgia Department of Transportation, in making this information available to Contractors, assumes no responsibility for its accuracy. No claim will be considered if the Contractor relies on this "For Information Only" data in its bidding or in its construction operations and finds that it is inaccurate. The Contractor's attention is directed to Specifications 101.16 – CONTRACT and 102.05 – EXAMINATIONS OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND SITE OF THE WORK.

Available files will be posted 8 am the day of Project Advertisement on the GDOT SharePoint site. Check this site daily for possible updates. A Read Me First file will document when new files are added. A Question and Answer document will also be maintained on the GDOT SharePoint site. Instructions to review and download are as follows:

1. Enter http://mydocs.dot.ga.gov/info/designbuild/default.aspx
2. Select Project Identification Number – 0010782.

999.3 DESIGN

A. General: Design the complete Project. Ensure the design is based on the engineer's specific knowledge, and engineering judgment in the preparation of the design for the Project.

1. **Measuring Units:** Ensure the Project is designed in **English** units of measurement.

2. **Design Software:** Design using Google Earth and Arc GIS.

3. **Design Scope of Services:** Prepare plans and/or schematics and details in accordance with the Georgia Department of Transportation's instructions as to design criteria, procedures, and format as contained in this Special Provision and in accordance with, but not limited to the following reference materials **current at the time of Project Advertisement**: A Policy On Design Standards Interstate System, GDOT Design Policy Manual, GDOT Signing and Marking Design Guidelines, GDOT Driveway and Encroachment Manual, AASHTO Roadside Design Manual, AASHTO Geometric Design of Highway and Streets, Manual on Uniform Traffic Control Devices (MUTCD), Georgia Manual on Drainage Design for Highways, Utility Accommodation Policy and Standards Manual, GDOT Bridge Design Memos and the Bridge and Structural Design Manual, and the Department's Current Plan Preparation Guide (PPG).

   Current Department design manuals and guidelines may be found at: http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/Pages/default.aspx. Ensure Project designers consider all elements of the design, including but not limited to roadway geometry, drainage requirements, traffic control during construction, erosion control, structural design, utility conflicts, signing and marking, and future maintenance requirements.

4. **Design Reviews:** Prepare the design under the direct supervision of licensed design professionals. A Professional Engineer licensed to practice engineering in the State of Georgia on the design team must seal the final plans. The seal on the drawing represents certification the design meets all applicable codes and is of sound engineering practice and standards. Check and certify the design.

   The Department will establish dates and times for cursory reviews and will comment on design work, but will not require hold points on the design, review periods, or comment responses, except as noted otherwise. If at any time the Department determines the design work is not in conformance with the Department's standards, details, specifications, or sound engineering practice, the Department reserves the right to stop work, at the Contractor's expense until a resolution of the issue(s) has occurred.

   Submit construction documents (plans and/or schematics, details and any specifications) shown in Table 4-1 or other portions of this Special Provision to the Department for review and acceptance. Acceptance, disapprovals, or comments made by the Department will be provided in writing to the Contractor within the appropriate timeframes shown in Table 4-1.

   No construction is to begin on any phase of the work prior to the Department authorizing the various component(s) of the plans and/or schematics and details as Released for Construction.

   Other items shall be submitted to the Department by the Contractor, if requested.

   After the Department has accepted the plans and/or schematics and details; and has authorized them as Released for Construction, any requests by the Contractor to the Department for any subsequent plan/design changes must include necessary documentation which supports the reasoning behind the change request. The Department must approve the requested change with written notice prior to its implementation as a plan revision and subsequent construction activity.

Facilitate monthly progress meetings at a venue and time determined convenient to the Department. The general purpose of these meetings is to update the Department staff on the status of design, current activities, issues, activities that the Department is currently performing, and other related matters that impact scope, schedule and budget. Provide the Engineer an agenda of items one week in advance of the meeting in order for the Engineer to arrange for GDOT Office reviewer(s) to attend, if necessary. Other attendees include the Contractor, design consultant, the Department's Project Engineer and Project Manager. Provide a call in number and conferencing capabilities to allow others to participate at the Department's discretion. Publish meeting notes of those discussions within two weeks of their occurrence and sent to all attendees and others indicated by GDOT. Ensure the first of these monthly meetings occur at the conclusion of the Post Award Meeting.

ABBREVIATIONS FOR TABLE 4.1

AR	As Required
FS	Full-size paper – meets GDOT Plan Presentation Guide
HC	Hard Copy – 8 ½ x 11 unless otherwise noted
HS	Half-size paper – meets GDOT Plan Presentation Guide
MS	Microstation File – Electronic
GE	Google Earth (.kmz) File - Electronic
GIS	Arc GIS File - Electronic
NTP	Notice to Proceed
PAS	Per Approved Schedule
PDF	Adobe PDF – One complete file and individual plan sheet files meets GDOT Electronic Plans Process
EQ	Equipment
OT	Open to Traffic
CLS	Class

TABLE 4-1: REVIEWS

Submittal Description	Format	Quantity	Delivery Date*	Review Period*	Review Type	Comment
Basis of Design	HC, PDF	3, 1	NTP1 + 7	14	Accepted by Engineer	
Schedule of Values	HC,PDF	3, 1	NTP1 + 14	14	Accepted by Engineer	
ITS Maintenance and Repair Plan	HC,PDF	3, 1	NTP1 + 30	14	Accepted by Engineer	
Inventory of existing ITS components	HC, PDF	3, 1	NTP1 +30	30	Accepted by Engineer	
VSLS Vender Specifications	HC, PDF	3 ,1	NTP1 + 30	7	Accepted by Engineer	
VSLS (including software, infrastructure cabinets, and field switches)	EQ	2	NTP1 + 150	N/A	N/A	Provide two (2) signs for use by TMC SI to perform integration and testing.
Final Plans, Schematics and Details (including all design calculations)	HC, GE, PDF	12, 1, 1	PAS	30	Accepted by Engineer	FHWA to perform concurrent review of plans.
Released for Construction Plans	HC, GE, PDF	4, 1, 1	PAS	14	Accepted by Engineer	
Install in the field VSLS (including VSLS and all required connections, poles, and power service for VSLS to operate)	EQ	1	OT - 90	N/A	N/A	See Appendix A for integration and testing requirements
Plan to transition the existing static sign system to the proposed VSLS system	HC, PDF	3, 1	PAS	30	Accepted by Engineer	See Appendix A for additional plan requirements
Install in the field all VSLS (including VSLS and all required connections, poles, and power service for VSLS to operate)	EQ	All VSLS	OT - 60	N/A	N/A	See Appendix A for integration and testing requirements
Critical Path Method (CPM) Baseline Schedule	HC, PDF	4, 1	NTP1 + 14	30	Accepted by Engineer	Provide one (1) courtesy copy to FHWA
QC/QA Plan	HC, PDF	3, 1	NTP1 + 14	21	Accepted by Engineer	

Worksite Utility Control Supervisor Qualifications Traffic Control Supervisor Qualifications Worksite Erosion Control Supervisor Qualifications	HC, PDF	3, 1	PAS; Prior to Construction	21	Accepted by Engineer	
Construction Traffic Control Plan	FS, HS, PDF	3, 3, 1	PAS	21	Accepted by Engineer	FHWA to perform concurrent review of Construction Traffic Control Plan
Maintenance Manual	HC, PDF	5, 1	PAS	30	Accepted by Engineer	See Appendix A for requirements
Training Materials	HC, PDF	20, 1	PAS	N/A	N/A	See Appendix A for requirements
Training Course	CLS	1	PAS	N/A	N/A	One (1) eight (8) hour training course. See Appendix B for requirements
Shop Drawings	FS	6	PAS	30	Accepted by Engineer	
As Built Plans and ARC GIS files	FS, GE, GIS, PDF	3	PAS	30	Accepted by Engineer	

*All units are “Calendar Days.”, as defined in section 101, Standard specifications

Transmit all submittals directly to the Engineer. The Engineer will provide submittals to the applicable GDOT Office Reviewer and/or other applicable entities (including FHWA), unless otherwise noted or discussed with the Contractor. **Hand-deliver submittals**. Unless a different review time is specified elsewhere in the contract, a period of **thirty (30) calendar days** from receipt to release of the submittal by the Department shall be allowed for the Department’s review. Engineer’s (Department’s) acceptance as to completeness is required for all reviews. Ensure CPM schedules reflect the review times contained within the specifications and contract. Engineer’s receipt of submittals will mark the beginning of the review period. Provide up to date half-size sets of plans with the most current design and construction plans at any time during the Project when requested by the Engineer. Errors and omissions are the responsibility of the Contractor to correct and shall be at the Contractor’s expense.

Include a cover letter with all submittals describing the submittal, review period and the due date for any Department response.

Include the Contractor’s QC/QA certification statement with all submittals (in addition to the design consultant’s QC/QA certification statement for all design related submittals). The Department will reject any submittal if the QC/QA certification statement is not included.

Any submittal received by the Engineer after 12 PM (noon) shall be considered as being received the following business day.

