

Georgia Department of Transportation
VOLUME 2
Technical Provisions
For
Design-Build Agreement
XXXXXXX Project

TABLE OF CONTENTS

1	GENERAL	1
1.1	Project Scope.....	1
1.2	Project Description.....	1
1.2.1	Other Considerations.....	1
2	PROJECT MANAGEMENT	1
2.1	Project Management Requirements.....	1
2.1.1	Design Quality Assurance.....	1
2.1.2	Construction Quality Assurance	1
2.1.3	Environmental Monitoring.....	1
2.1.4	Right of Way.....	1
2.1.5	Safety and Security.....	1
2.1.6	Traffic Management.....	1
2.1.7	Project Communications (Media and Public Information).....	1
2.1.8	Project Closeout	1
2.1.9	Reserved	2
2.1.10	Reserved	2
2.2	Schedule Requirements.....	2
2.2.1	General Schedule Requirements	2
2.2.2	120 Day Schedule Requirements.....	2
2.2.3	Project Baseline Schedule Requirements.....	2
2.2.4	Narrative Requirements	2
2.2.5	Project Schedule Update Requirements	2
2.2.6	Project Baseline Schedule Revisions	2
2.2.7	Schedule Display Requirements.....	2
2.3	Quality Management Requirements.....	2
2.3.1	Document Management.....	2
2.3.2	Quality Management Plan Submittal Requirements.....	2
2.3.3	Quality Management Plan Requirements	2
2.3.4	Quality Management Plan Structure	3
2.3.5	Nonconformance Report (NCR) System	3
2.3.6	Quality Management Updates.....	3
2.3.7	Responsibility and Authority of DB Team Staff	3
2.3.8	Design Quality Management Plan.....	3
2.3.9	Record Drawings and Documentation	3
2.4	Requirements for GDOT Office and Equipment.....	3
2.5	Web-Based Project Management Program	3
3	PUBLIC INFORMATION AND COMMUNICATIONS	1
3.1	General Requirements	1
3.2	Administrative Requirements	1
3.2.1	Public Information and Communications Plan.....	1
3.2.2	Project Information Coordinator.....	1
3.2.3	Reserved	1
3.2.4	Public Meetings	1
3.2.5	Monthly Public Information and Communications Reporting	1

3.2.6	Emergency Event Communications	1
3.2.7	Public Information.....	1
3.2.8	Public Involvement Action Items.....	1
4	ENVIRONMENTAL.....	1
4.1	General Requirements	1
4.2	Environmental Approvals	1
4.2.1	Responsibilities Regarding Environmental Studies.....	1
4.2.2	GDOT Review and Approval of Environmental Permits	1
4.3	Required Submittals	1
5	RIGHT OF WAY (ROW)	1
5.1	General Requirements	1
5.2	Administrative Requirements	1
5.3	DB Team’s ROW Scope of Services.....	1
5.4	Responsibilities of DB Team	1
5.5	Responsibilities of GDOT.....	1
5.6	GDOT Project Monitor/Reviewer	1
5.7	Responsibilities of the Office of the Attorney General.....	1
5.8	ROW Acquisition Plan.....	1
5.9	Schedule and Review Procedures	1
5.10	Acquisition Process Summary	1
5.11	DB Team Conflict of Interest	1
5.12	Meetings	1
5.13	Documentation and Reporting	2
5.14	Pre-Acquisition Activities.....	2
5.14.1	ROW Plans and Engineering	2
5.14.2	Title Services.....	2
5.14.3	Introduction to Property Owners	2
5.15	Appraisals.....	2
5.15.1	Appraisal Services	2
5.16	Acquisition Activities	2
5.16.1	DB Team Responsibilities During ROW Negotiations.....	2
5.17	Early ROW Acquisition	3
6	UTILITY ADJUSTMENTS	1
6.1	General Requirements	1
6.1.1	Utility Adjustment Relocation Costs	1
6.1.2	When Utility Adjustment is Required.....	1
6.1.3	Certain Components of the Utility Adjustment Work	1
6.1.4	Recordkeeping.....	1
6.2	Administrative Requirements	1
6.2.1	Standards	1
6.2.2	Communications.....	2
6.2.3	Worksite Utility Coordination Supervisor	2
6.2.4	Real Property Matters.....	2
6.3	Design.....	2
6.3.1	DB Team’s Responsibility for Utility Identification.....	2

6.3.2	Technical Criteria and Performance Standards	2
6.3.3	Memorandum of Understanding (MOU)	2
6.3.4	Utility Work Plans	3
6.4	Construction	3
6.4.1	Reserved	3
6.4.2	General Construction Criteria.....	3
6.4.3	Inspection of Utility Owner Construction	3
6.4.4	Scheduling Utility Adjustment Work	3
6.4.5	Standard of Care Regarding Utilities	3
6.4.6	Emergency Procedures.....	3
6.4.7	Switch Over to New Facilities.....	3
6.4.8	Traffic Control	4
6.5	Deliverables.....	4
6.5.1	Utility Work Plan Submittals	4
6.5.2	Preliminary Utility Status Report.....	4
6.5.3	Subsurface Utility Engineering (SUE) Requirements.....	4
6.5.4	Utility As-Built Requirements.....	4
7	RIGHT OF WAY (ROW) – ADDITIONAL PROPERTIES	1
7.1	General Requirements	1
7.2	Administrative Requirements	1
7.2.1	Revised ROW Acquisition Plan - Additional Properties Submittals	1
7.2.2	DB Teams ROW Properties Scope of Services	1
7.2.3	Requirements of DB Team	1
7.2.4	DB Team Conflict of Interest	1
7.2.5	Meetings	1
7.2.6	Documentation and Reporting	1
7.2.7	Responsibilities of GDOT.....	1
7.2.8	Responsibilities of the Office of Georgia Attorney General.....	1
7.3	Reserved	1
7.4	Fencing	2
7.4.1	Reserved	2
7.4.2	Property Fencing.....	2
7.5	Access to the Work	2
8	GEOTECHNICAL.....	1
8.1	General Requirements	1
8.2	Design Requirements.....	1
8.2.1	Subsurface Geotechnical Investigation by DB Team.....	1
8.2.2	Pavement Design.....	1
8.3	Construction	1
8.4	Deliverables.....	1
9	SURVEYING AND MAPPING	1
9.1	General Requirements	1
9.2	Administrative Requirements	1
9.2.1	Property Owner Notification.....	1
9.3	Design Requirements	1

9.3.1	Units	1
9.3.2	Survey Control Requirements	1
9.3.3	Conventional Method (Horizontal & Vertical).....	1
9.3.4	Reserved	1
9.3.5	Right of Way Survey	1
9.3.6	Survey Records and Reports	2
9.4	Construction Requirements	2
9.4.1	Units	2
9.4.2	Construction Surveys.....	2
9.5	Deliverables.....	2
9.5.1	Final ROW Surveying and Mapping.....	2
9.5.2	ROW Monuments.....	2
10	GRADING.....	1
10.1	General	1
10.2	Preparation within Project Limits	1
10.3	Slopes and Topsoil	1
10.4	Deliverables.....	1
10.4.1	Released for Construction Documents	1
11	ROADWAYS.....	1
11.1	General Requirements	1
11.2	Design Requirements	1
11.2.1	Typical Section(s) and Pavement Design	1
11.2.2	Additional Roadway Design Requirements.....	2
11.2.3	Allowable Design Exception(s)/Variance(s).....	3
11.2.4	Visual Quality	3
11.2.5	Permanent Lighting.....	3
11.2.6	Related Transportation Facilities	3
11.3	Deliverables.....	4
12	DRAINAGE	1
12.1	General Requirements	1
12.2	Administrative Requirements	1
12.2.1	Data Collection	1
12.2.2	Coordination with Other Agencies.....	1
12.3	Design Requirements	1
12.3.1	Surface Hydrology.....	1
12.3.2	Storm Sewer Systems.....	1
12.3.3	Hydraulic Structures (Culverts/Bridges)	1
12.4	Construction Requirements	2
12.5	Deliverables.....	2
13	STRUCTURES	1
13.1	General Requirements	1
13.2	Design Requirements	1
13.2.1	Design Parameters	1
13.2.2	Bridge Decks and Superstructures.....	1
13.2.3	Bridge/ Retaining Wall Foundations.....	1

13.2.4 Bridge Railing and Barriers..... 1
13.2.5 Retaining Walls..... 1
13.2.6 Aesthetics..... 1
13.2.7 Drainage Structures..... 1
13.2.8 Sign, Illumination, and Traffic Signal Supports..... 1
13.2.9 Widening/Modification of Existing Structure 1
13.2.10 Toll Gantry Structures..... 1
13.3 Construction Requirements..... 1
13.3.1 Concrete Finishes 2
13.3.2 Structure Metals 2
13.4 Final Bridge Inspection Prior to Service Commencement..... 2
13.5 Deliverables..... 2
14 RAIL..... 1
14.1 General Requirements 1
14.2 Railroad Design Standards..... 1
14.2.1 Design Railroad Live Load..... 1
14.2.2 Design Lateral Pressures for Railroad Live Load Surcharge..... 1
14.2.3 Clearances 1
14.2.4 Crashwalls..... 1
14.2.5 Drainage 1
14.2.6 Erosion Control..... 1
14.2.7 Utilities..... 1
14.2.8 Miscellaneous..... 1
14.3 Project Work Affecting Railroad Operations 2
14.3.1 Railroad Agreements..... 2
14.3.2 Operation Safety..... 2
14.3.3 Insurance Requirements..... 2
14.4 Construction Requirements..... 2
14.4.1 General 2
14.4.2 Track Clearances..... 2
14.4.3 Temporary Excavations..... 2
14.4.4 Excavation for Structures..... 3
14.4.5 Demolitions, Erection, Hoisting 3
14.4.6 Blasting 3
14.4.7 Maintenance and Repair of Railroad Facilities..... 3
14.4.8 Storage of Materials and Equipment..... 3
14.4.9 Cleanup..... 3
14.5 Damages 3
14.6 Flagging Services..... 3
14.6.1 When Required..... 3
14.6.2 Scheduling and Notification 3
14.6.3 Payment..... 3
14.6.4 Verification..... 3
14.7 Transporting Materials and Equipment Across Tracks 3
14.8 Work for Benefit of DB Team 4
14.9 Cooperation and Delays..... 4

14.10 Safety Guidelines 4
 14.10.1 Guidelines for Personnel on Railroad ROW 4
 14.10.2 Guidelines for Equipment on Railroad ROW 4
14.11 Insurance 4
 14.11.1 Requirements 4
 14.11.2 Evidence of Insurance 4
 14.11.3 Subletting 4
 14.11.4 Cancellation 4
14.12 Failure to Comply 4

15 LANDSCAPE AND HARDSCAPE ENHANCEMENTS 1
15.1 General Requirements 1
15.2 Administrative Requirements 1
 15.2.1 Design Requirements 1
 15.2.2 Landscape and Hardscape Enhancement Plans 2
 15.2.3 Personnel 3
15.3 Design Requirements 3
 15.3.1 Landscape and Hardscape Enhancement Principles and Strategies 3
 15.3.2 Reserved 4
 15.3.3 Reserved 4
 15.3.4 Trees, Shrubs, and Other Plant Materials 4
 15.3.5 Reserved 4
 15.3.6 Reserved 4
15.4 Construction Requirements 5
15.5 Deliverables 5

16 SIGNING, PAVEMENT MARKING, SIGNALIZATION 1
16.1 General Requirements 1
16.2 Administrative Requirements 1
 16.2.1 Meetings 1
16.3 Design Requirements 1
 16.3.1 Final Plans 1
 16.3.2 Permanent Signing and Delineation 1
 16.3.3 Project Signs – Outside the Existing and Proposed ROW 1
 16.3.4 Reserved 1
 16.3.5 Specific Service Signs 1
 16.3.6 Sign Support Structures 1
 16.3.7 Permanent Pavement Marking 1
 16.3.8 Permanent Signalization 1
16.4 Construction Requirements 2
 16.4.1 Permanent Signing and Delineation 2
 16.4.2 Permanent Pavement Marking 2
 16.4.3 Permanent Signalization 2
16.5 Deliverables 2
 16.5.1 Permanent Signing and Delineation 2
 16.5.2 Permanent Pavement Marking 2
 16.5.3 Permanent Signalization 2

17 INTELLIGENT TRANSPORATION SYSTEMS 1
17.1 General Description 1
17.1.1 General Purpose Lane ITS 1
17.1.2 Toll System Infrastructure 1
17.1.3 Transportation Management Center (TMC) Improvements 1
17.2 Design and Construction Requirements 2
17.2.1 Closed Circuit Television (CCTV) Subsystem 3
17.2.2 Detection Systems 6
17.2.3 Changeable Message Sign (CMS) Subsystems 7
17.2.4 Communications Network 9
17.2.5 ITS Electrical Service (Power) Requirements 14
17.3 Testing and Acceptance 19
17.4 Warranty 19
17.4.1 Protection of Existing ITS Signalization 19

18 TRAFFIC CONTROL..... 1
18.1 General Requirements 1
18.2 Administrative Requirements 1
18.2.1 Transportation Management Plan 1
18.3 Design Requirements 1
18.3.1 Traffic Control Plans 1
18.4 Construction Requirements 2
18.4.1 DB Team Responsibility 2
18.4.2 Access 2
18.4.3 Detours 3

19 MAINTENANCE DURING THE DESIGN-BUILD PERIOD 1
19.1 General Requirements 1
19.1.1 Reserved 1
19.1.2 GDOT Obligation to Repair 1
19.2 Construction Maintenance Limits Plan 1

20 BICYCLE AND PEDESTRIAN FACILITIES 1
20.1 General Requirements 1
20.2 Design Requirements 1
20.2.1 Bicycle Facilities 1
20.2.2 Pedestrian Facilities 1
20.2.3 Final Plans 2

21 TOLLING..... 1
21.1 GENERAL DESCRIPTION 1
21.1.1 General Purpose 1
21.1.2 Toll System Infrastructure 2
21.1.3 Toll System Improvements 2
21.2 Responsibilities 2
21.2.1 Division of DB Team and SRTA Responsibilities 2
21.3 Toll System Elements 4
21.4 Toll System Infrastructure 5
21.4.1 Toll System Sites 5