5. Quality Control/Quality Assurance: During the design phase of the contract, the Department, except where noted otherwise, will have oversight responsibilities only and will not perform official reviews and approvals of design work. The Department will not take any approval or formal review actions on design issues except as noted herein or for deviations from the intended scope of the Project.

Employ only persons duly registered in Georgia in the appropriate category in responsible charge of supervision and design of the work; and further, employ only qualified, State of Georgia registered land surveyors in responsible charge of any survey work.

Use only a consultant design team prequalified by the Department in all applicable Department area class requirements. Should a member of the design consultant team need to be replaced, obtain the Department's approval of the change.

Identify the originator, checker and back-checker on the cover of all submittals. Ensure the Plans, reports and other documents are stamped, signed and dated by the responsible Georgia Registered Engineer where required under the contract documents, generally accepted engineering practices or by applicable laws. Submit a certified statement certifying all reviews have been made.

Endorse all final reports, contract plans and survey data. These endorsements shall be made by a person(s) duly registered in the appropriate category by the Georgia State Board of Registration for Professional Engineers and Land Surveyors, being in the full employ of the Contractor and responsible for the work prescribed in the contract.

Authorized representatives of the Department and Federal Highway Administration (FHWA) may review and inspect the Project activities and data collected at all times. Ensure all reports, drawings, studies, specifications, estimates, maps and computations prepared by or for the Contractor are available to authorized representatives of both the Department and FHWA for inspection and review. Incorporate the Department's review comments into the plans as agreed. These changes shall not result in an increase in cost.

Before the start of the contracted design and construction effort, develop and acquire the Department's approval of a QC/QA Plan. Ensure the QC/QA Plan includes the following, which shall be considered minimum requirements:

a. Quality control and quality assurance procedures for design documents; specify measures to be taken by the Contractor:

    1) To ensure appropriate quality standards are specified and included in the design documents and to control deviations from such standards, being understood and agreed no deviations from such standards be made unless they have been previously accepted by the Department, and

    2) for the selection of suitable materials and elements of the Work included in the Project.

b. Quality control and quality assurance procedures for preparing and checking all plans, calculations, drawings and other items submitted to ensure they are independently checked and back-checked in accordance with generally accepted engineering practices, by experienced engineers.

c. Quality control and quality assurance procedures for shop drawings, as well as for determining during the construction phase when red lines or revisions are required, obtaining proper approval or acceptance, and then distributing plan revisions to the Department and others.

d. Procedures for coordinating work performed by different persons within the same area, in an adjacent area or in related tasks shall ensure that conflicts, omissions or misalignments do not occur between drawings or between the drawing and specifications. These procedures allow for the coordination of the review, approval, release, distribution and revision of documents involving such persons.

e. All the persons proposed to be responsible for Quality Control and Quality Assurance procedures are to be listed as follows: Discipline, Name, Contact Information, Qualifications, Duties, Responsibilities and Authorities.

f. Designate all key personnel performing Quality Control and Quality Assurance functions as such and will not be assigned to perform conflicting duties.

g. Quality Control procedure during the construction phase to ensure all labor, material and Work in accordance with applicable specifications.

6. Released for Construction: Upon the Contractor's satisfactory completion of the items listed in 999.1.B, and upon written notice from the Department the plans as Released for Construction, stamp each plan sheet with "Released for Construction" and include the notice date. The Released for Construction plans are the official plans used for construction of the Project.

7. As-Built Plans: Upon completion of the Project construction, provide a complete As-Built set of plans to the Department in the following formats:

a. Two (2) CD-ROMs or DVDs containing:

1) all electronic design files, electronic calculations, etc.

2) .pdf images of each plan sheet – one sheet per file

3) Arc GIS files including all installed ITS components including but not limited to VSLS, pull boxes, field switches, conduit, fiber, wireless/radio modems, power service points, etc…

4) .kmz file showing all ITS components

5) .pdf containing the entire plan set

b. One (1) hard copy of the design databook, and calculations

c. Two (2) full-size set of bond prints

d. Two (2) half-size set of bond prints

e. Provide a revised estimated summary of quantities and detailed estimate in the final As-Built plans. ArcGIS and Google Earth location tolerances are acceptable for location of all installed ITS components.

Ensure all production and delivery of materials needed for Department review. Both a member of the design team, who is a Professional Engineer, and a member who is a Registered Surveyor, licensed to practice engineering in the State of Georgia shall seal the As-Built plans.

All plan related documents produced during the contract period are to be maintained by the Contractor for the duration of the Contract organized, indexed and delivered to the Department (1) upon Final Acceptance of the Project or (2) even if incomplete, within seven (7) days of receipt of request from the Department. These documents include, but not limited to, the following items: design criteria, reports and notes, calculations, drawings, schematics, supporting materials, statement regarding accomplishment of reviews and others.

8. **Ownership of Documents**: All reports, drawings, studies, specifications, survey notes, estimates, maps, computations, computer files and other data, prepared by or for the Project under the terms of this Agreement and delivered to the Department become and remain the property of the Department. The Department will have the right to use this information without restriction or limitation and without compensation to the Contractor other than provided for in this agreement.

   Any use of these documents by the Department on any Project other than this one will be done without warranty by the Contractor/Design Consultant Team.

9. **Insurance:** In addition to the insurance requirements covered elsewhere, provide insurance coverage of the following types and amounts:

   a. Valuable Papers: Insurance in an amount sufficient to assure the restoration of any plans, drawings, field notes or other similar data relating to the work covered by the Project is required. Insurance is to be maintained in full force and effect during the life of this Agreement.

   b. Professional Liability (Errors and Omissions): Insurance in an amount not less than one million dollars ($1,000,000) per claim (with a maximum of $250,000 deductible per claim) during the agreement term and for a period of at least five (5) years after this Agreement is closed is required. Such a policy is to cover all of the Contractor's professional liabilities, whether occasioned by the Contractor, his employees, subcontractors or other agents, arising out of services performed under or in accordance with this Agreement.

   c. Insurance coverage required in this section may be held by the contractor or the design consultant team.

10. **Publication and Publicity:** Articles, papers, bulletins, reports or other materials reporting the plans, progress, analyses or results and findings of the work conducted under this Agreement shall not be presented publicly or published without prior approval in writing from the Department. All releases of information, findings and recommendations shall include a disclaimer provision to be included in all published reports on the cover and title page in the following form:

    "The opinions, findings and conclusions in the publication are those of the author(s) and not necessarily those of the Department of Transportation, State of Georgia or the Federal Highway Administration."

    Any information concerning the Project, including conduct, results or data gathered or processed, released by the Contractor without prior approval from the Department will constitute grounds for termination without indemnity to the Contractor. Information released by the Department or by the Contractor with prior written approval is to be regarded as public information and no longer subject to the restrictions of this Agreement. Information required to be released by the Department under the Georgia Open Records Act, Section 50-18-70, et seq., O.C.G.A., the restrictions and penalties mentioned set forth herein shall not apply. Any request for information directed to the Contractor, pursuant to the Georgia Open Records Act, is to be redirected to the Department for further action.

11. **Copyrighting:** The Contractor and the Department agree any papers, interim reports, forms and other material which are a part of work under this Agreement are to be deemed a "work made for hire", as such term is defined in the Copyright Laws of the United States. As a "work made for hire", all copyright interests in said works shall vest in the Department upon creation of the copyrightable work. If any papers, interim reports, forms or other material which are a part of work under the Agreement are deemed by law not to be a "work made for hire", any copyright interests of the Contractor are hereby assigned

completely and solely to the Department. Publication rights to any works produced under this Agreement are reserved by the Department.

12. **Patent Rights**: If patentable discoveries or inventions result from work described herein, all rights accruing from such discoveries or inventions are the sole property of the Contractor. However, the Contractor agrees to and does hereby grant to the Department, an irrevocable, non-exclusive, non-transferable and royalty-free license to practice each invention in the manufacture, use and disposition according to law of any article or material and in use of any method that may be developed as a part of the work under this Agreement.

B. Roadway

1. Preparation of Construction Plans

a. General Criteria: Ensure the use of the most current design criteria at the time of advertisement, as accepted by the Department, American Association of State Highway and Transportation Officials (AASHTO) Design Manuals for Arterial Streets, Rural, Urban and Interstate Highways, including those standards adopted by AASHTO and approved by the Secretary of Commerce, as provided by Title 23, United States Code, Section 109 (b), with the Department's Standards, Procedures, Plans, Specifications and Methods, with Federal Highway Administration procedures relating to plan review and approval, and shall produce plans in accordance therewith.

b. Design Specifications and Guidelines: Design for roadways and intersections in accordance with the current edition of AASHTO Design Specifications; of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals; and AASHTO Roadside Design Guide and the Department of Transportation Standard Specifications for Construction of Roads and Bridges, the 2008 Supplemental Specifications modifying the 2001 Standard Specifications. Design and plan preparation shall be in accordance with the FHWA Federal-Aid Policy Guide. Plan and specifications shall conform to the requirements of the Highway Capacity Manual.