21.4.2	Toll System Structures	7
21.4.3	Toll System Fiber Communications Network.....	11
21.4.4	Toll System Maintenance Area	11
21.4.5	Radio Frequency Requirements	11
21.5	Toll System Infrastructure Design and Construction Requirements	12
21.5.1	Toll System Infrastructure - Site Installation	12
21.5.2	Toll System Infrastructure - Sub-Grade.....	12
21.5.3	Toll System Infrastructure - At-Grade	13
21.5.4	Toll System Infrastructure – Above-Grade.....	16
21.5.5	Toll System Hub Buildings.....	18
21.5.6	Toll System Power Loads and Heat Dissipation	19
21.6	Toll System Infrastructure - Turnover to SRTA	19
21.6.1	Site Acceptance Checklist	19
21.6.2	Toll System Implementation Coordination	20
21.7	Testing and Acceptance.....	21
21.7.1	Toll System On-Site Integration and Commissioning Testing	21
21.7.2	End-To-End Testing.....	21
21.7.3	Operational Performance Testing.....	21
21.7.4	Acceptance.....	22
21.8	Maintenance and Warranty	22
22	SOUND BARRIERS	1
22.1	General	1
23	SUBMITTALS.....	2
23.1	General	2
23.2	Design Submittals and Progress of Design Work.....	2
23.2.1	Construction Phasing and Additional Submittal Requirements	15
23.3	Submittals Process	15
23.4	Shop Drawings and Temporary Works Submittals.....	15
23.4.1	General	15
23.4.2	Work Items Requiring Shop Drawings.....	15
23.4.3	Schedule of Submittals.....	15
23.4.4	Style, Numbering, and Material of Submittals	15
23.4.5	Submittals and Copies	15
23.4.6	Processing of Shop Drawings	15
23.4.7	Other Requirements for Shop Drawings for Bridges	15
23.4.8	Modifications on Construction	15
23.5	As-Built Plans.....	15

Volume 2 Attachments

- Attachment 6-1 Utility Name MOU
- Attachment 6-2 Utility Name MOU
- Attachment 6-3 Utility Name MOU
- Attachment 6-4 Utility Name MOU
- Attachment 6-5 Utility Name MOU

1 GENERAL

Supplement the following to Section 1 of Volume 3

1.1 Project Scope

1.2 Project Description

1.2.1 Other Considerations

The DB Team's design plans for Project shall comply with all requirements set forth in the DB Documents. The DB Team's design plans for the Project shall be consistent with the following:

- Environmental Document Approvals
- Interchange Modification and Interchange Justification Reports (if applicable)
- Concept Report
- Reference Information Documents (RID)

Any additions to the Existing ROW required for construction or operation of the proposed Project shall be illustrated on the DB Team's design plans for the Project.

The DB Team shall not rely on the physical description contained herein to identify all Project components. The DB Team shall determine the full scope of the Project through thorough examination of the DB Documents and the Project or as may be reasonably inferred from such examination.

Design and Construction Requirements

DB Team shall design and construct the Project to comply with the requirements of the DB Documents.

DB Team shall coordinate with GDOT and adjacent Governmental Entities and other third parties as appropriate to determine the design criteria, standards, and specifications of those components of Work which the DB Team will construct but which are to be maintained by others. For components of Work which potentially or actually impact the infrastructure of any Governmental Entity or third party entity, DB Team's design shall conform to the design requirements of such entity.

2 PROJECT MANAGEMENT

2.1 Project Management Requirements

No additional requirements

2.1.1 Design Quality Assurance

No additional requirements

2.1.2 Construction Quality Assurance

GDOT will provide construction engineering inspection and testing in accordance with GDOT Specifications and the Engineer of Record's design documents.

GDOT will provide plant inspection, testing and certification of plant produced materials at existing GDOT approved plant locations such as for precast/pre-stressed concrete, asphalt, and structural steel fabrication.

2.1.3 Environmental Monitoring

No additional requirements

2.1.4 Right of Way

No additional requirements

2.1.5 Safety and Security

No additional requirements

2.1.6 Traffic Management

No additional requirements

2.1.7 Project Communications (Media and Public Information)

A critical objective for all projects is to maintain the trust, support, and confidence of the media and public throughout the life of the project. In order to meet this objective, it will be critical to proactively manage messages and communications to the media. GDOT will be responsible for all communications with the media; all inquiries from media shall be directed to GDOT for responses. The DB Team shall coordinate and collaborate with GDOT on the development of the Public Information and Communications Plan (PICP). The DB Team shall ensure updated project information is provided the GDOT in a timely manner. The DB Team shall document all form of project communications with Customer Groups, interested Citizens, stakeholders, and general public.

2.1.8 Project Closeout

No additional requirements

2.1.9 Reserved

No additional requirements

2.1.10 Reserved

2.2 Schedule Requirements

2.2.1 General Schedule Requirements

No additional requirements

2.2.2 120 Day Schedule Requirements

No additional requirements

2.2.3 Project Baseline Schedule Requirements

No additional requirements

2.2.4 Narrative Requirements

No additional requirements

2.2.5 Project Schedule Update Requirements

No additional requirements

2.2.6 Project Baseline Schedule Revisions

No additional requirements

2.2.7 Schedule Display Requirements

No additional requirements

2.3 Quality Management Requirements

2.3.1 Document Management

No additional requirements

2.3.2 Quality Management Plan Submittal Requirements

No additional requirements

2.3.3 Quality Management Plan Requirements

No additional requirements

2.3.4 Quality Management Plan Structure

No additional requirements

2.3.5 Nonconformance Report (NCR) System

No additional requirements

2.3.5.1 Role Definitions and Order of Review

No additional requirements

2.3.5.2 Disposition Options

No additional requirements

2.3.5.3 Corrective Action

No additional requirements

2.3.5.4 Workflow States

No additional requirements

2.3.6 Quality Management Updates

No additional requirements

2.3.7 Responsibility and Authority of DB Team Staff

No additional requirements

2.3.8 Design Quality Management Plan

No additional requirements

2.3.9 Record Drawings and Documentation

No additional requirements

2.4 Requirements for GDOT Office and Equipment

A field engineer's office shall be provided and will be a minimum of a Type X or GDOT accepted equivalent will be required for this project. Refer to GDOT Standard Specifications, Section 153.

2.5 Web-Based Project Management Program

No additional requirements

3 PUBLIC INFORMATION AND COMMUNICATIONS

3.1 General Requirements

No additional requirements

3.2 Administrative Requirements

No additional requirements

3.2.1 Public Information and Communications Plan

No additional requirements

3.2.2 Project Information Coordinator

No additional requirements

3.2.3 Reserved

3.2.4 Public Meetings

No additional requirements

3.2.5 Monthly Public Information and Communications Reporting

No additional requirements

3.2.6 Emergency Event Communications

No additional requirements

3.2.7 Public Information

No additional requirements

3.2.8 Public Involvement Action Items

No additional requirements

4 ENVIRONMENTAL

4.1 General Requirements

No additional requirements

4.2 Environmental Approvals

4.2.1 Responsibilities Regarding Environmental Studies

No additional requirements

4.2.2 GDOT Review and Approval of Environmental Permits

No additional requirements

4.3 Required Submittals

No additional requirements

5 RIGHT OF WAY (ROW)

5.1 General Requirements

No additional requirements

5.2 Administrative Requirements

No additional requirements

5.3 DB Team’s ROW Scope of Services

No additional requirements

5.4 Responsibilities of DB Team

No additional requirements

5.5 Responsibilities of GDOT

No additional requirements

5.6 GDOT Project Monitor/Reviewer

No additional requirements

5.7 Responsibilities of the Office of the Attorney General

No additional requirements

5.8 ROW Acquisition Plan

No additional requirements

5.9 Schedule and Review Procedures

No additional requirements

5.10 Acquisition Process Summary

No additional requirements

5.11 DB Team Conflict of Interest

No additional requirements

5.12 Meetings

No additional requirements

5.13 Documentation and Reporting

No additional requirements

5.14 Pre-Acquisition Activities

No additional requirements

5.14.1 ROW Plans and Engineering

No additional requirements

5.14.2 Title Services

No additional requirements

5.14.3 Introduction to Property Owners

No additional requirements

5.15 Appraisals

5.15.1 Appraisal Services

No additional requirements

5.16 Acquisition Activities

5.16.1 DB Team Responsibilities During ROW Negotiations

No additional requirements

5.16.2 DB Team Responsibilities During Relocation Assistance

No additional requirements

5.16.3 DB Team Responsibilities During Closings

No additional requirements

5.16.4 DB Team Responsibilities For Condemnation Support

No additional requirements

5.16.5 DB Team Responsibilities For Clearance of ROW

No additional requirements

5.16.6 DB Team Responsibilities For Property Fencing

No additional requirements

5.17 Early ROW Acquisition

No additional requirements

6 UTILITY ADJUSTMENTS

6.1 General Requirements

6.1.1 Utility Adjustment Relocation Costs

No additional requirements

6.1.2 When Utility Adjustment is Required

No additional requirements

6.1.3 Certain Components of the Utility Adjustment Work

No additional requirements

6.1.3.1 Coordination

No additional requirements

6.1.3.2 Betterments

No additional requirements

6.1.3.3 Protection in Place

No additional requirements

6.1.3.4 Abandonment and Removal

No additional requirements

6.1.3.5 Service Lines and Utility Appurtenances

No additional requirements

6.1.3.6 Early Adjustments

No additional requirements

6.1.4 Recordkeeping

No additional requirements

6.2 Administrative Requirements

No additional requirements

6.2.1 Standards

No additional requirements

6.2.2 Communications

No additional requirements

6.2.2.1 Communication with Utility Owners Meetings and Correspondence

No additional requirements

6.2.3 Worksite Utility Coordination Supervisor

No additional requirements

6.2.4 Real Property Matters

No additional requirements

6.2.4.1 Documentation of Existing Utility Property Interests - Affidavits

No additional requirements

6.2.4.2 Acquisition of Replacement Utility Property Interests

No additional requirements

6.2.4.3 Georgia Utility Permit

No additional requirements

6.2.4.4 Documentation Requirements

No additional requirements

6.3 Design

6.3.1 DB Team's Responsibility for Utility Identification

No additional requirements

6.3.2 Technical Criteria and Performance Standards

No additional requirements

6.3.3 Memorandum of Understanding (MOU)

No additional requirements

6.3.4 Utility Work Plans

No additional requirements

6.3.4.1 Plans Prepared by DB Team

No additional requirements

6.3.4.2 Plans Prepared by the Utility Owner

No additional requirements

6.3.4.3 Design Documents

No additional requirements

6.3.4.4 Certain Requirements for Underground Utilities

No additional requirements

6.3.4.5 Utility Work Plan

No additional requirements

6.4 Construction

6.4.1 Reserved

6.4.2 General Construction Criteria

No additional requirements

6.4.3 Inspection of Utility Owner Construction

No additional requirements

6.4.4 Scheduling Utility Adjustment Work

No additional requirements

6.4.5 Standard of Care Regarding Utilities

No additional requirements

6.4.6 Emergency Procedures

No additional requirements

6.4.7 Switch Over to New Facilities

No additional requirements

6.4.8 Traffic Control

No additional requirements

6.5 Deliverables

No additional requirements

6.5.1 Utility Work Plan Submittals

No additional requirements

6.5.2 Preliminary Utility Status Report

No additional requirements

6.5.3 Subsurface Utility Engineering (SUE) Requirements

No additional requirements

6.5.4 Utility As-Built Requirements

No additional requirements

7 RIGHT OF WAY (ROW) – ADDITIONAL PROPERTIES

7.1 General Requirements

Supplement the following to Section 7.1 of Volume 3

Ensure designing and constructing the Project occurs within the existing ROW and within the Required ROW as designated in the RID.

7.2 Administrative Requirements

No additional requirements

7.2.1 Revised ROW Acquisition Plan - Additional Properties Submittals

No additional requirements

7.2.2 DB Teams ROW Properties Scope of Services

No additional requirements

7.2.3 Requirements of DB Team

Field establish the limits of ROW by staking at a minimum spacing of 100 feet prior to construction and ensure no encroachments will occur as a result of construction.

7.2.4 DB Team Conflict of Interest

No additional requirements

7.2.5 Meetings

No additional requirements

7.2.6 Documentation and Reporting

No additional requirements

7.2.7 Responsibilities of GDOT

No additional requirements

7.2.8 Responsibilities of the Office of Georgia Attorney General

No additional requirements

7.3 Reserved

7.4 Fencing

7.4.1 Reserved

7.4.2 Property Fencing

No additional requirements

7.5 Access to the Work

Following NTP 1, the DB Team shall be afforded access to all Property acquired by GDOT at that point in time.

8 GEOTECHNICAL

8.1 General Requirements

No additional requirements

8.2 Design Requirements

8.2.1 Subsurface Geotechnical Investigation by DB Team

No additional requirements

8.2.2 Pavement Design

No additional requirements

8.3 Construction

No additional requirements

8.4 Deliverables

No additional requirements

9 SURVEYING AND MAPPING

9.1 General Requirements

No additional requirements

9.2 Administrative Requirements

No additional requirements

9.2.1 Property Owner Notification

No additional requirements

9.3 Design Requirements

No additional requirements

9.3.1 Units

No additional requirements

9.3.2 Survey Control Requirements

No additional requirements

9.3.3 Conventional Method (Horizontal & Vertical)

No additional requirements

9.3.3.1 Horizontal Accuracy Requirements for Conventional Surveys

No additional requirements

9.3.3.2 Vertical Accuracy Requirements for Conventional Surveys

No additional requirements

9.3.4 Reserved

No additional requirements

9.3.5 Right of Way Survey

No additional requirements

9.3.5.1 Accuracy Standard

No additional requirements

9.3.6 Survey Records and Reports

No additional requirements

9.4 Construction Requirements

9.4.1 Units

No additional requirements

9.4.2 Construction Surveys

No additional requirements

9.5 Deliverables

9.5.1 Final ROW Surveying and Mapping

No additional requirements

9.5.2 ROW Monuments

No additional requirements

10 GRADING

10.1 General

No additional requirements

10.2 Preparation within Project Limits

No additional requirements

10.3 Slopes and Topsoil

No additional requirements

10.4 Deliverables

No additional requirements

10.4.1 Released for Construction Documents

No additional requirements

11 ROADWAYS

11.1 General Requirements

No additional requirements

11.2 Design Requirements

Supplement the following to Section 11.2 of Volume 3

Design Criteria Order of Precedence

The following requirements shall be adhered to for the design of the Project. The plans provided in the Reference Information Documents are provided for reference only and may contain or conform to some but not all of the design requirements herein. In the event of any conflict, ambiguity or inconsistency, among the following design criteria, the order of precedence, from highest to lowest, one being higher than two, shall be as follows:

1. Allowable Design Exception(s)/Variance(s) as set forth in Section 11.2.3
2. Select Design Criteria as set forth in Volume 2, Section 11.2
3. Volume 2 and Volume 2 Attachments (Technical Provisions)
4. Volume 3 and Volume 3 Attachments (Programmatic Technical Provisions)
5. Volume 3 Manuals (Technical Documents)

11.2.1 Typical Section(s) and Pavement Design

Table 11-1: Typical Section(s) for Roadway Design

Roadway	Number of Lane(s)	Lane Width(s)	Median Width(s)	Outside Shoulder Width(s)

Table 11-2: Pavement Design(s)

Material	Spread Rate

Table 11-3: Driveway Pavement Design(s)

<u>Material</u>	<u>Spread Rate</u>
Residential Asphaltic Concrete Driveways	
RECYCLED ASPH CONC 9.5 mm SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	165 lb/sy
GRADED AGGREGATE BASE COURSE – 6 INCH DEPTH INCL MATL	N/A
Commercial Asphaltic Concrete Driveways	
RECYCLED ASPH CONC 9.5 mm SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	165 lb/sy
RECYCLED ASPH CONC 19 mm SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	220 lb/sy
GRADED AGGREGATE BASE COURSE – 6 INCH DEPTH INCL MATL	N/A
Residential Concrete Driveways	
PORTLAND CEMENT CONCRETE – 6”	N/A
GRADED AGGREGATE BASE – 6” DEPTH	N/A
Commercial Concrete Driveways	
PORTLAND CEMENT CONCRETE – 8”	N/A
GRADED AGGREGATE BASE – 10” DEPTH	N/A

11.2.2 Additional Roadway Design Requirements

Table 11-4: Additional Design Criteria For Design-Build Project

Roadway	Functional Classification	Minimum Design Speed, mph	Maximum Grades, %	Superelevation Rate, %

11.2.3 Allowable Design Exception(s)/Variance(s)

No additional Design Exceptions or Variances proposed by the DB Team shall be allowed. Any existing conditions that do not meet the requirements of the AASHTO “13 Controlling Criteria” and/or the GDOT Standard Design Criteria, as denoted in the GDOT Design Policy Manual, must be presented to GDOT and shall be upgraded to meet the required criteria or mandatory practice with the proposed design of the Project.