Design for work to conform to AASHTO design standards for the appropriate classification and speed design.

Utilize the following references as a minimum in the development of this Project in addition to the references listed above

1) Electronic Data Guidelines (EDG) – current version
2) Plan Presentation Guide (PPG) – current version
3) GDOT Design Policy Manual – current version
4) Manual on Uniform Traffic Control Devices (MUTCD) by the U.S. Department of Transportation, Federal Highway Administration "FHWA" – current version
5) Manual on Drainage Design for Highways by the Georgia Department of Transportation - current version
6) Roadway and Bridge Standard Plans as of July, 2006 by the GDOT Road Design Office. Design and plan preparation in accordance with the Certification Acceptance authorized by 23 USC 117(a) for Administering Federal Aid Projects Not On Interstate System, dated June 1, 1990.
7) GDOT Construction Standards and Details - current versions

8) Pay Item Index by the GDOT State Transportation Office Engineer - current version

9) Utility Accommodation Policy and Standards by the GDOT Utilities Office - current version

10) GDOT Signing and Marking Design Guidelines – current version

11) Traffic Signal Design Guidelines – current versions

12) A Policy On Design Standards for Interstate System – current version

13) Other manuals of guidance which are standard procedures of the Department, (signal design, signing and markings, etc). – current version

The above list is not intended to be all-inclusive. All references to the "**current version**" shall mean those in effect and adopted by the Department at time of advertisement. Any current editions written in metric units ensure "soft converted" to U.S. Standards Units. Any rounding shall be to the dimension that shall increase safety.

c. Erosion and Sediment Control Sheets: Ensure daily stabilization of all disturbed areas of the Project at the end of each work day. More frequent stabilization may be required to prevent silt from leaving the Project site.

If needed, prepare the Erosion Sedimentation and Pollution Control Plans (ESPCP) in accordance with current Department practice, and in accordance with the requirements set forth in the NPDES General Permit No. GAR1000002 [August 2008]. NPDES General Permit Guidance may be found at: http://www.dot.state.ga.us/doingbusiness/PoliciesManuals/roads/Pages/DesignPolicies.aspx. In addition, design the plans in accordance with the current version of Georgia Soil and Water Conservation Commission's Manual for Erosion and Sediment Control in Georgia (Green Book).

All required sediment and erosion control items, including but not limited to installation and maintenance, shall be paid for under CONSTRUCTION COMPLETE.

As contained within the Department's standard ESPCP General Notes (dated 8-26-2008 or more current), remove all references to the following statement: "The Erosion Sedimentation and Pollution Control Plan (ESPCP) is provided by the Department."

Erosion and Sediment control plans should be completed in phases so that no phase contains more than 1 disturbed acre. Plans should be prepared in accordance with current Department practice, and in accordance with the requirements set forth in the NPDES General Permit No. GAR1000002 [August 2008]. Each phase requires its own plan set. Meet with EPD prior to establishment of phases for further instruction on Erosion and Sediment control requirements.

C. Mounting Requirements

1. The sign support structure and method of securing the sign to the support must be designed in accordance with the requirements of the Georgia DOT Specification, AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, AASHTO Roadside Design Guide and the MUTCD.

2. Variable speed limit signs shall be mounted securely to one of the following:

    a. Overhead, butterfly or cantilever sign vertical structure support.

    b. Independent sign support post, barrier mounted.

    c. Independent sign support post, ground mounted.

3. Overhead, butterfly or cantilever Sign Structure Mounted Signs

    a. Variable speed limit signs that are mounted to existing overhead, butterfly or cantilever sign structure supports shall be mounted to the vertical support column of the sign structure. The mounting bracket shall be sufficient to support the weight of the variable speed limit sign and any equipment mounted to the sign that is required for its operation, as well as to resist modified AASHTO wind loads of 90 mph.

    b. No portion of the mounting bracket may protrude past the edges of the sign into oncoming traffic. Modifications to the overhead sign structure supports to place the mounting bracket shall not reduce the overall load carrying capacity of the sign structure.

4. Median Barrier Mounted Sign Supports

    a. The sign post connection including the, base plate and anchors shall be sufficient to support the weight of the variable speed limit sign and any equipment mounted to the sign that is required for its operation, as well as to resist modified AASHTO wind loads of 70 mph.

    b. Mount sign supports to the top of the median barrier using an anchorage system approved by the Department for use on this project. The sign post, base plate and anchors must be located within the footprint of the top of the barrier with no portion protruding such that it is exposed to oncoming traffic.

    c. Mounting of conduit or cable required for power and communications to the exterior of the concrete barrier shall not be permitted. Conduit shall be located within the concrete barrier section. Reconstruction of concrete barrier required to install conduit shall be in accordance with the GDOT Standard Specifications and Special Provision 621.

    d. For signs mounted to existing median barrier, the barrier may require modifications to accommodate the installation of the sign base plate and anchor bolts. This includes is but is not limited to the removal of the existing concrete glare screen and existing reinforcing modifications to the existing barrier section dimensions and reinforcing to mount the new sign to the barrier portion of the median. Sign post base plates and anchorages shall not be mounted to the glare screen concrete. The existing barrier shall be repaired as needed after completing the modifications to the concrete and

reinforcing, including patching at cut reinforcing bars as well as any concrete spalls or cracks that have developed as a result of removal. The cost of the modification and repair of the of existing barrier and/or concrete glare screen and repairs shall be included in the overall bid price.

5. Ground Mounted Signs

    a. Mount signs posts on breakaway type supports constructed in accordance with the requirements of the GDOT Standard Specifications.

D. Utilities

1. Coordination Responsibilities: The Contractor shall have the responsibility of coordinating the project construction with all utilities that may be affected. Coordinating responsibilities shall include but not be limited to the following:

   a. The Contractor shall initiate early coordination with all Utility Owners located within the project limits. The Contractor shall be responsible for the cost of Utility Coordination. Coordination shall include, but shall not be limited to, contacting each Utility Owner to advise of the proposed project facilities.

   b. The Contractor shall design the project to avoid conflicts with utilities.

   c. Progress meetings will be held at the project location if requested by either the Contractor or the Department. Attendees shall include the Contractor, design consultant, the Department's project engineer and design liaison, and may also include a representative from various Department Offices.

   d. The Contractor shall coordinate and conduct a preliminary review meeting with the Utility Owners to assess and explain the impact of the project. The Department's Project Manager, District Construction Engineer (or designee), and District Utilities Engineer (or designee) shall be included in this meeting. Knowledge of the project environmental "Commitments/ Requirements" (Green Sheets) is essential for Utility Owners during their design phase. The Contractor shall provide the Environmental Commitments table, and any re-evaluation with all Utility Owners.

   e. During the construction of the project, the Contractor shall designate, prior to beginning any work, a Worksite Utility Coordination Supervisor (WUCS) who shall be responsible for initiating and conducting utility coordination meetings and accurately recording and reporting the status. The WUCS shall be the primary point of contact between all of the Utility companies, the Contractor and the Department. The WUCS shall recommend the rate of reoccurrence for utility coordination meetings and the Engineer will have the final decision on the regularity for utility coordination meetings. The WUCS shall contact each of the utility companies for the purpose of obtaining information. The WUCS shall notify the appropriate utility company and/or utility subcontractors and the Department of the status of controlling items of white lining and utility locations as they are completed.

      1) Qualifications: The WUCS shall be an employee of the Prime Contractor, shall have at least one year experience directly related to highway and utility construction in a supervisory capacity and have a complete understanding of the Georgia Utilities Protection Center operations, and shall be knowledgeable of the High-voltage Safety Act and shall be trained on the Georgia Utility Facility Protection Act (GUFPA). The Department does not provide any training on GUFPA but will maintain a list of the Georgia Public Service Commission certified training programs developed by other agencies. Currently the following companies offer approved GUFPA training programs:

      Associated Damage Consultants
      Phone: 706.234.8218 or 706.853.1362

      Georgia Utility Contractors Association
      Phone: 404.362.9995

      Georgia Utilities Protection Center

Phone: 678.291.0631 or 404.375.6209

H B Training & Consulting
Phone: 706.619.1669 or 877.442.4282 (Toll Free)

The Prime Contractor is responsible for obtaining the GUFPA training for their employees.

Questions concerning the Georgia Public Service Commission GUFPA training program shall be directed to:

Georgia Public Service Commission
244 Washington St. SW
Atlanta, GA 30334-5701
404.463.9784

2) Ticket Status: During the utility coordination meetings the WUCS shall collect and maintain the Ticket Status information to determine the status of all locate requests within the project limits. This information will be used to assure those planning to use mechanized equipment to excavate or to work within the project limits are prepared to begin work when they have reported or estimated beginning work. At points where the Contractor's or utility company's operations are adjacent to or conflict with overhead or underground utility facilities, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not commence until all arrangements necessary for the protection thereof have been made.