DB Team is permitted to retain Design Deviations that are present within the existing conditions. Any existing Design Deviations that are identified within the project limits and that are intended to be retained in the proposed design must be presented to GDOT.

The following are allowable Design Exception(s)/Variance(s) for the Project:

11.2.3.1 Design Exception...

11.2.4 Visual Quality

No additional requirements

11.2.5 Permanent Lighting

No additional requirements

11.2.6 Related Transportation Facilities

Supplement the following to Section 11.2.6 of Volume 3

DB Team shall design and construct all new roadway and bridges to accommodate the planned expansions or updates of Related Transportation Facilities. Additional Project information can be found as designated in the latest edition of the following regional and local transportation plans:

ARC Regional Transportation Plan:

http://www.atlantaregional.com/File%20Library/Transportation/Transportation%20Plans/tp_e6_vol1_rtp_2_7_08.pdf

ARC Transportation Improvement Program:

<http://www.atlantaregional.com/transportation/transportation-improvement-program>

ARC RTP and TIP supporting documents:

<http://www.atlantaregional.com/transportation/regional-transportation-plan>

The DB Team shall also coordinate with the appropriate Governmental Entities who have jurisdiction for the above Transportation Improvement Programs to determine the extent of the accommodation.

11.3 Deliverables

No additional requirements

12 DRAINAGE

12.1 General Requirements

No additional requirements

12.2 Administrative Requirements

12.2.1 Data Collection

No additional requirements

12.2.2 Coordination with Other Agencies

No additional requirements

12.3 Design Requirements

No additional requirements

12.3.1 Surface Hydrology

No additional requirements

12.3.1.1 Design Frequencies

No additional requirements

12.3.1.2 Hydrologic Analysis

No additional requirements

12.3.2 Storm Sewer Systems

No additional requirements

12.3.2.1 Pipes

No additional requirements

12.3.2.2 Municipal Separate Storm Sewer System (MS4)

No additional requirements

12.3.2.3 Gutter Spread/Ponding

No additional requirements

12.3.3 Hydraulic Structures (Culverts/Bridges)

No additional requirements

12.3.3.1 Method Used to Estimate Flows

No additional requirements

12.3.3.2 Design Frequency

No additional requirements

12.3.3.3 Hydraulic Analysis

No additional requirements

12.3.3.4 Riverine Bridge/Bridge Culvert Design

No additional requirements

12.3.3.5 Bridge Deck Drainage

No additional requirements

12.3.3.6 Drainage Report for Major Stream Crossings

No additional requirements

12.4 Construction Requirements

No additional requirements

12.5 Deliverables

No additional requirements

13 STRUCTURES

13.1 General Requirements

No additional requirements

13.2 Design Requirements

13.2.1 Design Parameters

No additional requirements

13.2.2 Bridge Decks and Superstructures

No additional requirements

13.2.3 Bridge/ Retaining Wall Foundations

No additional requirements

13.2.4 Bridge Railing and Barriers

No additional requirements

13.2.5 Retaining Walls

No additional requirements

13.2.6 Aesthetics

No additional requirements

13.2.7 Drainage Structures

No additional requirements

13.2.8 Sign, Illumination, and Traffic Signal Supports

No additional requirements

13.2.9 Widening/Modification of Existing Structure

No additional requirements

13.2.10 Toll Gantry Structures

No additional requirements

13.3 Construction Requirements

No additional requirements

13.3.1 Concrete Finishes

No additional requirements

13.3.2 Structure Metals

No additional requirements

13.4 Final Bridge Inspection Prior to Service Commencement

No additional requirements

13.5 Deliverables

No additional requirements

14 RAIL

14.1 General Requirements

No additional requirements

14.2 Railroad Design Standards

No additional requirements

14.2.1 Design Railroad Live Load

No additional requirements

14.2.2 Design Lateral Pressures for Railroad Live Load Surcharge

No additional requirements

14.2.3 Clearances

No additional requirements

14.2.3.1 Permanent Clearances

No additional requirements

14.2.3.2 Temporary Clearances

No additional requirements

14.2.4 Crashwalls

No additional requirements

14.2.5 Drainage

No additional requirements

14.2.6 Erosion Control

No additional requirements

14.2.7 Utilities

No additional requirements

14.2.8 Miscellaneous

No additional requirements

14.3 Project Work Affecting Railroad Operations

14.3.1 Railroad Agreements

No additional requirements

14.3.1.1 Permanent ROW Encroachment Agreement(s)

No additional requirements

14.3.1.2 Reserved

No additional requirements

14.3.1.3 Railroad Right of Entry Agreement(s)

No additional requirements

14.3.2 Operation Safety

No additional requirements

14.3.3 Insurance Requirements

No additional requirements

14.4 Construction Requirements

14.4.1 General

No additional requirements

14.4.2 Track Clearances

No additional requirements

14.4.3 Temporary Excavations

No additional requirements

14.4.4 Excavation for Structures

No additional requirements

14.4.5 Demolitions, Erection, Hoisting

No additional requirements

14.4.6 Blasting

No additional requirements

14.4.7 Maintenance and Repair of Railroad Facilities

No additional requirements

14.4.8 Storage of Materials and Equipment

No additional requirements

14.4.9 Cleanup

No additional requirements

14.5 Damages

No additional requirements

14.6 Flagging Services

14.6.1 When Required

No additional requirements

14.6.2 Scheduling and Notification

No additional requirements

14.6.3 Payment

No additional requirements

14.6.4 Verification

No additional requirements

14.7 Transporting Materials and Equipment Across Tracks

No additional requirements

14.8 Work for Benefit of DB Team

No additional requirements

14.9 Cooperation and Delays

No additional requirements

14.10 Safety Guidelines

No additional requirements

14.10.1 Guidelines for Personnel on Railroad ROW

No additional requirements

14.10.2 Guidelines for Equipment on Railroad ROW

No additional requirements

14.11 Insurance

14.11.1 Requirements

No additional requirements

14.11.1.1 DB Team's Liability Insurance

No additional requirements

14.11.1.2 Railroad Protective Liability Insurance

No additional requirements

14.11.2 Evidence of Insurance

No additional requirements

14.11.3 Subletting

No additional requirements

14.11.4 Cancellation

No additional requirements

14.12 Failure to Comply

No additional requirements

15 LANDSCAPE AND HARDSCAPE ENHANCEMENTS

15.1 General Requirements

This Section 15 defines requirements with which the DB Team shall design and construct aesthetic treatment enhancements at a minimum for the roadway and landscaping Elements of the Project. Aesthetic treatments shall be designed to harmonize with the indigenous landscape and architecture.

15.2 Administrative Requirements

The intent of this Section 15 is to provide an enhancement value to both the users and the onlookers of the corridor and to provide a roadway corridor with continuity and attractiveness through the use of comprehensive aesthetic treatments.

This Section 15 presents minimum landscape design requirements for the Project. The Aesthetic and Landscape Plan shall include but shall not be limited to the following aesthetic features and shall be included in the design preliminary plan:

- Material, finish, color, and texture of bridge Elements
- Materials, finish, and color of barriers and railings
- Paved slope treatments
- Finish, color, and/or texture of retaining and sound barriers including the use of formliners
- Contour grading, slope rounding, channel treatments, and drainage
- Sculptural and artistic features of other structures
- Sidewalks, median or pedestrian specialty paving, including material, finish, and color
- Hardscape embellishments at interchanges and intersections
- Fencing embellishments (other than GDOT standard material)
- Specialty Signage/Logos/Emblems –
- Architectural embellishment to any permanent building construction within the Project, including ancillary support, and operational. Planted vegetation (excluding erosion control seeding, final turf seeding and sodding)
- Material finish and color of light poles and mast arms, ambient lighting colors, and general layout conditions

15.2.1 Design Requirements

The DB Team shall use the preliminary Aesthetic and Landscape Plan submitted with the Proposal as a basis to prepare the final Aesthetic and Landscape Plan. A themed Project embellishment for the Elements/hardscape structures of the Project to upgrade the structural components with ornamentation. The theme must be Georgia-related in nature and can be integrated into the Elements/hardscape structures, imbedded in the structural forms, or added on to the elements/hardscape surfaces. The color gray or colors similar to normal concrete will not be considered as part of the landscape and

aesthetics plan. Non colored concrete features may be considered as part of the landscape and aesthetics plan that include the color gray or similar to the natural color of concrete when formliner is utilized. All embellishments must be made of long-lasting materials and easy to maintain with a minimal amount of maintenance cost. The expected maintenance work plan and schedule for long-term maintenance of the embellishment must be included with the proposal. The theme must have wide appeal without offense to any person or group. The theme must not constitute an advertisement or promotion for any service, attraction or product. Some possible themes could be:

- Georgia Granite
- Georgia Flora or Fauna
- Georgia History

DB Team shall present their concept aesthetic and landscape plan to those local communities as designated by GDOT in order to gather input and feedback to be incorporated into the final aesthetic and landscape plan. The aesthetic and landscape plan that is submitted to the local communities for review shall only consist of the input to the aesthetic and landscape plan of those embellishments as allowed by this Section 15 and not the change in construction materials as allowed per the requirements of the RFP. Before presenting the concept aesthetic and landscape plan to the public, the DB Team shall meet and review the aesthetic and landscape plan with GDOT. The DB Team shall complete the coordination with the local communities within 8 weeks from the date of first presentation of the concept aesthetic and landscape plan to the local communities. After DB Team coordination with the public, the DB Team shall prepare a final aesthetic and landscape plan and submit the plan to GDOT for acceptance. GDOT will designate an amount as the aesthetic reserve. The aesthetic reserve shall include:

- Preparation of concept aesthetic and landscape plan as required above
- Coordination with local communities required for the development of the preliminary and final aesthetic and landscape plan
- Preparation of final aesthetic and landscape plan
- Preparation of the Landscape Enhancement Plan
- Implementation of all aesthetic measures including all materials and labor
- Implementation of all landscape and hardscape enhancement measures including all materials and labor

The DB Team shall design the aesthetic, landscape, and hardscape to utilize the aesthetic reserve. However the DB Team shall be responsible for any amount exceeding the aesthetic reserve.

15.2.2 Landscape and Hardscape Enhancement Plans

DB Team shall submit a Landscape Enhancement Plan for acceptance by GDOT within one hundred fifty (150) Days from NTP 1. The Landscape Enhancement Plan shall provide guidelines and requirements for the design of the Project. The Landscape

Enhancement Plan shall include all elements to fully communicate the proposed design to GDOT. GDOT acceptance of the Landscape Enhancement Plan is required prior to construction of any affected Elements. The Landscape Enhancement Plan for the Project shall include at a minimum the following:

- A plan that indicates plant palettes, locations of plants, plant types, and planting dates;
- A maintenance program; and
- Composite drawings of all utilities and easements that would interfere with landscaping, markers, or any other identified enhancements,

The Hardscape Enhancement Plan of the Project shall include at a minimum the following:

- A master plan that will convey the layout of the various roadway features included by the DB Team, e.g. where the depressed sections, elevated sections, and at-grade roadways are located, where there are bridges, retaining walls, sound barriers, sign structures, and other structure components.
- Drawings showing where site specific elements are located, e.g. fences, signage, potential locations of community improvement opportunity areas, gate way markers, Managed Lane buildings, bridge enhancements, landscaping, etc.
- Color schemes and their locations

Upon completion of the Hardscape Enhancement Plan, the DB Team shall consolidate the information into guidelines which establishes the requirements for engineering and development of the highway corridor aesthetics. The guidelines shall serve as the primary standard guidance necessary to produce the intended aesthetic form, function and appearance of this and potential future projects.

15.2.3 Personnel

DB Team shall provide a landscape architect, registered in the State of Georgia, with a minimum five (5) years' experience in designing Landscape Enhancement Elements for roadway projects of similar scope and size, to develop the Landscaping Enhancement Plan.

15.3 Design Requirements

15.3.1 Landscape and Hardscape Enhancement Principles and Strategies

DB Team shall follow the guidelines and requirements of the accepted Landscape Enhancement Plan, as well as the aesthetics principles, requirements, and strategies established in the Hardscape Enhancement Plan as accepted by GDOT for the Project, including the following:

- The Project shall minimize impact on the existing natural environment to the extent possible.
- The Project shall be complimentary to the indigenous landscape to the fullest extent possible.
- Simple geometric shapes for structures shall be used to the extent possible for continuity along the entire length of the Project.
- All structures shall be carefully detailed so as to achieve the greatest level of quality and fit within the regional context.
- Color, texture, and form shall be used consistently for all structures.
- Where color is used for concrete features, DB Team shall use colored mix concrete or staining application with prior acceptance by GDOT. No painted concrete features will be allowed.
- Graphics, signage, and lighting shall be consistent along the entire length of the Project.
- Unmanaged woods, existing trees and rock outcroppings shall be preserved to the greatest extent possible.
- Embellishment Elements shall be fully integrated with the overall landscape design.
- Landscape Enhancement Plans shall conform to GDOT’s specifications, policies and procedures.
- Visual quality of the landscape shall be consistent along the entire length of the Project.
- Embellishment Elements shall be easy to maintain and provide protection from vandalism and graffiti.
- Aesthetics shall not interfere with safety, constructability, and maintenance.

15.3.2 Reserved

15.3.3 Reserved

15.3.4 Trees, Shrubs, and Other Plant Materials

Tree, shrubs and other plant materials shall comply with applicable requirements in GDOT’s Specifications 700 (Grassing), 702 (Vine, Shrub and Tree Planting); and GDOT’s Policies and Procedure 6755-9 (Landscaping on GDOT ROW).

15.3.5 Reserved

The DB Team shall design the lighting with the following embellishment criteria:

- One pole type for the entire Project.
- DB Team shall provide a lighting layout plan that addresses each light fixture (i.e. roadside lighting, high mast lighting, wall pack, etc.) and type of luminaire (i.e. LED lighting, HPS, Induction, Metal halide, etc.).

15.3.6 Reserved

Reserved

15.4 Construction Requirements

Prior to start of production of any embellishment Element, the DB Team shall provide GDOT samples, mock ups, or catalog cuts for GDOT review and acceptance.

DB Team shall provide GDOT sample panels a minimum of sixty (60) Days in advance of starting construction of textured concrete surfaces.

15.5 Deliverables

The DB Team shall provide Submittals as required in Section 23 and in the DB Documents in addition to the following:

- The DB Team shall submit the Landscape and Hardscape Enhancement Plan to GDOT for review and acceptance within sixty (60) Days of issuance of NTP 1.

16 SIGNING, PAVEMENT MARKING, SIGNALIZATION

16.1 General Requirements

No additional requirements

16.2 Administrative Requirements

16.2.1 Meetings

No additional requirements

16.3 Design Requirements

16.3.1 Final Plans

No additional requirements

16.3.2 Permanent Signing and Delineation

No additional requirements

16.3.3 Project Signs – Outside the Existing and Proposed ROW

No additional requirements

16.3.4 Reserved

16.3.5 Specific Service Signs

No additional requirements

16.3.6 Sign Support Structures

No additional requirements

16.3.7 Permanent Pavement Marking

No additional requirements

16.3.8 Permanent Signalization

No additional requirements

16.3.8.1 Traffic Signal Requirements

No additional requirements

16.3.8.2 Traffic Signal Timing Plans

No additional requirements

16.3.8.3 Traffic Signal Permit

No additional requirements

16.3.8.4 Traffic Signal Support Structures

No additional requirements

16.4 Construction Requirements

16.4.1 Permanent Signing and Delineation

No additional requirements

16.4.2 Permanent Pavement Marking

No additional requirements

16.4.3 Permanent Signalization

No additional requirements

16.5 Deliverables

16.5.1 Permanent Signing and Delineation

No additional requirements

16.5.2 Permanent Pavement Marking

No additional requirements

16.5.3 Permanent Signalization

No additional requirements

17 INTELLIGENT TRANSPORTATION SYSTEMS

17.1 General Description

This specification addresses the requirements for the GDOT General Purpose Lane Intelligent Transportation System (GDOT ITS) and the Toll System including requirements for traffic surveillance, detection, traveler information dissemination, communication, and maintenance during construction.

The improvements, infrastructure, and responsibilities for GDOT ITS and the Toll System are generally described below. Section 21 provides additional specific toll system infrastructure responsibility delineations between the DB Team and SRTA.

17.1.1 General Purpose Lane ITS

This work includes, but is not limited to, GDOT ITS, communication network, power, structures, and other required elements within the Right-of-Way required to accommodate the project. The GDOT ITS includes, but is not limited to, Changeable Message Signs (CMS), Microwave Detection Systems (MDS), Closed Circuit Television (CCTV) Pan Tilt Zoom (PTZ) cameras, Communication Hub Buildings and HVAC systems, and the communication network including duct bank, the fiber backbone.

17.1.2 Toll System Infrastructure

Toll System Infrastructure shall be designed and constructed by the DB Team. The components, requirements and specifications for Toll System Infrastructure is provided in Section 21.

Within Section 21, Section 17 is referenced for requirements and specification regarding the design and installation of portions of the Toll System, and although some of the Toll System devices described in Section 21 may be identical or similar to the ITS devices described in this section, the devices described in Section 21 are separate and distinct.

17.1.3 Transportation Management Center (TMC) Improvements

If required, Transportation Management Center (TMC) Improvements shall be managed by GDOT and implemented by the Transportation Management Center System Integrator (TMC SI, and also referred to as the NaviGator ITS Contractor). The Transportation Management Center Improvements include, but are not limited to, NaviGator system and software modifications, integration services, and other related improvements as necessary to connect, communicate with, and operate GDOT ITS.

The DB Team is responsible for assuring that all software it incorporates for any aspect of the Project is compatible with software used by GDOT as provided in the

Technical Provisions. Prior to using any software or version of software not then in use by GDOT, the DB Team must obtain written acceptance from GDOT. In addition, DB Team shall provide to GDOT, at The DB Team's cost, any software, licenses and training necessary to assure that GDOT is able to implement compatible usage of all software utilized by The DB Team. Compatible shall mean that the DB Team-provided electronic file(s) may be loaded or imported and manipulated by GDOT using its software with no modifications, preparation or adjustments. All electronic information submitted to GDOT shall be in native format or, if not available, legible.

The DB Team is responsible for ensuring that the civil infrastructure is in place, in accordance with established milestone dates, and for coordination of work as required to allow for the TMC SI to complete their software development, installation and integration responsibilities with DB Team installed devices.

17.2 Design and Construction Requirements

Attachment 17-2: Roll Plots identifies potential GDOT ITS locations to be removed or relocated and preferred locations for new ITS.

For GDOT ITS, it is DB Team's responsibility to determine the number and specific locations of all ITS components to meet the requirements as outlined in the GDOT's ITS Strategic Deployment Plan (SDP) for the level I of ITS deployment and the latest ITS Design Manual for design requirements. The DB Team has flexibility to offer alternatives for GDOT to consider, however the locations identified on the ITS Layout shall be the minimum amount of devices and infrastructure to meet the traffic management needs of the Project. The DB Team shall review suggested location modifications with GDOT during the ITS and Toll System design workshop, to be conducted after roadway geometry is established but before beginning design efforts for the prototype Toll System Infrastructure and through the preliminary design process.

DB Team shall prepare a preliminary and final GDOT and SRTA ITS layout including network communication schematic diagrams and specification for review and acceptance by GDOT to ensure adequate planning of the ITS implementation and components' consistency and compatibilities with adjacent GDOT's. The plan at a minimum shall provide horizontal and vertical plan location, proposed equipment, proposed structures, and types of materials for the entire ITS. The DB Team shall follow the current version of the GDOT Navigator ITS Design Manual for its ITS design.

The DB Team shall conduct all work necessary to design, procure, furnish, install, integrate (as defined in this section and associated specifications), and maintain GDOT ITS on the Project, including but not limited to, gantries, electrical power, fiber-optic communications, ITS cabinets, maintenance access, junction boxes, and conduits, all in accordance with GDOT standards and specifications and Special Provisions contained herein. Each ITS device, regardless of its purpose, provided

by the DB Team shall support, at a minimum, NTCIP-compliant interface protocols so that integration of each device/controller with NaviGator is more efficiently supported.

It is the DB Team's responsibility to survey and locate the existing GDOT and SRTA ITS equipment including, but not limited to, all fiber trunk lines, conduit and duct banks, communication hubs, drop fiber and electrical lines, as well as ITS devices. The DB Team shall perform preventative maintenance, respond to problem notifications from GDOT, make any needed repairs or upgrades as necessary, and repair ITS devices or communications damaged by any party during construction.

For each GDOT ITS system, the DB Team is allowed eight (8) hours GDOT ITS downtime to cutover the new GDOT ITS. The DB Team shall notify GDOT no less than two (2) business days before proceeding with any GDOT ITS Work. Any downtime outside of the 24 hours may result in liquidated damages as shown in Exhibit 18.

If the Project impacts a Continuous Count Station (CCS) that collects traffic data for GDOT, The DB Team shall notify GDOT at 404-347-0701 two weeks prior to beginning of construction activities. GDOT will coordinate with the owner of the equipment, who will be responsible for salvaging for future use.

17.2.1 Closed Circuit Television (CCTV) Subsystem

17.2.1.1 CCTV General Requirements

- CCTV shall be designed in accordance with the GDOT ITS Design Manual, latest edition;
- CCTV shall be located as shown on Attachment 17-2: Roll Plots or as approved by GDOT;
- CCTV shall be furnished, installed, integrated, and tested in accordance with GDOT Standard Specifications:
 - Section 682 – Electrical Wire, Cable, and Conduit;
 - Section 935 – Fiber Optic System;
 - Section 936 – Closed Circuit Television (CCTV);
 - Section 939 – Communication and Electrical Equipment;
 - Section 940 – NaviGator Advanced Transportation Management System Integration

17.2.1.2 CCTV Applications

GDOT ITS CCTV cameras are used to monitor real-time traffic conditions along the roadway and provide real-time information to support:

- Incident verification and management;
- Highway Emergency Response Operator (HERO) dispatching;

- Traffic surveillance and traffic control, including any traffic signals, ramp meters management.

Additionally, dedicated GDOT ITS CCTV cameras are used to monitor GDOT general purpose CMS, i.e. to verify overhead CMS messages and to monitor CMS LED performance to support maintenance management.

17.2.1.3 CCTV Design Requirements

CCTV cameras shall be designed to be digital IP cameras with digital video streaming capability. The camera shall be designed with on-board H.264 encoding in the camera housing to generate the digital video stream. The camera cables shall include Ethernet cable for digital video stream.

The GDOT ITS CCTV system shall be designed to provide overlapping, continuous coverage between adjacent cameras of the general purpose lanes, Managed Lanes, interchange ramps, and ramp intersections with each side street.

GDOT ITS CCTV shall be installed at the locations as shown on Attachment 17-2: Roll Plots to provide overlapping coverage. Minor shift of locations may be allowed with GDOT acceptance. Additional GDOT ITS CCTV may be required to provide overlapping, continuous coverage of the general purpose and Managed Lanes. GDOT ITS CCTV, Toll CCTV, and Toll Rate CCTV may be co-located with GDOT and SRTA acceptance.

Early in the preliminary design schedule, the DB Team shall submit for GDOT review the respective evidences that the CCTV design provides coverage as described above and independent from SRTA CCTV coverage. The evidence may be a 3-dimensional (3D) view of the general purpose lanes and Managed Lanes as viewed from the DB Team's proposed camera mounting heights above the roadway. The 3D views shall cover the entire Project limits and include all possible sight obstructions, including, but not limited to vegetation, existing signs, proposed signs, relocated signs, bridges and overpasses, and vertical and horizontal alignments.

CCTV poles shall be of sufficient height to mount all GDOT cameras at nominally fifty (50) feet above the roadway surface. CCTV cameras, MDS units may be mounted on the same poles. The joint use poles shall be designed to meet the CCTV camera's mounting height of fifty (50) feet above the roadway. Cameras shall not be mounted in excess of fifty-four (54) feet above the base of the pole or the area where a bucket truck can park for maintenance of the camera. At no times shall the distance between the bucket truck parking location and the camera require a bucket truck arm length of greater than seventy (70) feet. If CCTV cameras are connected to overhead sign trusses, the maximum fifteen (15) foot tubular extension shall be connected to the sign structure upright and not to any truss portion of the structure. Tubular extensions shall meet the minimum vibration requirements described herein.

Any pole or upright with a CCTV camera mounted to it shall be designed to be rigid with minimum vibration due to wind. Total deflection at the CCTV mounting height shall meet the requirements set for strain poles for ATMS applications per GDOT Specs Section 639. The DB Team shall include deflection design calculations in the required structure design submittals.

17.2.1.4 CCTV Detailed Technical Requirements / Specifications

GDOT CCTV technical requirements including submittals, materials, construction and testing are described in GDOT Standard Specifications Section 936 – Closed Circuit Television (CCTV). CCTV integration is described in GDOT Standard Specifications Section 940 – NaviGator Advanced Transportation Management System Integration.

All GDOT CCTV cameras shall be pan-tilt-zoom pressurized dome cameras meeting requirements described in GDOT Standard Specifications Section 936– Closed Circuit Television (CCTV).

17.2.1.5 CCTV Implementation Requirements

For CCTV subsystems that are replacements for removed/relocated CCTV, the DB Team shall furnish, install, integrate, test, and make available for GDOT’s use prior to deactivation and removal of the existing CCTV. All replacement CCTV equipment shall be new. No relocation of existing equipment is permitted as a part of this Project. Replaced and removed devices shall be provided to GDOT.

DB Team shall coordinate return of salvageable equipment with GDOT State ITS Engineer at (404) 635-2849.

All salvaged equipment should be placed on pallets, containing a list of materials with the description of each item, their condition, and equipment serial numbers. DB Team shall deliver salvaged equipment to the Traffic Signal Electrical Facility (TSEF) located at 935 East Confederate Avenue, SE, Building 5, Atlanta, GA 30316-2531.

Camera system assemblies shall be installed on new concrete strain poles unless installed on existing or other sign/toll gantry structures.

The DB Team shall include milestones for replacement CCTV and new traffic monitoring CCTV installation in the Critical Path Method (CPM) Schedule.

The DB Team shall prepare and implement a CCTV integration plan for GDOT’s approval. The integration plan shall meet the requirements of GDOT Standard Specifications Section 940 - NaviGator Advanced Transportation Management System Integration.

Regardless of the line of sight verification during design, the DB Team shall be responsible for constructing GDOT CCTV camera system meeting the coverage requirements. If after completion of all CCTV, roadway and Managed Lane lanes and structures, signs, CMS, etc., GDOT discovers any roadway segment not meeting the coverage requirements, the DB Team shall modify the CCTV placement as necessary to meet the coverage requirements. The modification could include, but not limited to, raising or lowering camera mounting heights, additional CCTV installations, or other solutions presented by the DB Team and approved by GDOT. No additional payment will be made to the DB Team for meeting the CCTV coverage requirements.