3) Notice: The names of known utility companies and the location of known utility facilities will be shown on the Plans, or listed in the Overhead/Subsurface Utility Engineering Investigation if performed or in the Special Provisions; and the WUCS shall give 24-hour notice to such utility companies before commencing work adjacent to said utility facilities which may result in damage thereto. The WUCS shall further notify utility companies of any changes in the Contractor's work schedules affecting required action by the utility company to protect or adjust their facilities. Notice to the utility companies by the Department of the Award of Contract, under Subsection 105.06, shall not be deemed to satisfy the notice required by this paragraph. Furthermore, this 24-hour notice shall not satisfy or fulfill the requirements of the Contractor as stated in Chapter 9 of Title 25 of the Official Code of Georgia Annotated, known as the "Georgia Utility Facility Protection Act".

q. In addition to the above, the Contractor shall comply with all provisions set forth under subsection 107.21 of the Georgia Department of Transportation's Specifications, Construction of Transportation Systems, current edition.

2. General

a. By Georgia Statues, utilities whether public or privately owned, aerial or underground, are permitted by the Department and local governments to be accommodated within the public right of way. To this end, the Contractor will avoid all utilities. Design/construction techniques that avoid utility conflicts may involve increased upfront costs; however, those costs are offset by savings during construction, in addition to the total cost savings for the project (the Department or local government) and the respective utility owners.

b. Additional guidance for accommodating utilities within the right of way are given in the AASHTO publications: A Guide for Accommodating Utilities within Highway Right of Way, A Policy on Geometric Design of Highways and Streets; the TRB publication:

Policies for Accommodation of Utilities on Highway Rights-of-Way; and in GDOT's Utility Accommodation Policy and Standards, current edition.

c. Overhead/Subsurface Utility Engineering (SUE) Investigations are not a requirement on this project.

1) The Contractor shall identify all utility conflict points where verified existing utility information is necessary to avoid the respective utility conflict. The Contractor shall coordinate with the Utility Owners to avoid existing utility facilities and thereby eliminate utility relocations.

3. Anytime underground operations (sign placement), excavations or digging of any type is contemplated in the general area of the any utility facility, "Excavating" means any operation by which the level or grade of land is changed or earth, rock, or other material below existing grade is moved and includes, without limitation, grading, trenching, digging, ditching, auguring, scraping, directional boring, and pile driving. Georgia Utility Facility Protection Act (GUFPA) mandates that, before starting any mechanized digging or excavation work, you must contact Georgia 811 at least 48 hours but no more than 10 working days in advance to have utility lines marked. See Special Provision Section 105.06. Damage and Emergency locate request may be called in 24 hours a day, seven days a week. The Contractor shall take reasonable action to determine the location of any underground utility facilities in and near the area for which signs are to be placed. In addition to establishing the approximate location of all utility facilities, the Contractor shall be required to fully expose the facility to verify its horizontal and vertical location, if underground operations are contemplated within the Tolerance Zone, which is defined to mean the approximate location of underground utility facilities defined as a strip of land at least 4 feet wide, but not wider than the width of the underground facility plus 2.0 feet on either side of the outside edge of such facility based upon the markings made by the locators. Excavation within the tolerance zone requires extra care and precaution. The contractor shall avoid interference with underground utility facilities within the tolerance zone by utilizing such precautions that include, but are not limited to, hand excavation, vacuum excavation methods, and visually inspecting the excavation while in progress until clear of the existing marked facility; The Contractor shall provide, during and following excavation for placement of any signs, such support for existing underground utility facilities in and near the excavation as may be reasonably necessary for the protection of such facilities unless otherwise agreed to by GDOT and the Utility owner. The Contractor shall backfill all excavations in such manner and with such materials as may be reasonably necessary for the protection of existing underground utility facilities in and near the area of excavation or sign placement.

http://www.dot.ga.gov/doingbusiness/consultants/Pages/default.aspx

999.4 CONSTRUCTION

Ensure the Project is constructed as per the Project scope and as per the accepted Released for Construction plans in accordance with the Specifications. No construction will begin on any phase of the work prior to the Department providing written authorization to the Contractor to begin land disturbing activities. Deliver four (4) hard copy sets of the Released for Construction plans to the Department's Area Office at least 1 (one) week prior to the Contractor performing initial land disturbing activities. Deliver all subsequent Released for Construction plans at least 24 (twenty four) hours before commencing land disturbing activities. All plans submitted to the Area Office for use on construction shall include all applicable Standards and Details required in the Work.

Construction includes, but is not limited to, the following:

A. All clearing and grubbing and grading required in accordance with Sections 201, 202, 205, 206, 208 and 209. Ensure the removal and replacement of unsuitable material.

B. All signing, interstate signage including sign structures, and guard rail.

C. Ensure storing of any equipment and materials on the Project outside of the active clear zone.

D. Errors and omissions are the responsibility of the Contractor to correct and at the expense of the Contractor.

E. Consent orders are the responsibility of the Contractor to negotiate and/or pay.

F. Do not reuse existing materials removed from the Project. Coordinate the removal and disposal of all Signing and ATMS items with the Department. Properly dispose all remaining material in accordance with all Local, State and Federal laws.

G. Ensure daily stabilization of all disturbed areas of the Project at the end of each work day at a minimum. More frequent stabilization may be required to prevent silt from leaving the Project site.

H. Preparation of As-Built Construction Plans.

999.5 MEASUREMENT AND PAYMENT

The Work required under this Specification will not be measured separately for payment. Develop a Schedule of Values with sufficient breakdown for each of the following items:

- DESIGN COMPLETE
- CONSTRUCTION COMPLETE

Provide a detailed estimate with the Released for Construction Plans. Partial payments of the Lump Sum price will be made on monthly statements based on the accepted Schedule of Values. Include in the Schedule for Values a rational basis for partial payments of the Lump Sum bid based on the completed portion of the item and definitive activities. Submit the Schedule of Values to the Engineer. No payments will be made until the Schedule of Values is accepted.

No payment for mobilization will be made until the Department issues written authorization that plans are released for construction. Payment for mobilization shall not exceed 2.5% of the overall bid price for Construction Complete. The Contractor shall submit a detailed breakdown of mobilization in the proposed schedule of values for acceptance.

Contractor shall work with the Engineer to establish estimated quantities, as this will determine the frequency of required testing and/or material certification by the Department.

At the end of each calendar month, provide the Department with a certification showing the percent complete for each item of work. Include a breakdown and supporting documentation, to include the Design Consultant's monthly invoice, in sufficient detail to substantiate the percent complete certified.

Payment shall be made under:

Item 999-2010 - DESIGN COMPLETE …… per Lump Sum

Item 999-2015 - CONSTRUCTION COMPLETE …….. per Lump Sum

999.6 TECHNICAL PROPOSAL

Submit a Technical Proposal that includes, but is not limited to, a Work Plan (identifying critical schedule tasks such as material procurement, along with rational for how the Work will be phased plan during the design and construction activities and rationale for how the Erosion and Sediment Control will be phased), proposed VSLS vender, a detailed Critical Path Method project schedule, any permit requirements, expected Released for Construction date, total contract time, mobilization assumptions, a detailed Maintenance of Traffic (MOT) plan, and any construction staging assumptions.

Clearly document all assumptions in this technical proposal. There are no page limit restrictions for the technical proposal.

GDOT maintains the ability to review and approve all submittals after award. Selection of a Proposer will not imply acceptance or approval of any portion of the Proposer's Technical Proposal.

Submit to the Department five (5) copies of the technical proposal and one (1) cd or dvd containing an electronic copy of the technical proposal in a sealed envelope so marked as to identify its contents without being opened.

If the "Technical Proposal" is not received by the GADOT Office of Construction Bidding Administration, Room 1113, by no later than 11:00 a.m. on the day of the Bid Opening, the Bid will be subject to rejection.

Appendix A

1. General Specifications For a Variable Speed Limit Sign System

a. The following specifications outlined below are to establish a term contract for Variable Speed Limit Signs (VSLS).

2. Variable Speed Limit Sign (VSLS) General Description

a. The I-285 Variable Speed Limit Project consists of the deployment of VSLSVSLS along the northern portion of I-285 approximately between its interchange with I-20 west of downtown Atlanta to approximately its interchange with I-20 east of downtown Atlanta. The I-285 Variable Speed Limit Project comprises the design and construction of a VSLS System.

3. VSLS Infrastructure Elements

a. Design and construct VSLS infrastructure elements. VSLS infrastructure elements include, but are not limited to the signage, sign supports, Intelligent Transportation Systems (ITS) elements, connection to communication network, power, and other required elements within the I-285 right of way required to accommodate VSLS.

4. Traffic Management Center (TMC) Improvements

a. Traffic Management Center (TMC) improvements shall be implemented by the Traffic Management Center System Integrator (TMC SI). The Traffic Management Center Improvements include: NaviGAtor system and software modifications, integration services, and other related improvements as necessary to connect, communicate with, and operate VSLS. The TMC shall have primary access to and control of the VSLS.