17.2.2 Detection Systems

17.2.2.1 Detection System General Requirements

All MDS detection systems shall be able to collect volume, speed and lane occupancy data and transmit that data to GDOT TMC. Except as modified herein:

- MDS shall be designed in accordance with ITS Design Manual, latest edition;
- MDS shall be located as shown on Attachment 17-2: Roll Plots;
- MDS shall be furnished, installed, integrated, and tested in accordance with GDOT Standard Specifications Section 937 - Detection System, and with:
 - Section 682 – Electrical Wire, Cable, and Conduit;
 - Section 935 – Fiber System;
 - Section 939 – Communication and Electronic Equipment;
 - Section 940 – NaviGator Advanced Transportation Management System Integration

All MDS shall be high definition (HD) microwave vehicle detectors.

17.2.2.2 Detection System Applications

The Project includes GDOT ITS MDS: MDS data output are used by GDOT to support travel time calculations and to support incident detection and verification algorithms. Travel time messages are posted to Overhead CMS based on data collected from the MDS.

17.2.2.3 Detection System Design Requirements

MDS, and MDS poles, detector mounting heights, setbacks, power, communication cabling, surge suppression, and cabinets shall be designed to meet the manufacturer's specifications in addition to GDOT Standard Specifications Section 937–Detection System. The DB Team shall include evidence of coordination with the MDS manufacturer with the preliminary plans submittal.

17.2.2.4 Detection System Technical Requirements / Specifications

MDS technical requirements are described in GDOT Standard Specifications Section 937 – Detection System.

17.2.2.5 Detection System Implementation Requirements

The DB Team shall furnish, install, integrate and test a complete GDOT ITS MDS implementation meeting GDOT Standard Specifications and Special Provisions. The DB Team shall provide all necessary configurations of the MDS in accordance with GDOT requirements and manufacturer requirements. All GDOT MDS shall be the latest hardware, software and firmware provided by the manufacturer. The MDS shall be compatible with GDOT operating systems at the time of installation.

For GDOT MDS subsystems, the DB Team shall furnish, install, integrate, test, and make available for GDOT’s testing and verification, and resolve any installation and configuration issues prior to final acceptance. All MDS equipment shall be new. No relocation of existing equipment is permitted as a part of this Project. The DB Team shall prepare and implement MDS testing plan for GDOT’s approval. The testing plan shall meet the requirements of GDOT Standard Specifications Section 937 – Detection System.

GDOT ITS MDS shall be fully integrated and tested by the DB Team. The testing and integration plans for MDS shall include test procedures to verify the MDS meet GDOT requirements.

17.2.3 Changeable Message Sign (CMS) Subsystems

17.2.3.1 General CMS Requirements

All CMS design shall meet the following requirements:

- CMS shall be designed in accordance with the latest GDOT ITS Design Manual;
- CMS shall be located as shown on Attachment 17-2: Roll Plots;
- CMS shall be furnished, installed, integrated, and tested in accordance with GDOT Standard Specifications Section 631 – Permanent Changeable Message Signs and,
 - Section 682 – Electrical Wire, Cable, and Conduit;
 - Section 797 – Hub Building;
 - Section 939 – Communication and Electronic Equipment;
 - Section 940 – NaviGator Advanced Transportation Management System Integration

17.2.3.2 CMS Applications

The Project includes CMS applications, as described below:

- Walk-in, overhead CMS are used to provide travelers with information on travel times, traffic incidents, road conditions, weather conditions, and vehicle

alerts such as Amber Alerts. As shown on Attachment 17-2: Roll Plots, these CMS will be controlled from the GDOT TMC;

17.2.3.3 CMS Design Requirements

General: All CMS shall be full-color, full matrix LED displays. All CMS, along with associated controllers and software, shall be capable of displaying both text and Manual of Uniform Traffic Control Devices (MUTCD), GDOT approved graphical images and shapes. Full-color CMS shall display, at a minimum, the colors prescribed in the MUTCD, section 1A.12. CMS that are required to show graphics or display 12” or smaller font sizes shall have a pixel pitch of 20 mm. The CMS locations shall conform to sign spacing specifications in the MUTCD and according to Attachment 17-2: Roll Plots.

Each CMS will require a new structure to be designed and constructed by the DB Team.

Overhead CMS: Overhead CMS shall be provided with walk-in housing and capable of displaying three (3) lines of eighteen (18) inch characters with twenty-one (21) characters per line. The center of each overhead CMS shall be aligned over the middle of the lanes under the CMS. A catwalk shall be provided on the overhead truss to allow CMS maintenance access from the outside shoulder or from the widest shoulder of the Managed Lane, depending on the location of the CMS.

17.2.3.4 CMS Technical Requirements / Specifications

GDOT CMS technical requirements are described in GDOT Standard Specifications 631– Permanent Changeable Message Signs.

17.2.3.5 CMS Implementation Requirements

For CMS that are replacements for removed existing CMS, the DB Team shall furnish, install, integrate, test, and turn it over to the Department’s use prior to deactivation and removal of the existing CMS. All replacement CMS equipment shall be new. No relocation of existing equipment is permitted as a part of this Project. The DB Team shall coordinate return of salvageable equipment with GDOT ITS Engineer at (404) 635-2849.

All salvaged equipment should be placed on pallets, containing a list of materials with the description of each item, their condition, and equipment serial numbers. DB Team shall deliver salvaged equipment to the Traffic Signal Electrical Facility (TSEF) located at 935 East Confederate Avenue, SE, Building 5, Atlanta, GA 30316-2531.

The DB Team shall prepare and implement a GDOT CMS integration plan for GDOT’s approval. The integration plan shall meet the requirements of GDOT Standard Specifications Section 940 – NaviGator Advanced Transportation Management System Integration.

The DB Team shall prepare and implement a CMS testing plan for GDOT’s approval. The testing plan shall meet the requirements of GDOT Standard Specifications Section 631 – Permanent Changeable Message Signs.

17.2.4 Communications Network

The DB Team shall design, furnish, install, integrate and test the communication network for the GDOT ITS.

The table below lists the existing and proposed hub buildings that may be utilized for this project. DB Team shall construct the proposed hub buildings in the approximate location and building dimensions shown on Attachment 17-2: Roll Plots. Hub buildings shall meet the requirements of GDOT Special Provision 797 – Hub Buildings and the project specifications.

HUB	Owner/Occupant	Location	Status
HUB C	GDOT	I-85 @ I-285	Existing
HUB D	GDOT	I-85 @ Pleasant Hill Rd NW Quadrant	Existing
HUB Y	GDOT/SRTA	I-85 SB @ Rest Area North of I-985	Proposed
HUB DD	GDOT/SRTA	I-85 @ Hamilton Mill Rd SW Quadrant	Proposed

17.2.4.1 Communication / Network General Requirements

The DB Team shall design, furnish, install, integrate and test the fiber-optic backbone and laterals for the ITS, and Toll System as shown on the ITS Layout (Exhibit 17-2). The backbone shall be single-mode fiber optic cable for both the GDOT and Toll System networks. The long haul and distribution networks shall be Internet Protocol (IP) over Ethernet. Communication drops to local GDOT ITS cabinets, toll equipment cabinets and toll gantry cabinets shall also be single-mode fiber optic cable and IP over Ethernet. Communication between the ITS cabinets and the local devices attached to the cabinet shall be designed, furnished and installed by the DB Team based on the requirements of the device or devices. SRTA (for Toll System) and GDOT shall require separate pullboxes for the drop fiber and conduit from main fiber splicing trunk pull box for maintenance access.

The communication and network layout focuses on the existing and proposed Communication Hub buildings that will aggregate distribution layer Ethernet network for transmission to the GDOT.

The DB Team shall verify that all existing ducts anticipated to be used by the DB Team are open, with no blockages, water or breaks. Damaged conduits shall be replaced or new duct banks installed around the blockage at no additional cost to GDOT or SRTA.

The DB Team shall not install a duct bank under any paved surface except when crossing ramps or other travel lanes. New conduit duct banks shall be installed approximately ten (10) feet inside the existing Interstate Right-of-Way where feasible. Where vegetation or other obstructions hinder installation of the duct banks approximately ten (10) feet from the Right-of-Way line, the DB Team may modify the duct banks location for GDOT review and approval.

The DB Team shall design all required conduit and cable crossings of travel lanes to connect to the ITS, toll systems that are to be placed in the median or along the opposite side of the Managed Lanes from the fiber trunk lines. GDOT will not provide any additional compensation for conduit and cable crossings.

17.2.4.2 Communication Network Design Requirements

The communication infrastructure and network shall be designed in accordance with the latest GDOT NaviGator ITS Design Manual.

The DB Team shall conduct a communication network design kick-off meeting with GDOT and SRTA prior to beginning design efforts. The DB Team shall utilize the kick-off meeting to confirm GDOT and SRTA communication network requirements.

When conduit or duct banks are installed under roadways or shoulders for lateral crossings, the conduit and duct banks shall be installed by directional boring as shown in GDOT ITS detail drawings.

GDOT ITS and the Toll System shall be served by a physically and logically separate communication networks. All conduit, conduit access (such as ECBs and pull boxes), fiber and communication cabling, cabinets, patch panels, network switches and terminal servers shall be solely dedicated to the GDOT or the Toll System network. Dedicated conduit shall be within the same conduit duct bank. For each new duct bank, two (2) conduits shall be dedicated for Toll System use and denoted by coloring as being Toll System conduit. Every conduit in each duct bank shall have a unique color and/or striping pattern. The coloring shall be consistent through the Project corridor. No fiber optic, other data communication, or composite cable shall be installed in the same conduit as an electrical power service cable.

The Communication network for the GDOT ITS shall be designed to be end-to-end: from the field device to the NaviGator TMC including the ITS cabinets and existing Communication Hub Buildings.

Design considerations shall include cabinet dimensions, communication shelf slots, network bandwidth capacity, conduit capacity, backbone fiber availability, and electrical circuit capacity.

The fiber-optic backbone shall be designed along the General Purpose lanes as shown on Attachment 17-2: Roll Plots. All GDOT ITS data shall be aggregated to 1 GB backbone network at designated communication hub buildings at locations

shown on Attachment 17-2: Roll Plots and within existing Communication Hub buildings.

All fibers installed under this project shall be terminated at Communication Hubs or termination points as designated for the GDOT and Toll System networks. This shall include terminating each fiber to a rack mounted fiber distribution center. Provide patch cords for each connection between fibers at a termination fiber distribution center.

The DB Team shall determine the link loss budget analysis for all fiber-optic links.

The DB Team shall design a backbone communication system with fiber-optic cables installed along the project area. Lateral drop cabling shall be used to reach GDOT and Toll System Sites.

If GDOT or SRTA provides ITS or Toll System communication network details during the design phase, the DB Team will adapt the communication network design to accommodate the SRTA communication network requirements.

General design criteria elements for GDOT ITS networks are as follows:

- Provide an internet protocol (IP) Ethernet based system with a fully redundant architecture, allowing automatic, self-healing, and cutover of data flow to a secondary path or segment in the case of a primary equipment failure or fiber break. The ITS communication system backbone shall be rated for a Gigabit transfer rate, minimum. ITS field switches shall be rated for a 1-gigabit uplink transfer rate, minimum. Downlink ports at the field switches shall be 10/100BaseT;
- Provide Network Switch, Layer 3 Gig-E to connect the local ITS system to the GDOT wide area network (WAN) at the existing and proposed Communication Hub location(s). The Layer 3 network switch shall be designed with adequate 1-gigabit and 10/100BaseT ports to support the network architecture and design;
- Provide field network switch, Layer 2 10/100BaseT in each ITS cabinet to support connectivity of the ITS devices connected to the cabinet. Each Layer 2 switch will be designed with adequate ports to support communication with all devices connected to the cabinet. A minimum of four (4) spare ports shall be provided;
- Each field network switch shall provide a primary and secondary fiber path from the field cabinet to the Communication Hub;
- The fiber layout for GDOT ITS shall provide a daisy-chain. The daisy-chain shall be confirmed with GDOT during the ITS and Toll System design workshops and preliminary design efforts; The maximum number of Layer 2 field network switches forming a network path between an end device (GDOT ITS) and a Communication Hub based data aggregating Layer 3 network switch shall not exceed eight (8) per fiber pair. The calculated data

- throughput assigned to any sub-network path shall not exceed one-third of the path's throughput capacity;
- New devices and existing devices shall not be assigned within the same network path or otherwise daisy-chained to avoid possible inconsistencies in communication protocols;
 - Unless specified in Attachment 17-2: Roll Plots the DB Team shall determine the quantity of fibers required for the backbone communication system and local connectivity. The DB Team shall provide all calculations required to support the design determination. Include capacity for 100 percent (100%) system expansion. The DB Team shall provide 100 percent (100%) spare fibers that shall be continuous along any section of the Project and continuous from end to end of the project. The number of fibers shall be rounded up to the next larger standard fiber cable size, for example, if the calculation determine forty (40) fibers are needed, eighty (80) shall be provided rounded up to ninety-six (96) which is the nearest standard cable size.
 - All drop fiber shall be 12-fiber single mode cables;
 - The GDOT ITS also includes two new Hub buildings. The new communication Hubs shall be designed to meet all GDOT design guidance and construction specifications and SRTA equipment requirements. The Communication Hub building including but not limited to, the building, foundation, conduit cutouts and entrances, air conditioning systems, fencing, grounding, paving, vertical and overhead cable runways and trays, electrical service, electrical conductors, and electrical pull boxes will be designed to meet all the requirements shown on GDOT ITS Detail ITS-13 Hub Details – Hub except that the dimension of the hub buildings shall be as shown on Attachment 17-2: Roll Plots, exterior dimensions and 9'-6" interior building height measured from the finished floor to the finished ceiling. The DB Team shall verify that the door of the building can accommodate SRTA's proposed Equipment racks. Except as required for UPS and patch panel racks, equipment racks for Toll System equipment will be furnished and installed by SRTA. The hub buildings shall be designed so that the air conditioning units are installed on the roof of the hub building. The layout of the Communication Hub buildings shall be designed for the equipment racks to be installed on the long dimension of the Communication Hub building. The design will ensure that one (1) row of equipment racks can be installed, powered and cabled. The Communication Hub building will be designed to enclose an equipment rack, electrical and fiber cable management, and a service technician work table and two (2) chairs. The Communication Hub building shall be designed to include lightning protection, grounding to 5 ohms or less and surge suppression. The Hub building shall be enclosed by fencing which meets the requirements of ITS Design Manual and GDOT Standard Specifications. The DB Team shall coordinate the design of the Communication Hub building with SRTA, concurrence by SRTA and approval by GDOT;
 - DB Team shall ensure both new Communication Hub buildings are able to utilize a mobile emergency generator during power outages. Route the main

power to a manual transfer switch located with the mobile emergency generator connection installed on the outside of the shelter. The emergency generator connection shall allow GDOT/SRTA personnel to power the site from a portable generator in the event that the commercial power is lost. Route the resulting main power to a 42-circuit distribution panel and through the associated AC surge protective devices. Section 17.2.5 provides requirements to allow mobile generator to power Hub buildings.

The DB Team shall furnish and installed the fiber plant of the Toll System communication network. SRTA shall furnish to the DB team the fiber splicing diagrams for the Toll System Components. General design requirements applicable to the DB Team for the Toll System network are as follows:

- The fiber layout for Toll System network shall provide a daisy-chain for up to eight (8) Toll System switches per fiber pair. The daisy-chain shall be confirmed with SRTA during the ITS and Toll System design workshops and preliminary design efforts;
- The DB Team shall design Toll System fiber network based on SRTA provided logical network assignments, fiber allocation information and splicing details. SRTA is responsible for confirming the design of toll equipment cabinets, Communication Hub Buildings, and providing all layer 2 and layer 3 network equipment within the toll equipment cabinets and Communication Hubs including but not limited to the network switches, video encoders, media converters, terminal servers, modems, and uninterruptable power supplies;
- The Toll System fiber optic cable shall contain the trunk fiber as shown in Attachment 17-2: Roll Plots in separate conduits;
- The DB shall break and re-splice the existing 72-strand fiber optic backbone cable to the proposed fiber optic backbone cable at the north terminus (existing type 7 pull box located at approximately 34.01553712 N, - 84.06523444 W). SRTA will provide the splice details for this work. Notification of the intent to complete this work should be provided to SRTA 30 days in advance for the purposes of conducting internal testing and repairs. The splicing shall not occur without approval from SRTA.
- All drop fiber shall be 12-fiber single mode cables;
- The SRTA Network shall have physically redundant backbone cable routes on each side of the roadway to all toll and toll ITS locations. Each daisy chain must connect to two (2) Communication Hubs containing SRTA network equipment;
- The DB Team shall design all cabinet and hub foundations and slabs as well as grounding and electrical service.

The DB Team will refer to the Responsibility Matrix (Exhibit 21-1) for additional details regarding responsibilities relative to the Toll System communication network and integration.

17.2.4.3 *Communication Network Implementation* ***Requirements***

The communication network shall be furnished, installed, integrated and tested in accordance with the GDOT Standard Specifications and Special Provisions.

All fiber optics used in this Project shall be outside plant (OSP) single-mode fiber. The DB Team shall provide fiber-optic cables for trunk lines and drop lines, fiber distribution centers, patch panels, splice enclosures, and fiber-optic cable splices as required to connect each ITS equipment cabinet, each Communication Hub Building, and ITS elements to the backbone communication system.

Either field terminated or pre-terminated drop cable assemblies shall be used for all drop fibers from the fiber optic trunk line to the ITS cabinet or device.

Underground splice enclosures shall be furnished and installed at all trunk line splices and at all locations where drop fibers are installed.

Rack mounted fiber distribution centers (FDC) shall be furnished and installed in all field cabinets and hub buildings.

The DB Team shall furnish and install all equipment, cabinets, cabling, and electronic devices needed to connect the backbone fiber to the Layer 2 and Layer 3 Ethernet switches and to connect all GDOT ITS devices to the Layer 2 switch in the local ITS cabinet.

17.2.5 ITS Electrical Service (Power) Requirements

17.2.5.1 ITS Electrical General Requirements

The DB Team shall coordinate with the electrical power companies and provide electrical power for all ITS and Toll System Sites included in the project. The DB Team shall pay all costs for providing electrical power service. In addition, the DB Team shall pay all electric service recurring costs, for both the ITS and Toll System Sites until Substantial Completion.

17.2.5.2 Electrical Design Requirements

17.2.5.2.1 General Electrical Design Requirements

The DB Team shall ensure electrical power is designed based on the electrical service loads at each location where power is required. Electrical service, wire sizes, transformers, surge suppression, meters, grounding, lightning protection and uninterruptable power supply (UPS) are all considered part of the electrical power systems. UPS units for Toll System including those for new HUB Buildings to backup SRTA equipment will be furnished and installed by SRTA. Refer to Section 21 for any additional toll related electrical design requirements.

At locations where electrical power service is provided to GDOT and Toll System, the DB Team shall ensure that the electrical power company installs two (2) electrical usage meters, one (1) for GDOT equipment and one (1) for Toll System equipment.

The DB Team shall design electrical loads for all ITS cabinets, Hub Buildings, GDOT ITS Devices, and Toll Systems. Anticipated electrical loads for the Toll System Sites are provided in Section 21. At each location, electrical load for GDOT ITS shall be exclusive of any toll or toll related ITS related cabinet electrical loads.

The DB Team shall provide electrical power calculations to GDOT and SRTA 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 provided at a location be less than 120 volt, 20 amps AC. Electrical load at each ITS or Toll Systems shall be based on a factor of two (2) times the calculated load based on the equipment being provided for that cabinet to allow for future expansion and use of maintenance tools.

In addition to other requirements referenced herein, electric pull boxes shall be spaced not more than five-hundred (500) feet apart. No fiber optic or other data communication or composite cable shall be installed in the same conduit as an electrical power service cable.

The DB Team shall install mechanical theft deterrent devices in all Project electrical conduits and electrical pull boxes to prevent the removal of electrical wiring and to prevent unauthorized access. The theft deterrent devices typically consist of a rubber stopper mechanical device that compress against the electrical wiring and prevents the wires from being easily pulled through the conduits. DB Team shall also install electrical pull box lids that contain locking mechanisms that works with the use of cams to prevent unauthorized access.

Voltage design drop calculations shall comply with the suggested limits defined in NEC Article 210.19 (A) (1) Informational Note #4 and NEC Article 215.2 (A)(1)(b) Informational Note #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. These calculations shall include sizing and ratings of all circuit breakers, transformers, fused switches and transfer switches planned for installation. These calculations shall be submitted with the preliminary and final design 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. Where Transformers are used, they shall be provided with $\pm 2.5\%$ and $\pm 5\%$ voltage taps. These taps shall not be used to fulfill the voltage drop and wire size requirements of these minimum technical requirements.

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.

17.2.5.2.2 Lightning Protection Design Requirements

All CCTV, CMS, GPLS, and MDS poles, toll gantries and structures (including sign structures with ITS or Toll System attachments) shall be designed to include lightning protection systems per the requirements of Attachment 17-3 Surge Protection and as described herein. The top of the lightning rod shall be at least two (2) feet above the highest point or top of any and all ITS and Toll System devices attached near the top of the pole or Toll System devices shall be mounted within a sixty (60) degree cone of protection measured from the top of the lightning rod, which ever provides more protection for the ITS device.

Each Toll System site, ITS cabinet, ITS pole and Hub building shall have an exterior earth-ground ring consisting of a system of ground rods connected to a ring of a #2 AWG, stranded bare copper ground wire. For toll ITS sites, ITS Cabinets and ITS Poles, the earth ring shall consist of a minimum of two ground rods. For Toll System Sites and Hub Buildings, the earth ring shall consist of a minimum of 4 ground rods. Ground rods shall be placed at least 40 feet from adjacent ground rods. When ground rods adjacent installations are within 100 feet of each other, the rings shall be connected with #2 AWG stranded bare copper ground wire. Each site shall include lightning protection which shall also be connected to the site's earth-ground ring. The ground system shall be measured and documented with a resistance of five (5) ohms or less.

Lightning protection for Toll System Gantries for Toll Collection and GPLS Sites shall include lightning rods spaced at ten (10) foot intervals across the top of the gantry structure.

When new GDOT ITS or Toll System devices are placed on an existing structure, the structure's lightning protection system shall be updated by the DB Team to the lightning protection requirements for new structures.

17.2.5.2.3 Grounding Design Requirements

In order to facilitate testing and periodic retesting of the grounding array at each ITS and Toll System pole, ITS and Toll System cabinet, Hub Building, Toll System Sites, gantry and structure, etc., the DB Team shall design the grounding system so that the top of all grounding rods is installed in an Electrical Service Type 2 Pull Box. The grounding conductor shall be designed to be exothermically connected to the ground rod at an elevation of twelve (12) inches below ground line. All tolling/ITS equipment and enclosures located at a Toll System Site or Communication Hub site shall conform to the latest adopted NEC for bonding and grounding. Grounding arrays shall be designed to be interconnected for cabinets, poles, lightning systems,

etc., that are within forty (40) feet of each other. The actual locations of buried connections and ground rods should be accurately shown in the as-built plans.

When new GDOT or Toll System devices are placed on an existing structure, the grounding system shall be updated by the DB Team to current specifications.

Grounding shall meet the minimum requirements of NEC.

17.2.5.2.4 Uninterruptable Power Supply (UPS) Design

Requirements

For GDOT ITS locations, the DB Team shall design Uninterruptable Power Supply (UPS) to meet the requirements in GDOT ITS Design Manual, GDOT Standard Specifications Section 939 and the following:

- UPS shall be designed for all new Hub Buildings to support GDOT equipment;
- The DB Team shall designate space within the Hub Buildings for the installation of the GDOT and SRTA UPS.

SRTA will furnish and install UPS for Toll System Sites. At the new Hub Buildings, SRTA will furnish and install UPS for Toll System equipment only. Specific requirements for the toll equipment cabinets are provided in Section 21 – Tolling.

17.2.5.3 Electrical Implementation Requirements

The DB Team shall furnish, install and test the electrical systems as required to meet the power and UPS demand of each Toll System site, Communication Hub location, and GDOT ITS Cabinet Location. The DB Team shall furnish and install and test the electrical services as required by GDOT Specification, the approved plans, and herein.

At locations (except Hub Buildings) where electrical power service is provided to both GDOT ITS and Toll System cabinets and devices, the DB Team shall ensure that the electrical power company installs two (2) separate electrical usage meters, one (1) for GDOT equipment and one (1) for Toll System equipment. At each new Hub Building, the DB Team shall ensure that the electrical power company installs one (1) electrical usage meter for the Hub Building. The DB team shall configure the electrical service inside the Hubs to allow SRTA to furnish and install a UPS for the Toll System equipment only.

The DB Team shall ensure all voltage being provided to the cabinet is in accordance with the DB Team's approved electrical design calculations. The DB Team shall test the power from the electrical service disconnect, to the transformer, to the meter(s) and into the cabinets.

For both GDOT ITS and Toll System sites, the DB Team shall furnish and install all components of the electrical power systems to ensure complete and functioning

systems, from equipment cabinets to and including devices. 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 an device to protect against surges induced from a lightning strike on the ground.

Electrical service shall be installed and ready for connection before ITS cabinets and CMS are installed. Electrical services shall be connected and activated for all ITS cabinets, Communication Hub Buildings, and CMS within twenty-four (24) hours of installation of the cabinet or CMS.

17.2.5.4 Provision for Temporary Generators for Hub Buildings

Generator and Auxiliary Power Connection: The DB Team shall furnish both new Hub Buildings that have provisions for the connection of an external power source, such as a portable generator, through a weatherproof, water-resistant, secure interface to back up both GDOT and SRTA electrical services. This feature should allow authorized personnel to access, connect, and secure an external power source to the Hub buildings in order to restore power within five (5) minutes of arrival time at the Hub buildings. The DB Team shall provide each Hub Building a manual transfer switch rated equal to or higher than the design load of the Hub’s main breaker and the generator input twist-lock connector rating. Ensure that the transfer switch provides a means of switching between normal utility power and auxiliary backup generator power. Ensure that the switching time between sources is no longer than 250 milliseconds. Ensure that the transfer switch meets UL 1008. Ensure that the transfer switch does not allow simultaneous active power from more than one source and does not allow generator backflow into normal utility AC circuits.

Manual Transfer Switch: Ensure the manual transfer switch is a two-position switch. Label the switch positions as “Generator Power” and “Utility Power”. Equip the transfer switch with a “Utility-On” indicator, which will illuminate when normal utility power service is available and the switch is in the “Generator Power” position. The indicator must turn off when the transfer switch is moved to the “Utility Power” position.

Generator Access Panel: Include a generator connection panel inside the Hub Buildings, next to the main electrical services panels. The generator connection panel shall consist of, at a minimum, a manual transfer switch. A generator hook up with a four-prong, 30-amp twist-lock connector with recessed male contacts shall be installed on the outside wall, minimum two (2) feet off the ground, of each Hub Building. The generator hook up shall be enclosed in a weatherproof and dustproof enclosure. The enclosure shall have a lockable exterior door. Ensure that this

access door is labeled as “Generator Access Door”, equipped with a tamper-resistant hinge. The access door shall be provided with a #2 lock unless otherwise specified in the plans. The access door must include a weatherproof opening for the generator cable. The generator hookup compartment shall allow closing and locking of the access door when the generator cable is connected.

Connect wiring from the main electrical service panel to the transfer switch. Connect the alternate power source’s wiring on the transfer switch to a receptacle that can accept a 240 VAC generator cord. Install a power service wire between the transfer switch and the existing power distribution panel inside the Hub.

17.3 Testing and Acceptance

The DB Team shall submit test plans to GDOT for review and acceptance.

DB Team testing of specific ITS technologies, electrical components, communication network and infrastructure, Communication Hubs and equipment cabinets shall follow the test requirements in the following related sections in the GDOT Standard Specifications/Special Provisions:

- Section 631 – Permanent Changeable Message Signs;
- Section 682 – Electrical Wire, Cable, and Conduit (Multi-cell and Continuous Flexible Conduit System);
- Section 797 – Hub Building;
- Section 935 – Fiber Optic Cable;
- Section 936 – Closed Circuit Television (CCTV);
- Section 937 – Detection System;
- Section 939 – Communication and Electrical Equipment;
- Section 940 – NaviGator Advanced Transportation Management System Integration

GDOT ITS, Communication Hub and Communication Network testing and final acceptance processes are to be conducted according to the applicable GDOT Standard Specifications, Special Provisions and as described herein.

17.4 Warranty

The DB Team shall provide all warranties as set forth in the DB Agreement and specified in the Standard Specifications, Special Provisions and contained herein. In the event of conflicting warranty periods between the above, the longest warranty period identified shall be provided by the DB Team. All warranties shall commence upon Final Acceptance. Any additional costs incurred by the DB Team to meet the warranty requirements shall be the sole responsibility of the DB Team.

17.4.1 Protection of Existing ITS Signalization

The DB Team shall ensure the existing GDOT ITS and existing Toll System (if exists) are protected from damage. Damage caused by the DB Team to GDOT ITS, due to failure to locate any existing or installed GDOT ITS within the project limits, shall be the responsibility of the DB Team to repair and at no cost to the Department.