5. Variable Speed Limit Sign (VSLS) Responsibilities

a. The Contractor and TMC SI will work concurrently and together on the project during the design, construction and implementation. The general responsibilities of each party are depicted below. Unless otherwise specifically stated all work described in this document is the responsibility of the Contractor.
b. Contractor
    i. VSLS and sign supports
    ii. Conduit
    iii. Cabinet (including field switch)
    iv. Connection to trunk line
    v. Power service connection
c. TMC SI
    i. Software
    ii. Integration into NaviGAtor

6. Design-Build Contractor

a. Provide all materials, equipment, services, and work required to design and construct the Variable Speed Limit Sign (VSLS) system which includes, but is not limited to all components of the sign system including: the static portion of the sign, the LED display, the National Transportation Communications for ITS Protocol (NTCIP) sign controller, NTCIP V02.39, the modem and other necessary communications devices, the cabinet and housing and all necessary wiring, cabling or connections in accordance with these Technical Requirements.

b. Set up and coordinate meetings with GDOT, the TMC SI, utility and telecommunication providers, other contractors that may be retained by the involved parties to successfully complete the Project and other contractors that may be working within the project limits. Meetings should be held at least monthly, unless directed otherwise by the Engineer. Close coordination with all contractors is essential. Meetings shall be scheduled and

attended by authorized and qualified representatives of the Contractor and include representatives from each entity.

c. Coordinate with the TMC SI, and all other contractors in the planning, scheduling, design and construction of the elements that are collective to all entities. Develop and integrate schedules into the Critical Path Method (CPM) schedule and make work areas available, as needed, to successfully meet the Open to Traffic and contract completion dates.

d. Coordinate and validate the design, and ensure it meets all requirements for equipment cabinets, communication, power, and sign supports as needed by GDOT and TMC SI for VSLS locations. Coordinate with the utility and telecommunication companies to acquire the necessary electrical and telecommunication services to support GDOT operations. These include, but are not limited to, submitting the necessary applications on GDOT's behalf (as applicable), managing the design and construction work of any third parties, and paying for all associated fees, charges and expenses.

e. Coordinate with the GDOT ITS Manager, 404-635-2852, to determine available fiber for VSLS connection.

7. Traffic Management Center System Integrator (TMC SI)

a. Under supervision of GDOT, the TMC SI shall be responsible for all modifications to NaviGAtor including, but not limited to, a VSLS operations module integrating GDOT operational procedures with applicable VSLS devices. Additionally, the TMC SI will be responsible for modifying NaviGAtor to operate and control Contractor installed NTCIP-compliant devices that are not currently supported within the software.

8. Variable Speed Limit Sign (VSLS) Testing

a. Accommodate and support TMC SI testing and acceptance. Acceptance testing shall be required for the VSLS. Testing is required for individual elements as well as the complete VSLS System. The VSLS will be tested in a factory setting by the Contractor, with oversight by GDOT and TMC SI, before being installed.

b. Provide two (2) VSLS, infrastructure cabinets, and field switches to the TMC SI for use in integration and testing within 60 days of Notice to Proceed (NTP) 1.

c. Make available one VSLS field location for integration and testing no later than 90 Calendar Days before open to traffic. Make available all VSLS field locations for integration and testing no later than 60 Calendar Days before scheduled open to traffic. The sites shall be complete including, but not limited to, the VSLSs, the fiber optic cabling between the communication hub(s) and the roadside cabinet(s), sign supports, electrical power to the cabinet(s), power and communication conduits from the cabinet(s) to the sign supports, all ground boxes, lightning protection and grounding. The VSLS's manufacturer software will be used to test the following items:

   i. Automatically adjust the sign brightness based on ambient light conditions

   ii. All pixels are in working order

   iii. Accurate display of message sent to sign

   iv. Letter size and color as well as background color

   v. Communication with TMC

d. If testing discovers some part of the VSLS site was incorrectly installed or missing, the Contractor shall make all necessary repairs, replacements or adjustments. Repairs, replacements, or adjustments are to be made in the time frames established by Special Provision 150.11.

e. The system will be required to operate without failure for a minimum of 30 consecutive days (30-day burn). The 30-day burn begins when all of the equipment is installed, functional, and verified by GDOT to meet these specifications.

f. GDOT will utilize the first forty-five (45) Calendar Days after the VSLS system is Open to Traffic to perform Operational Performance Testing. This testing occurs after Open to Traffic and involves the VSLS responding to commands from TMC. In the event that any issues related to the Contractor's work are identified, the Contractor shall make all necessary repairs, replacements, or adjustments in the time frames established by Special Provision 150.11. Final acceptance of the Contractor's work will not be given until the later of 45 Calendar Days after Open to Traffic or all issues are repaired to the satisfaction of GDOT.

9. <u>Variable Speed Limit Sign (VSLS) Manuals and Training</u>

a. Except as modified herein and as applicable to the VSLS, the Contractor shall provide all submittals, manuals and training required by:

i. Section 631 Special Provisions – Permanent Changeable Message Signs
ii. Section 682 Special Provisions – Electrical Wire, Cable, and Conduit (Multi-cell and Continuous Flexible Conduit System)
iii. Section 939 Special Provisions – Communication and Electrical Equipment
iv. Section 940 Special Provisions –NaviGAtor Advanced Transportation Management System Integration

b. **Maintenance Manuals**

i. Develop and provide to GDOT a manual with step by step requirements and procedures for routine preventive maintenance of all system mechanical, electrical and electronic parts. Prepare and provide to GDOT a manual with step by step instruction for trouble-shooting and repair or replacement of all system mechanical, electrical and electronic parts. The manuals shall be prepared in both electronic (searchable) formats and hard copies in notebooks with a detailed table of contents and tabs for each section. Five copies of the manuals shall be provided.

c. **Training Requirements**

i. Develop training materials covering VSLS maintenance.
ii. Conduct one eight-hour training course for maintenance.
iii. Present training course for up to 16 people in the course.
iv. Copies of all training materials will be provided to all trainees with four additional copies of materials for the course provided for GDOT's future use, including one copy in electronic searchable format.

10. <u>Variable Speed Limit Sign (VSLS) Design Requirements</u>

a. Except as modified herein:

i. VSL System shall be designed in accordance with ITS Design Manual

ii. VSL System shall be furnished, installed, integrated, and tested in accordance with

1. Section 631 Special Provisions – Permanent Changeable Message Signs
2. Section 682 Special Provisions – Electrical Wire, Cable, and Conduit (Multi-cell and Continuous Flexible Conduit System)
3. Section 939 Special Provisions – Communication and Electrical Equipment
4. Section 940 Special Provisions – NaviGAtor Advanced Transportation Management System Integration

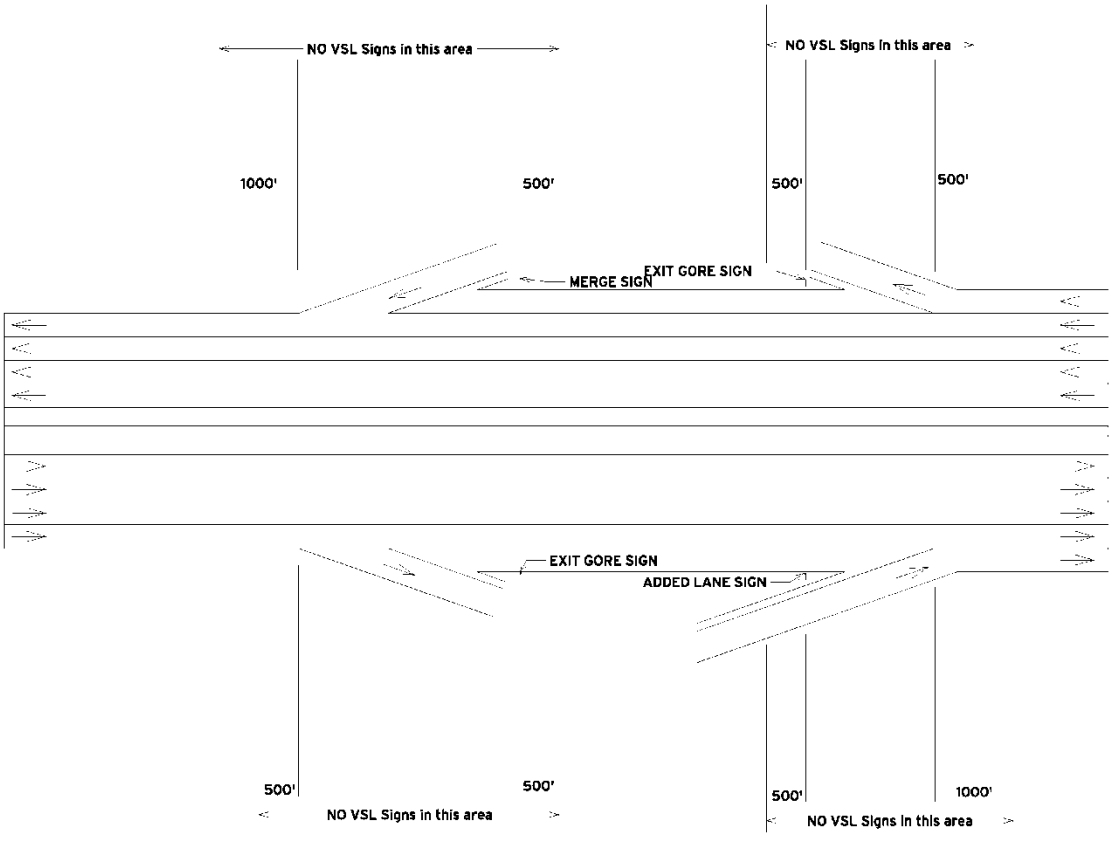
b. Design the VSLS system in general conformance with the Concept of Operations.

c. The Contractor shall be responsible for locating all final VSLS locations, as well as locating all power points, and data connections required.

d. The signs will be connected to GDOT's TMC via the existing and proposed fiber optic network and controlled by the Georgia NaviGAtor II (NAVII) software.