If necessary, any disruption to the existing GDOT ITS and existing Toll System shall be planned and coordinated with GDOT and SRTA, respectively, no less than two (2) business days before proceeding with the Work..

17.4.1.1 Existing System Inventory

The DB Team shall conduct the field survey and provide a complete inventory of all ITS and Toll System components and infrastructure in the Project limits within thirty (30) calendar Days of NTP 1. The inventory shall include components and infrastructure to be removed and replaced, to be removed and relocated and to be left in place.

17.4.1.2 ITS Locates

The DB Team shall be required to locate the electrical and fiber optic conduits and cables within the construction limits. The DB Team shall obtain available ITS as-built and location information from GDOT and SRTA upon NTP 3 and shall be fully responsible for locating all existing, temporary and new ITS infrastructure and facilities until Final Acceptance. The DB Team shall be responsible for providing ITS locates requested by other consultants, contractors and/or utility companies within forty-eight (48) hours of receiving requests from GDOT or SRTA or from any other source from NTP 3 to Final Acceptance. The DB Team shall notify GDOT or SRTA of the date and location of each Locate Request and the date at which the locate was completed.

The DB Team shall fully cooperate with all utility owners during the design, survey and construction activities of the Project. The DB Team shall call Georgia 811 a minimum of forty-eight (48) hours and a maximum of ninety-six (96) hours before any excavation work.

17.4.1.3 ITS Preventative Maintenance

GDOT and SRTA (and their respective maintenance contractors) will continue to provide routine and on-call maintenance for all ITS, Toll System equipment within the project area during the contract period. The DB Team shall cooperate with GDOT and SRTA by accommodating access to the site for GDOT or SRTA's maintenance contractor to perform routine or on-call maintenance.

17.4.1.4 ITS Repair and Replacement

Throughout the construction period until the final acceptance of the project, the DB Team shall notify GDOT and SRТА of any damage to the existing ITS or Toll System field element or infrastructure that is caused by the DB Team, either due to the negligence or direct action of the DB team as soon as possible. GDOT or SRТА (or their respective maintenance contractors) will repair or replace the damaged ITS or Toll System field element or infrastructure. The DB Team shall be responsible for the total repair or replacement cost along with all fines per Volume 1, Exhibit 18.

If an existing ITS or Toll System element or infrastructure needs to be taken out of service due to construction related relocation or interruption or as required by the project specifications, the DB team shall provide GDOT or SRТА (depend on the ownership) a written notice seventy-two (72) hours in advance before taking control of the device(s). Any impacted devices shall be replaced with an equivalent in new condition or per the project specifications. All replacement devices are subject to the testing and acceptance requirements specified in the project specifications.

18 TRAFFIC CONTROL

18.1 General Requirements

No additional requirements

18.2 Administrative Requirements

18.2.1 Transportation Management Plan

No additional requirements

18.3 Design Requirements

18.3.1 Traffic Control Plans

No additional requirements

18.3.1.1 Roadway Guidelines

No additional requirements

18.3.1.1.1 Design Parameters for Traffic Control

No additional requirements

18.3.1.1.2 Allowable Shoulder/Lane/Roadway Closures and Traffic Stage Changes

Supplement Lane and Shoulder Closure During Design-Build Period Section of Volume 3 with the following:

1. _____

A minimum of ____ travel lanes in each direction shall remain open to the travelling public at all times. An exception to minimum number of lanes open may be allowed for center lane construction subject to approval by GDOT.

Lane and shoulder closures will NOT be allowed between the following hours:

Day	Southbound Lanes	Northbound Lanes
Monday through Friday	5:00 a.m. to 8:00 p.m. daily	5:00 a.m. to 9:00 p.m. daily
Saturday	10:00 a.m. to 8:00 p.m.	10:00 a.m. to 8:00 p.m.

Sunday	10:00 a.m. to 8:00 p.m.	10:00 a.m. to 8:00 p.m.
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2. _____

A minimum of ____ travel lanes in each direction shall remain open to the travelling public at all times. An exception to minimum number of lanes open may be allowed for center lane construction subject to approval by GDOT.

Lane and shoulder closures will NOT be allowed between the following hours:

Day	Southbound Lanes	Northbound Lanes
Monday through Friday	5:00 a.m. to 8:00 p.m. daily	5:00 a.m. to 9:00 p.m. daily
Saturday	10:00 a.m. to 8:00 p.m.	10:00 a.m. to 8:00 p.m.
Sunday	10:00 a.m. to 8:00 p.m.	10:00 a.m. to 8:00 p.m.

All Other Roads and Streets/Ramps/Collector Distributor Lanes

A minimum of one (1) travel lane in each direction shall remain open for all ramps and collector distributor lanes. No ramps or side streets will be allowed to be closed unless approved by GDOT or the Governmental Entity having jurisdiction of the cross street. The DB Team shall not install lane closures, perform flagging, or move equipment on the travel way on any day between the hours of 5:30 a.m. to 9:30 a.m. and from 4 p.m. and 7 p.m. The DB Team shall coordinate with each Local Government Agency having jurisdiction to determine acceptable times for closure to occur.

1. Long term shoulder closures will be allowed on one shoulder with GDOT approval in areas where there is an inside and an outside shoulder. The shoulder opposite of the closed shoulder shall have a minimum width of eight (8) feet. Shoulder closure will be allowed for a maximum of one hundred and eighty (180) days and a maximum distance of one (1) mile. There should be at least one (1) mile between long term shoulder closures. Long term shoulder closure is defined as any shoulder closures lasting longer than times allowed in section this section.

18.4 Construction Requirements

18.4.1 DB Team Responsibility

No additional requirements

18.4.2 Access

No additional requirements

18.4.3 Detours

No additional requirements

19 MAINTENANCE DURING THE DESIGN-BUILD PERIOD

19.1 General Requirements

19.1.1 Reserved

19.1.2 GDOT Obligation to Repair

No additional requirements

19.2 Construction Maintenance Limits Plan

No additional requirements

20 BICYCLE AND PEDESTRIAN FACILITIES

20.1 General Requirements

Supplement Section 20.1 of Volume 3 with the following:

The DB Team shall ensure the bicycle and pedestrian facilities of the Project adhere to the following guidance documents:

- Georgia Guidebook for Pedestrian Planning
- GDOT Pedestrian and Streetscape Guide
- Georgia DOT Bike/Ped Design Policy
- AASHTO Bicycle and Pedestrian Design Guidelines

Bicycle and pedestrian planning and design documents can be found on the GDOT Bicycle and Pedestrian Programs website:

<http://www.dot.ga.gov/travelingingeorgia/bikepedestrian/Pages/PlanningandDesignResources.aspx>

20.2 Design Requirements

20.2.1 Bicycle Facilities

Supplement Section 20.2.1 of Volume 3 with the following:

The DB Team shall accommodate bicycle and pedestrian projects. Additional information of the proposed projects can be found in the latest edition of the following regional and local transportation plans:

- Atlanta Regional Bicycle Transportation & Pedestrian Walkways Plan:
<http://www.atlantaregional.com/transportation/bicycle--pedestrian>
- Cobb County Bicycle and Pedestrian Plan:
<http://dot.cobbcountyga.gov/bikeped/index.htm>
- Atlanta Regional Commission (ARC) Regional Transportation Plan:
<http://www.atlantaregional.com/transportation/regional-transportation-plan>
- Cobb County Comprehensive Transportation Plan
<http://dot.cobbcountyga.gov/ctp/index.htm>

20.2.2 Pedestrian Facilities

No additional requirements

20.2.3 Final Plans

No additional requirements

21 TOLLING

21.1 GENERAL DESCRIPTION

The improvements, infrastructure, and responsibilities for tolling are generally described below. For the purposes of the DB Documents, Open to Tolling shall mean the date that GDOT will open the managed lane to traffic and SRTA may begin toll collections. Open to Tolling will occur for each direction on separate days.

Sections 21 and 17 and the Attachments to each Section are all intended to be read together to determine the complete Tolling and ITS requirements for the Project. If conflicts exist between these Sections and Attachments, the DB Team shall submit a Request for Information to GDOT and SRTA for guidance on which requirement shall take precedence. The DB Team shall not receive additional compensation for conflicts that are identified after the Project award.

21.1.1 General Purpose

This work includes the design, procurement and installation of the Toll System Infrastructure required to support the Toll System as described herein and depicted in the referenced exhibits. The types of Toll System locations within the Project include:

- Toll Collection Sites
 - Bidirectional – Toll Collection Site in which the structure and/or toll equipment cabinet and equipment within are shared to support managed lane tolling in both directions.
 - Single direction (with barrier or guardrail) – Toll Collection Site in which the structure and/or toll equipment cabinet and equipment within are used to support managed lane tolling in one direction.
- Toll General Purpose Lanes Scanning Sites (Toll GPLS Site)
- Toll Rate CMS Sites
- Toll CCTV or and Toll Rate CCTV Only Sites (as required per DB Team final design)

Drawing of the typical layout for each Toll System Site type are provided in Attachment 21-2: Typical Toll System Site Drawings. Typical layouts include various grouping of the types of Toll System Sites listed above (for example, a Toll GPLS Site may also include a Toll CCTV or Toll Rate CCTV using the same structure, some of the same conduits and the same toll equipment cabinet).

The locations of the Toll System Sites are depicted in Attachment 17-2: Roll Plots and the quantities of devices are listed by location in Attachment 17-1: Device by Location List.

Although some of the Toll System devices described in this section may be identical or similar to the ITS devices described in Section 17, the devices described in this section are separate and distinct. The ITS devices described in this section are integral

components of the Toll System and will be installed and controlled by SRTA and communicate via a separate communications network, have separate power feeds and toll equipment cabinets and in most cases separate structures and conduits. In some cases both SRTA and GDOT ITS equipment may share a structure and/or conduits (for example it may be appropriate to locate both SRTA and GDOT ITS CCTV cameras on the same structure).

21.1.2 Toll System Infrastructure

Toll System Infrastructure shall be designed and constructed by the DB Team. The Toll System Infrastructure includes those elements required for the Toll System including, but not limited to toll gantries and other structures; equipment mounting structures; static portion of the toll rate sign (excluding Toll Rate CMS); power; duct bank; a fiber backbone communications network; fiber laterals (drop fiber); toll equipment cabinets with concrete pads, HVAC and stub-ups; structure mounted toll equipment cabinets with HVAC and conduits; separate power and communications conduits to the toll equipment cabinets; conduits from the toll equipment cabinets to the structures; structure mounted conduits and wireways to the equipment mounting locations; junction boxes; ground boxes; hub buildings with HVAC; fencing; barriers; support walls; maintenance areas; NEC compliant grounding systems; lightening protection, and related elements. DB Team shall provide any proposed changes to locations of Toll System Infrastructure to SRTA for review and acceptance.

21.1.3 Toll System Improvements

The Toll System shall be procured, designed and installed by SRTA. The Toll System includes, but is not limited to, Automatic Vehicle Identification (AVI) readers; over-lane antennas; in-pavement vehicle detection loops; lane controllers; Violation Enforcement Systems (VES) Cameras; Toll Rate CMS; CMS Toll Rate CCTV cameras; Toll CCTV cameras; roadside vehicle detection equipment (MDSs); communications wiring from the toll equipment cabinets to toll equipment; power wiring from the toll equipment cabinets to toll equipment; power backup systems; communications equipment; equipment specific brackets for attaching equipment to the DB Team provided mounting structures; other incidental items necessary to complete the work, and integration services.

The Toll System equipment and devices provided and installed by SRTA are detailed in Attachment 21-2: Typical Toll System Site Drawings.

21.2 Responsibilities

Multiple contractors may work on the Project during design, construction and implementation. The DB Team shall be responsible for coordination of its Work with all such parties.

21.2.1 Division of DB Team and SRTA Responsibilities

Specific delineations between the DB Team and SRTA are provided in Attachment 21-1: Toll Responsibility Matrix. Conflicts between the responsibility matrix and any section contained herein shall be presented to GDOT for a final decision, with concurrence from SRTA on Toll System Infrastructure items.

Within the responsibility matrix,

- “Primary Responsibility” designates the party that is responsible for completion of the work.
- “Support Responsibility” is used to designate when one party may have to provide input before the party with primary responsibility can complete the work or must directly support the work activity as it is taking place (e.g., SRTA providing toll equipment specifications to the DB Team as input to the structural calculations).
- “Coordination Responsibility” is used to designate when one party is responsible for coordinating the work with the other (e.g., the DB Team coordinating SRTA’s access to a Toll System Sites for purposes of testing).
- “Concurrence Responsibility” is used to designate when one party must provide concurrence for the other party’s work prior to implementation of that work.
- “No Responsibility” designates that the other party is completely responsible for the work without Concurrence or Support from the other.

The design, construction and installation of the Toll System Infrastructure is critical to the operation and maintenance of the Toll System. Therefore, the DB Team shall gain concurrence in advance from both GDOT and SRTA before constructing or installing Toll System Infrastructure that deviates from the designs and plans (either provided as part of the DB Documents or accepted design and plans after project award).

21.2.1.1 DB Team Responsibilities

The DB Team shall coordinate with GDOT, SRTA and their designates, as well as utility and telecommunication providers, and other Contractors that may be obtained by the involved parties to successfully complete the Project. Close coordination with all Contractors is essential. Meetings shall be scheduled weekly, unless otherwise accepted by GDOT, and attended by authorized and qualified representatives of the DB Team and include representatives from each entity. Initial coordination meetings may be less frequent if accepted by GDOT. The DB Team shall coordinate with SRTA and all other contractors in the planning, scheduling, design and construction of the Toll System Infrastructure. The DB Team shall develop and integrate schedules into the Critical Path Method (CPM) schedule, refer to Volume 3, Section 2.3. The DB Team shall meet all milestone dates necessary to achieve Substantial Completion and to not

delay Open to Tolling that includes intermediate completion dates (for example turning over Toll System Sites to SRTA for Toll System installation).

The DB Team shall design, coordinate, and confirm with SRTA the design of and requirements for all components of the Toll System Infrastructure. The DB Team shall be responsible for coordinating with the local utility companies to acquire the necessary electrical services to support all Toll System Sites. These include, but are not limited to, submitting the necessary applications on GDOT or SRTA's behalf (as applicable), managing the design and construction work of any third parties, and paying for all associated fees, charges and expenses.

21.2.1.2 SRTA Responsibilities

SRTA shall design, procure, install, integrate and test the Toll System on the Toll System Infrastructure installed by the DB Team, including:

- All Toll System equipment;
- Layer 2 and Layer 3 network electronics for the Toll System network;
- Electrical leads, communications cabling and other required cabling from the toll equipment cabinet to the toll system equipment, and
- Equipment specific mounting brackets required for all Toll System equipment.