11. <u>VSLS Locations</u>

a. Place VSLS in accordance with what is listed in Appendix B. At each location, there shall be a sign installed in the median as well as one placed on the outside shoulder. Ensure that the two signs are capable of communicating so that they will show the same message at all times. In general, the majority of VSLS should be placed in accordance with the speed limit sign locations in Figure 4-2 "Post Interchange Sign Sequence" from the GDOT Signing and Marking Guidelines. As shown in Appendix B, additional VSLS will be required approximately every 0.5 mile in certain locations. These VSLS shall not be placed within the area 500 feet upstream of the taper for a diverge exit ramp or painted gore point for drop lane case to 500 feet downstream of the exit gore sign. VSLS shall also not be placed within the area 500 feet upstream of the merge or added lane sign to 1000 feet downstream of the entrance ramp taper for merge case or painted gore point for added lane case. See detail below:



b. The maximum spacing between VSLS locations shall not exceed 1.5 miles.

c. Maintain spacing at 500 feet between VSLS and all other signs except in the case of installing the VSLS on the support columns for an existing overhead sign bridge. Existing

signs may be moved to achieve 500 feet between VSLS and all other signs as approved by the Engineer.

d. The contractor shall ensure that all VSLS installed by this project have a minimum sight distance of 1000 feet. Clearing of obstacles to obtain the minimum sight distance shall be in accordance with section 201 of the Georgia Standard Specifications. The cost for this work shall be included in the overall price bid for the project.

e. VSLS may be approximately 500 feet from the recommended locations to achieve any of the following:

   i. Installation on an existing overhead sign structure
   ii. Installation closer to data connection or power point
   iii. Installing signs back-to-back in median
   iv. Improved visibility from existing CCTV camera
   v. Improved sign spacing and/or visibility

f. Any change in location from what is recommended in Appendix B must be approved by GDOT.

12. <u>Variable Speed Limit Sign Technical Specifications</u>

a. The VSLS shall refer to all components of the sign including: the static portion of the sign, the LED display, the NTCIP sign controller, the wireless modem or other necessary communications devices, the cabinet and housing and all necessary wiring, cabling or connections.

b. Signs shall meet or exceed the current GDOT approved edition of the MUTCD and Standard Highway Signs (SHS) companion document requirements for color, dimensions, layout, and numeral and letter sizes and fonts. The electronic display digits should emulate E-series fonts as specified by the SHS.

c. Ensure the static portion of the sign shall have a Type 3 reflective sheeting background that meets GDOT specifications.

d. Ensure each VSLS shall consist of a standard, static speed limit sign with a cutout section for the numeric portion of the sign that shall have changeable, 2-digit LED display to be used to display the numbers.

e. The overall dimensions of the face of the VSLS shall be 48” wide by 60” tall.

f. Ensure the LED display of the VSLS consists of LEDs with minimum life expectancy of 100,000 hours for each LED. Ensure the LED display is able to display white with a minimum luminance of 12,400 cd/m^2 when operating at 100 percent intensity.

g. Ensure only the use of LEDs that are rated by the LED manufacturer to have a minimum lifetime of 100,000 hours of continuous operation while maintaining a minimum of 70% of the original brightness.

h. Ensure the VSLS controller is NTCIP compliant and provides communication to the TMC via connection to the existing fiber backbone provided by the Contractor. Ensure the controller is equipped with ports to allow for future hard-wired connections as well as the ability to be controlled on-site via a laptop computer. Ensure the VSLS can be monitored and controlled from a remote location, such as the TMC, or in the field at the sign location. Due to the limited access in the median, ensure the VSLS located in median can be controlled from right shoulder location via laptop computer. Ensure the sign controller is addressable through an Ethernet communication network.

i. The VSLS shall be legible from a minimum distance of 1,000 feet in both day time and night time conditions. The VSLS shall be capable of measuring ambient lighting

conditions and shall automatically dim or brighten to the necessary luminance based on those conditions. The VSLS shall have a cone of vision of at least 30° at the half-power angle. At each VSLS location, the Contractor shall adjust the sign display to a tilt position that provides optimum message legibility to all motorists within the message legibility range.

j. The design life of each VSLS, including all sign components, operating 24 hours a day shall be a minimum of 10 years in the normal environment of Georgia.

k. All components of the VSLS (internal sign components, controller, communications equipment, power supply, etc.) shall operate effectively in all weather conditions. The components shall operate effectively within the following limits:

    i. Ambient temperature range of -40°F to +140°F.
    ii. Humidity of 99%, non-condensing

l. The controller for the sign shall be internally housed in a cabinet on the back of the sign that meets National Electrical Manufacturers Association (NEMA) 3R. The cabinet shall be vandal and tamper resistant with a security lockout feature to prevent unauthorized access.

m. The performance of all VSLS components shall not be impaired due to vibration caused by wind, traffic or normal transportation.

n. The presence of ambient radio frequency, magnetic or electromagnetic interference, including that from state and other mobile radios, power lines, transformers and motors within the proximity of any components of the VSLS system, shall not affect the operation or impair performance of the system. The system shall not conduct or radiate signals that will adversely affect other electrical or electronic equipment. It will be the Contractor's responsibility to test for interference before placing any VSLS.

o. Ensure the VSLS controller is NTCIP compliant and provides communication to the TMC via connection to the existing fiber backbone provided by the Contractor. Ensure the controller is equipped with ports to allow for future hard-wired connections as well as the ability to be controlled on-site via a laptop computer. Ensure the VSLS can be monitored and controlled from a remote location, such as the TMC, or in the field at the sign location. Due to the limited access in the median, ensure the VSLS located in median can be controlled from right shoulder location via laptop computer. Ensure the sign controller is addressable through an Ethernet communication network

p. The VSLS controller shall be capable of performing complete diagnostics of the sign and shall be able to detect and act on various failures. Notification of failures or errors shall be able to be logged and returned to the operator at the TMC. Failures include, but are not limited to, data transmission errors, receipt of invalid message, loss of communication, controller failure, failure of LEDs or drivers in any character module and conflict between the actual message displayed and the message commanded. The actions taken shall depend on the type of failure (Example: Communication with a group of signs fails resulting in an action of display a default speed of 65 mph on each sign in the group). In general, when a communication failure occurs with a sign or within a group of signs, the controller shall automatically respond by displaying the default speed.

q. The message sent to each VSLS shall be displayed constantly until the sign controller is instructed to do otherwise or until a failure results in a pre-determined default message or other action. In the event of power failure, the sign shall immediately display the current message upon restoration of power.

r. The horizontal clearance of a VSLS placed in the median shall be a minimum of 2 feet from the normal edge of traffic lane to the nearer edge of the sign. The horizontal

clearance of a VSLS on the outside shoulder shall follow general notes for standard signs found in GDOT Signing and Marking Guidelines. The vertical clearance for the signs shall be a minimum of 8 feet above the normal edge of pavement to the bottom of the sign or assembly. Contractor should try to maintain a consistent sign height for the VSLS throughout the corridor.

s. Install static signage notifying drivers that they are entering a variable speed limit zone on or downstream of the entrance ramps from I-20 (west and east sides), I-75, SR 400, I-85, and SR 78 as well as on I-285 prior to entering the zone. Entering a variable speed limit zone signs must be white with a minimum 8" series "E" black legend and a minimum size of 5.5' x 5.5'.

t. The VSLS shall be mountable on a permanent breakaway sign support complying with the current AASHTO Roadside Design Guide. Sign supports shall meet the requirements of NCHRP 350, as well as accommodate the sign weight and a wind load requirement of 90 MPH. Signs are allowed to be attached to the vertical support structure of an existing sign bridge.

u. All existing speed limit signs along I-285 within project limits shall be removed and delivered to GDOT District 7 Maintenance yard.

v. Deleted as part of Amendment 3

w. A combination of wireless communication and solar power source can be considered for the median signs. When solar power is utilized, provide battery backups that can power the VSLS and all components for a minimum of 48 hours without sunlight. Ensure no additional monthly or otherwise reoccurring costs are incurred to the Department as a result of the wireless communications installation. Solar power can be utilized for outside shoulder VSLS.

x. The Contractor shall make every effort to use existing overhead sign structures or existing roadway over or underpasses to provide conduit and power to median signs. Conduit runs along the top of the median barrier from the crossover point to the VSLS will be allowed for a maximum of 200'. Directional boring for conduit and power are allowed. When directional boring is utilized, ensure conduit and power are not attached to the face of the barrier.

y. Provide a positive connection to the Department Nav2 Ethernet network. This connection must be made by connecting to an active Gig-E switch located at a field switch or Hub. If required, access the Hub to complete connection to a Gig-E switch. Contractors that need access to the GDOT hub buildings to complete their work shall purchase an electronic programmable key and key programmer. Contractors needing access to a hub building must submit a System Change Request (SCR) form if installation of new equipment is being performed, or a Maintenance and Repair Report (MARR) form for regular routine maintenance. Submit these forms via email the Department at least 72 hours in advance of. The system currently in use for Hub building access is CyberLock by Videx.

   To purchase keys, key programmers and get technical assistance on the GDOT CyberLock system, contact:
   Glen Peifer
   Peifer Companies LLC
   5287 Knight Arnold Rd.
   Memphis, TN 38118
   901-363-6396 phone
   901-363-6986 fax
   www.PeiferLock.com

z. All VSLS installed must be from the same manufacturer with identical specifications to the two signs provided for testing.

aa. Ensure VSLS comply with NTCIP 1203 Version v02.39 November 2010 for this project.

bb. Each pair of roadside and median VSLS must be controlled from a single cabinet located on the right shoulder in the direction of travel. Power and communications can be housed in the same cabinet.

13. <u>VSLS Software and Communication System Requirements</u>

a. Install communication connection to the TMC by existing or proposed main trunk fiber.

b. Ensure that VSLS can be managed remotely at the TMC or locally with a laptop including the ability to reset the sign.

c. Controller shall possess a minimum of 1 serial interface with the ability to connect to a laptop computer to allow user to program, operate, exercise, diagnose and read current status of all sign features and functions.

d. VSLS shall be able to communicate using fiber, Ethernet, RS-232, or radio

14. <u>VSLS Electrical Requirements</u>

a. Except as modified herein, the electrical system shall be designed in accordance with the current GDOT ITS Design Manual:

   i. Chapter 2 – General Design Guidelines
   ii. Chapter 12 – Specifications
   iii. Appendix 3 – Typical ITS F/O Cable/CMS/Device Plan Sheet
   iv. Appendix 9 - Details

b. Except as modified herein, the electrical system shall be furnished, installed, integrated and tested in accordance with the GDOT Specifications and:

   i. Section 631 Special Provisions – Permanent Changeable Message Signs
   ii. Section 682 Special Provisions – Electrical Wire, Cable, and Conduit (Multi-cell and Continuous Flexible Conduit System)
   iii. Section 939 Special Provisions – Communication and Electrical Equipment

c. Coordinate with the electrical power companies and provide electrical power for all VSLS systems included in the project. The Contactor shall pay all costs for proving electrical power service. In addition the Contactor shall pay all electric service and recurring costs until GDOT's acceptance and FHWA concurrence of the completion of punch list.

d. Electrical design requirements

   i. Design electrical power based on the electrical service loads at each location where power is required. Electrical service, wire sizes, transformers, surge suppression, meters, grounding, lightning protection are all considered part of the electrical power systems.

   ii. Notify GDOT when transformer(s) are not adequately sized to manage the additional loading of the VSLS. Work with GDOT and Power utility to replace transformer.

   iii. Design electrical loads for all VSLS cabinets, VSLS Devices, and associated equipment.

   iv. Provide electrical power calculations to GDOT for review and approval during the design. Power calculations shall include power loading, transformers, and conductor sizes based on NEC standards. In no case shall electrical service

provide at a location be less than 120 volt, 20 amps AC. Electrical load at each VSLS cabinet shall be based on a factor of two times the calculated load based on the equipment being provided for that cabinet to allow for future expansion and use of maintenance tools.

v. Design the grounding system so that the top of all grounding rods are installed in an Electrical Service Pull Box. This is in order to facilitate testing and periodic retesting of the grounding array at each VSLS device and cabinet. Design the grounding conductor to be exothermically connected to the ground rod at an elevation of 12" below ground line. Design grounding arrays to be interconnected for cabinets, poles, etc., that are within 40 feet of each other.

vi. Provide power service for all of the VSLS devices within the project.

vii. Provide full payment to the electric utility for extending the existing power service to provide power to the VSLS devices where needed along the project route.

viii. Power drops shall be designed and installed to comply with the National Electric Code (NEC) and GDOT Standard Specifications

ix. In addition to other requirements referenced to herein, electric pull boxes shall be spaced not more than 500 feet apart.

x. Voltage design drop calculations shall comply with the suggested limits defined in NEC Article 210.19 (A) (1) FPN #4 and NEC Article 215.2 (A)(3) FPN #2. These calculations shall define all service points, circuits emanating from those points, details of all loads on all circuits, the nominal voltage on each circuit, the voltage drop for each link of each circuit, the percent voltage drop for each circuit and the wire size selected for each link of each circuit. Calculations shall include sizing and ratings of all circuit breakers, transformers, fused switches and transfer switches planned for installation. Submit calculations with the Final Plan, Schematics, and Details submittal and with each subsequent submittal with all data appropriately updated. An allowance of 9.0 Amps shall be included at the end of the circuit for a convenience outlet.

xi. Where Transformers are used, provide with +/- 2.5% & +/- 5% voltage taps. These taps shall not be used to fulfill the voltage drop and wire size requirements of this MTR.

xii. Where circuits run both north and south from a power service point, separate circuits, each with its individual circuit breaker, shall be provided. A main disconnect circuit breaker shall be provided at each power service point.

e. **Electrical implementation requirements**

i. Furnish, install and test the electrical systems as required to meet the power requirements for each VSLS equipment cabinet. Furnish and install and test the electrical services as required by GDOT Specification, the accepted plans, and herein.

ii. Ensure all voltage being provided to the cabinet is in accordance with the Contractor's approved electrical design calculations. Test the power from the electrical service disconnect, to the transformer, to the meter(s) and into the cabinets to ensure all voltage is in accordance with the accepted electrical design calculations.

iii. Furnish and install all components of the electrical power systems to ensure complete and functioning systems from the VSLS cabinet to and including the VSLS. The electrical systems shall be furnished and installed to include all

required device power supplies, grounding, lighting protection and surge suppression. Surge suppression shall be furnished and installed on both ends of any underground electrical cable or composite cable carrying electrical power to a VSLS device to protect against surges induced from a lightning strike on the ground.

15. <u>VSLS Installation</u>

a. Submit an unveiling plan to implement the VSLS system as coordinated with the removal of the existing speed limit signs. The plan must indentify how the existing static sign system will be transitioned to the proposed VSLS system so as to minimize the confusion to the traveling public and to ensure that I-285 maintains a posted speed limit at all times.

b. Fabricate and supply each VSLS in its entirety. Each VSLS shall include all components of the sign including: the static portion of the sign, the LED display, the NTCIP sign controller, the modem and other necessary communications devices, the cabinet and housing and all necessary wiring, cabling or connections.

c. Provide all necessary cabling and connections for the VSLS system to operate correctly, including cabling connecting the power and data to the VSLS. Provide all necessary mounting hardware for the signs. Submit shop drawings for all mounting hardware, VSLS support, and all other loaded connections for review and acceptance by the Department.

d. Install each VSLS, the communication network, power supplies and poles. Ensure VSLS are communicating with operating software and ensure all elements operate correctly. Provide all electrical connections, cabling and wiring necessary for the signs to operate correctly.

16. <u>VSLS Maintenance and Warranty</u>

a. Provide maintenance and service of the system until GDOT and FHWA acceptance of the project punch list completion by the Contractor. VSLS Maintenance includes working with TMC Maintenance provider to ensure minimal disruptions to the existing ITS systems.

b. Provide full warranty of the entire VSLS system (including the signs, software, communications devices, power supply, and other necessary components) for 12 months. Provide all warranties specified in the Standard Specifications and Special Provisions. All warranties shall commence on the date of GDOT acceptance and FHWA concurrence of the Punch list completion by the Contractor. Any additional costs incurred by the Contractor to meet the warranty requirements shall be the sole responsibility of the Contractor. Warranty includes parts and labor for malfunctions due to failures or workmanship. The warranty should not cover damage by a third party such as VSLS knocked down as a result of motorist.

c. At acceptance of the Punch list, furnish all warranty documentation to GDOT. The warranty information shall include the warranty start and end dates as well as contact information for warranty support include procedure for return of failed parts and repair or replacement. Warranties shall provide for shipping of the failed parts to the manufacturer and for shipping of the repaired or replacement part to GDOT at no cost to GDOT.

d. Provide a manufacturer warranty against all defects and/or failure in design, assembly, fabrication, materials and workmanship for the complete VSLS electrical system.

e. The warranty period shall not begin until the date that the GDOT issues written notice of acceptance of the Punch list.

f. The LEDs shall be covered by a five (5) year manufacturer warranty. The rest of the display and accessories shall be covered for at least a three (3) year manufacturer warranty.

17. Protection of Existing ITS System

a. ITS communication, power, and ITS devices are located within the project limits. Ensure existing ITS that is to remain is protected from damage and properly maintained and repaired from Notice to Proceed (NTP) 1 until acceptance of the VSLS Project.

b. **ITS Maintenance and Repair Plan**

   i. Submit an ITS Maintenance and Repair Plan for GDOT's approval within 30 calendar days of NTP1. The Plan shall outline the procedures and resources the Contractor shall utilize to maintain and conduct repairs on the ITS field elements and infrastructure as necessary. The ITS Maintenance and Repair Plan shall be closely coordinated with the GDOT TMC Maintenance Contractor. The ITS Maintenance and Repair Plan shall specifically address any ITS field elements or components not working due to Project impacts and address Contractor's maintenance responsibilities commence.

   ii. Provide a complete inventory of all ITS components and infrastructure in the Project limits that are expected to be impacted by the Project within 30 calendar days of NTP1. The inventory shall include components and infrastructure to be removed and replaced, to be removed and relocated or modified in any way.

c. **ITS Locates**

   i. Provide ITS locates of any new or modified devices requested by other consultants, contractors and/or utility companies within 48 hours of receiving requests from Georgia 811 or from any other source from NTP to Final Acceptance. Weekly, beginning at NTP3, the Contractor shall notify GDOT of the date and location of each Locate Request and the date at which the locate was completed.

d. **ITS Repair and Replacement**

   i. Coordinate with the TMC Maintenance Contractor to maintain the existing system within Project. The Contractor shall place new ITS field elements and communication infrastructure in service as soon as possible after installation. The GDOT ITS System is a vital part of traffic management in metro Atlanta. See Special Provision Sections 108.08 and 150.11 for GDOT ITS System outage limitations.

   ii. Provide a minimum of forty-eight (48) hour notice for intentional outages for ITS field element relocations and repairs. Repairs shall be coordinated (notify when an ITS field element is going down and when it is back in service) with the TMC and Project Manager.

Appendix B

#	Quantity	VSLS Location
1 CW	2	1500' downstream of the Entrance Ramp from I-20
2 CW	2	1500' downstream of the Entrance Ramp from Hollowell Pkwy
3 CW	2	Between the Exit Ramp to Bolton Rd and Exit Ramp to S Atlanta Rd
4 CW	2	Between the Exit Ramp to Bolton Rd and Exit Ramp to S Atlanta Rd
5 CW	2	1500' downstream of the Entrance Ramp from S Cobb Dr
6 CW	2	1500' downstream of the Entrance Ramp from S Atlanta Rd
7 CW	2	Between the Exit Ramp to Paces Ferry Rd and Entrance Ramp from Paces Ferry Rd
8 CW	2	1500' downstream of the Entrance Ramp from Paces Ferry Rd
9 CW	2	Between the Exit Ramp to I-75 and Entrance Ramp from I-75
10 CW	2	1500' downstream of the Entrance Ramp from I-75
11 CW	2	2640' downstream of 10CW
12 CW	2	2640' downstream of 11CW
13 CW	2	1500' downstream of the Entrance Ramp from Northside Dr
14 CW	2	2640' downstream of 13CW
15 CW	2	1500' downstream of the Entrance Ramp from Riverdale Dr
16 CW	2	2640' downstream of 15CW
17 CW	2	2640' downstream of 16 CW
18 CW	2	1500' downstream of the Entrance Ramp from Roswell Rd
19 CW	2	1500' downstream of the Entrance Ramp from Peachtree Dunwoody Rd
20 CW	2	2640' downstream of 19CW
21 CW	2	1500' downstream of the Entrance Ramp from Ashford Dunwoody Rd
22 CW	2	2640' downstream of 21CW
23 CW	2	2640' downstream of 22CW
24 CW	2	2640' downstream of 23CW
25 CW	2	2640' downstream of 24CW
26 CW	2	2640' downstream of 25CW
27 CW	2	1500' downstream of the Entrance Ramp from Peachtree Industrial Blvd/SR 141
28 CW	2	2640' downstream of 27CW
29 CW	2	2640' downstream of 28CW
30 CW	2	2640' downstream of 29CW
31 CW	2	2640' downstream of 30CW
32 CW	2	1500' downstream of the Entrance Ramp from I-85
33 CW	2	1500' downstream of the Entrance Ramp from Chamblee Tucker Rd
34 CW	2	Between 33 CW and Exit Ramp to Northlake Pkwy
35 CW	2	1500' downstream of the Entrance Ramp from Lavista Rd
36 CW	2	Between the Entrance Ramp from US 29 and Exit Ramp to US 78
37 CW	2	Between the Exit Ramp to US 78 Entrance Ramp from US 78
38 CW	2	1500' downstream of the Entrance Ramp from Church St/E. Ponce de Leon Ave
39 CW	2	Between the Exit Ramp to Memorial Dr Entrance Ramp from Memorial Dr
40 CW	2	1500' downstream of the Entrance Ramp from Memorial Dr
41 CW	2	1500' downstream of the Entrance Ramp from Indian Creek MARTA Station
42 CW	2	1500' downstream of the Entrance Ramp from Covington Hwy
43 CW	2	1500' downstream of the Entrance Ramp from Glenwood Rd

#	Quantity	VSLS Location
1 CCW	2	1500' downstream of the Entrance Ramp from I-20
2 CCW	2	Between Entrance Ramp from I-20and Exit Ramp to Glenwood Rd
3 CCW	2	1500' downstream of the Entrance Ramp from Glenwood Rd
4 CCW	2	1500' downstream of the Entrance Ramp from Covington Hwy
5 CCW	2	Between Exit Ramp to Memorial Dr and Entrance Ramp from Memorial Dr
6 CCW	2	1500' downstream of the Entrance Ramp from Memorial Dr
7 CCW	2	1500' downstream of the Entrance Ramp from Church St/E. Ponce de Leon Ave
8 CCW	2	Between Exit Ramp to US 29 and Entrance Ramp from US 29
9 CCW	2	1500' downstream of the Entrance Ramp from US 29
10 CCW	2	Between 9 CCW and Exit Ramp to Chamblee Tucker Rd
11 CCW	2	1500' downstream of the Entrance Ramp from Northlake Pkwy
12 CCW	2	Between Exit Ramp to Lavista Rd and Entrance Ramp from Lavista Rd
13 CCW	2	1500' downstream of the Entrance Ramp from Chamblee-Tucker Rd
14 CCW	2	1500' downstream of the Entrance Ramp from I-85 SB
15 CCW	2	1500' downstream of the Entrance Ramp from I-85 NB
16 CCW	2	1500' downstream of the Entrance Ramp from Buford Highway
17 CCW	2	2640' downstream of 16 CCW
18 CCW	2	2640' downstream of 17 CCW
19 CCW	2	2640' downstream of 18 CCW
20 CCW	2	2640' downstream of 19 CCW
21 CCW	2	2640' downstream of 20 CCW
22 CCW	2	1500' downstream of the Entrance Ramp from Chamblee-Dunwoody Rd
23 CCW	2	2640' downstream of 22 CCW
24 CCW	2	1500' downstream of the Entrance Ramp from Ashford-Dunwoody Rd
25 CCW	2	2640' downstream of 24 CCW
26 CCW	2	1500' downstream of the Entrance Ramp from Glenridge Drive
27 CCW	2	2640' downstream of CCW26
28 CCW	2	1500' downstream of the Entrance Ramp from Roswell Rd
29 CCW	2	2640' downstream of 28 CW
30 CCW	2	2640' downstream of 29 CW
31 CCW	2	1500' downstream of the Entrance Ramp from Riverside Rd
32 CCW	2	2640' downstream of 31 CCW
33 CCW	2	2640' downstream of 32 CCW
34 CCW	2	1250' downstream of the Entrance Ramp from Northside Drive
35 CCW	2	2640' downstream of 34 CCW
36 CCW	2	Between Exit Ramp to I-75 and Entrance Ramp from I-75
37 CCW	2	1500' downstream of the Entrance Ramp from Cobb Parkway
38 CCW	2	Between Exit Ramp to Paces Ferry Rd and Entrance Ramp from Paces Ferry Rd
39 CCW	2	1500' downstream of the Entrance Ramp from Paces Ferry Rd
40 CCW	2	Between Exit Ramp to Atlanta Rd and Entrance Ramp from Atlanta Rd
41 CCW	2	1500' downstream of the Entrance Ramp from Atlanta Rd
42 CCW	2	1500' downstream of the Entrance Ramp from S Cobb Drive
43 CCW	2	Between 42 CCW and Entrance Ramp from Bolton Rd
44 CCW	2	1500' downstream of the Entrance Ramp from Bolton Rd
45 CCW	2	1500' downstream of the Entrance Ramp from Hollowell Parkway