21.3 Toll System Elements

As support information for the DB Team, the Toll System includes the following components:

Lane Controller: The Lane Controller is composed of redundant roadside computers located in a toll equipment cabinet near the Toll Collection Sites with high availability performance requirements. The Lane Controller manages and communicates to all toll equipment and sensors; and generates, stores, and transmits the transponder and video transactions to the Facility Server.

Automatic Vehicle Identification (AVI) subsystem: The AVI subsystem installed on the Managed Lanes is required to be interoperable with other SRTA AVI systems. Antennas will be mounted on toll gantry structures at each Toll Collection Site and Toll GPLS Site location. Separate antennas are required for both directions of travel lanes if a toll gantry supports both directions of travel. Reader(s) will be installed on a gantry mounted AVI enclosure.

Violation Enforcement System (VES): Each Toll Collection Site will contain a Toll Violation Enforcement System (VES) configured for real-time enforcement, consisting of the following:

- Rear Toll VES Camera and illumination per lane to collect digital images of a vehicle's license plate.;

- Image server(s) that communicate with the Toll VES Camera to store images. All servers will be installed in the toll equipment cabinet located nearby.

Automatic Vehicle Detection and Classification (AVDC) Subsystem: Each Toll Collection Site will contain an AVDC system that detects the presence of vehicles. The AVDC subsystem also triggers the Toll VES cameras to capture license plate images for video transactions. The AVDC subsystem shall consist of an embedded loop-based system. Associated controllers will be installed in the cabinets located near the Toll Collection Site.

SRTA shall furnish and install the Toll System elements identified above. Design efforts shall be coordinated with the DB Team to ensure that the tolling infrastructure shall support the Toll System.

Toll Rate Changeable Message Sign (CMS): The Toll Rate CMS is integrated into overhead signs to provide the current toll rates for use of the Managed Lanes.

Toll Rate CCTV Camera: The Toll Rate CCTV camera faces the Toll Rate CMS and records the current toll rates being displayed. The recorded video of the historical displayed toll rates is then available for auditing purposes.

Toll Microwave Detection Sensor (MDS): The Toll MDS detects vehicles by projecting a beam of microwave energy across traffic lanes perpendicular to the direction of travel. The Toll MDS equipment is mounted to an outrigger on a pole or the interior upright of an overhead structure. The Toll MDS is aimed at the General Purpose lanes for a single direction of travel and provides accurate traffic speed and volume data.

Toll CCTV Cameras: The Toll CCTV Cameras monitor traffic and incidents on the roadway and are controlled by SRTA.

21.4 Toll System Infrastructure

The DB Team shall design and construct the Toll System Infrastructure in accordance with the requirements and specifications provided herein.

21.4.1 Toll System Sites

The DB Team shall design and construct the Toll System Infrastructure in accordance with the Toll System Sites identified in Attachment 17-2: Roll Plots. Although the DB Team may reasonably adjust the Toll System Sites due to such issues as utility conflicts, site or environmental conditions, the DB Team shall obtain acceptance from both GDOT and SRTA for all location adjustments, with final acceptance of the proposed locations residing with SRTA. The DB Team is prohibited from removing or consolidating the number of Toll System Sites. The Toll layouts and the placement of the equipment will vary based upon the requirements of the Toll System Site and the location, and the Toll System Infrastructure design and installation shall accommodate

these variances. Typical drawings for the different Toll System Site layouts are provided in Attachment 21-2: Typical Toll System Site Drawings.

The Toll CCTV System is separate and distinct from the GDOT ITS CCTV System and the DB Team shall install the infrastructure for the Toll CCTV system, with the cameras and controllers being installed by SRTA. The Toll CCTV locations and infrastructure shall be designed by the DB Team to provide the coverage and adhere to the CCTV infrastructure design criteria specified in Section 17.2. SRTA intends to install cameras that meet the same requirements as GDOT ITS CCTV cameras. For proposal purposes, the DB Team shall assume the use of this camera. The placement of the Toll CCTV Cameras depicted in Attachment 17-2: Roll Plots are conceptual only. The DB Team is responsible for final design and placement of the Toll CCTV Cameras and installation of the infrastructure as described in Attachment 21-1: Toll Responsibility Matrix.

A Toll Rate CCTV Camera is associated with each Toll Rate CMS Site and faces the Toll Rate CMS for the purpose of recording the current toll rate being displayed. Although they are associated with the Toll Rate CMS Site, the DB Team provided infrastructure for the Toll Rate CCTV camera will be located upstream from the Toll Rate CMS Site. The Toll Rate CCTV camera infrastructure may be designed by the DB Team to be part of a separate Toll System or ITS Site or may require a dedicated infrastructure site. The Toll Rate CCTV camera shall be between 100 and 1500 feet of the Toll Rate CMS.

Although the Toll CCTV will be installed by SRTA, the design and installation of the Toll System Infrastructure as it relates to the Toll CCTV Sites shall be governed by the applicable specifications and requirements in Section 17.2 unless directly addressed in Section 21 or Attachment 21-2: Typical Toll System Site Drawings.

A subset of the Toll System Sites are designated as Toll Collection Sites where the managed lanes toll payment transactions are collected. The Toll Zones, which are the managed lanes sections where toll collection takes place, are one hundred fifty (150) feet in length, typically including seventy five (75) feet in each direction from the toll gantry.

The DB Team shall design and construct the Toll Collection Sites. The Toll Collection Sites shall be located as shown in Attachment 17-2: Roll Plots. Modifications to the locations provided shall require prior concurrence from SRTA and acceptance from GDOT. Placement of the Toll Collection Sites is intended to avoid merging areas and weaving sections to minimize lane changes and shall not be located on elevated bridge structures without the concurrence of SRTA and acceptance by GDOT. Preferably, Toll Zones are located along at grade sections or wall supported sections that are no higher than ten (10) feet above existing grade. Locations shall not coincide with any ITS induction loops, ramp meters, or any other ITS devices without concurrence of SRTA and acceptance by GDOT. Additionally, Toll Zone locations shall not be within thirty five (35) feet of underground or overhead utilities and utility crossings including storm

drainage. The Toll Zone shall accommodate the requirements and work of SRTA, utility and other contractors.

Horizontal Alignment: The Toll Zone Gantry shall be installed perpendicular to the roadway. The Toll Zone typical section shall have the same lane and shoulder widths as the Managed Lanes, ramps and/or access locations, unless confirmed by SRTA and accepted by GDOT.

Vertical Profile: The maximum grade through the Toll Zone shall not exceed 4%.

Cross Slope: Cross slope in the Toll Zones shall not exceed 4%.

The DB Team shall be responsible for incorporating all geometric modifications (based upon costing plans provided by GDOT to the DB Team) to construct the Toll Collection Sites at the locations identified in Attachment 17-2: Roll Plots according to the horizontal alignment, vertical profile and cross slope requirements provided above.

21.4.2 Toll System Structures

Typical Toll System Sites layouts, including gantry and structure placements are depicted in Attachment 21-2: Typical Toll System Site Drawings.

21.4.2.1 Toll Gantry Structures - Toll Collection Sites and Scan Sites

Toll gantries shall be designed and configured to allow maintenance access to all signing, lighting and Toll System equipment from bucket trucks. The DB Team shall design and construct toll gantries in conformance with Attachment 17-2: Roll Plots, Attachment 21-2: Typical Toll System Site Drawings, Section 21.5, and the following requirements:

Design Standard: The DB Team shall design and construct the toll gantries using GDOT Type I, Type II, Type III and Type IV structures as specified in GDOT Standard Specifications Section 638. Type II structures may not be utilized when the toll gantries also contains static or CMS signs. The horizontal alignment of the Toll Zones and Toll GPLS Sites shall be perpendicular to the travel lane(s). Toll gantry columns shall be protected by concrete traffic barrier or guardrail.

Design Loads: Toll gantries shall be designed and constructed to support all loads due to over-the-lane Toll Systems as determined by SRTA and as provided below:

- 5th Ed., or most current AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (AASHTO LTS);
- Co-located static signage or front access Toll Rate CMS signage with dimensions of up to eight (8) feet vertical and thirty (30) feet in width mounted on the horizontal “over the road” toll gantry support. The structure shall be designed to support proposed toll equipment and a maximum Toll Rate CMS weight of three thousand (3000) pounds;

- Primary design wind will be performed in accordance with Section 3 of the AASHTO LTS, except where wind drag effect is computed for Toll Rate CMS signs in accordance with Table 3-6. Use wind drag coefficient of 1.2, substituted for the noted 1.7 value shown in the table. Note 'g' for this table recognizes that the 1.7 value is arbitrary;
- The design and installation of the Toll System Infrastructure as it relates to the Toll Rate CMS shall be governed by the applicable specifications and requirements in Section 17.2.3 unless directly addressed in Section 21, Attachment 17-1: ITS Roll Plots or Attachment 21-2: Typical Toll System Site Drawings.

Serviceability: For concerns related to wind induced deflections and vibration behavior, utilize wind speed corresponding to the Natural Wind Gust fatigue event from Section 11.7.3 of the AASHTO LTS (11.2 mph) as a substitute for the full wind design speed, as it will offer a far more accurate prediction of the everyday behavior of the structure.

Toll gantries shall be designed and installed by the DB Team and shall include the foundations, structural supports, trusses, cable trays, conduits, junction boxes, grounding, and any related ancillary items to meet the requirements for the Toll System and SRTA. The design shall be confirmed by SRTA and accepted by GDOT prior to construction.

When the Toll System Infrastructure uses existing structures, the grounding system and lightning protection for that structure shall be updated by the DB Team to current specifications.

The design and installation of the Toll System Infrastructure as it relates to the Electrical and Grounding shall be governed by the requirements and specification outlined in Section 17.2.5 unless directly addressed in Section 21 or Attachment 21-2: Typical Toll System Site Drawings.

21.4.2.2 Mounting Structures

Included as part of the DB Team provided structures, the DB Team shall also provide mounting structures for the attachment of Toll System equipment. GDOT Standard shall apply except where SRTA's below mounting and loading requirements are more stringent. Requirements for the mounting structures include:

Toll Collection Site:

Mounting Structure for AVI Antenna over the center of the Express Lane:

- 4"-8" OD structure;
- 19' high clearance from center of express lane;
- Structure extends 2' past the centerline of express lane;
- Capable of supporting 50lb;
- Vibration tolerance: 1 Grms, 10 to 500 Hz;

- +/- 1 inch all planes and +/- 1 degree of rotation all axes.

VES Vertical Mounting Pole mounted on the center barrier or 3' from the edge of the roadway:

- 4"-8" OD pole;
- 15' high measured from Center of Express Lanes;
- Capable of supporting 50lb;
- Vibration tolerance: 1 Grms, 10 to 500 Hz;
- +/- 1 inch all planes and +/- 1 degree of rotation all axes.

Structural Support for MDS mounted on the gantry upright:

- 4"-8" OD structure;
- 17'-18' high elevation above travel lanes;
- Structure extends 10' past the gantry span in direction of travel;
- Capable of supporting 20lb;
- Vibration tolerance: .5G up to 30Hz;
- +/- 1 inch all planes and +/- 1 degree of rotation all axes.

Toll GPLS Site:

Mounting Structure for AVI Antenna over the center of GP lanes (1 per GP lane)

- 4"-8" OD structure;
- 19' minimum, 25' maximum clearance from roadway surface;
- Vertical structure capable of supporting 50lb per lane mounted CL of the lane;
- Vibration tolerance: 1 Grms, 10 to 500 Hz;
- +/- 1 inch all planes and +/- 1 degree of rotation all axes;

Toll Rate CMS Site

Mounting Structure for CMS Display mounted on Static Sign:

- 10-Character sign
 - 1'10" height x 11'2" length;
 - 100lbs weight (140lbs weight if mounting brackets used).
- 7-Character sign
 - 1'10" height x 7'11" length;
 - 77lbs weight (101lbs weight if mounting brackets used).
- See RFP specifications for location of CMS displays in the static signs.

Mounting Structure for CCTV and Toll Rate CCTV Camera Mounted on the Toll Collection or GPSL Site Gantry:

- 4"-8" OD pole;
- Pole extends 10' minimum above gantry;
- Capable of supporting 15lb;
- See Section 17.2.1.3 for specifications for CCTV vibration and deflection requirements.

Toll CCTV-Only or Toll Rate CCTV-Only Site

Mounting Structure for Toll CCTV-Only or Toll Rate CCTV-Only Site (if required per DB Team's design)

- See Section 17.2.1.3 for Toll CCTV-Only or Toll Rate CCTV-Only Site Structural support requirements, which are the same as ITS CCTV structural requirements.

21.4.2.3 Toll Rate CMS Signage and Structure

The DB Team shall provide the static panels for the Toll Rate CMS signage and structures. Typical drawings of the required Toll Rate CMS signage and structures are provided in Attachment 21-2: Typical Toll System Site Drawings.

The design and installation of the Toll System Infrastructure as it relates to the CMS shall be governed by the applicable specifications and requirements in Section 17.2.3 unless directly addressed in Section 21 or Attachment 21-2: Typical Toll System Site Drawings.

21.4.2.4 Toll CCTV and Toll Rate CCTV Structures

The DB Team shall provide Toll CCTV and Toll Rate CCTV structures. Typical drawings of the required Toll CCTV and Toll Rate CCTV, when integrated within Toll System Sites, are provided in Attachment 21-2: Typical Toll System Site Drawings.

The design and installation of the Toll System Infrastructure as it relates to the Toll CCTV and Toll Rate CCTV Sites shall be governed by the applicable specifications and requirements in Section 17.2 unless directly addressed in Section 21 or Attachment 21-2: Typical Toll System Site Drawings.

21.4.2.5 Toll CCTV Only Site Structures

For Toll CCTV-Only and Toll Rate CCTV Sites (if required per the DB Team design), the design and installation of the Toll System Infrastructure as it relates to the Toll CCTV and Toll Rate CCTV Sites shall be governed by the applicable specifications and requirements in Section 17.2.1 unless directly addressed in Section 21 or Attachment 21-2: Typical Toll System Site Drawings.

21.4.2.6 Toll MDS Structures

The DB Team shall provide Toll MDS structures integrated into the Toll Collection Sites. The design and installation of the Toll System Infrastructure as it relates to the Toll MDS shall be governed by the applicable specifications and requirements in Section 17.2.2 unless directly addressed in Section 21 or Attachment 21-2: Typical Toll System Site Drawings.

21.4.3 Toll System Fiber Communications Network

The Toll System fiber communications network shall be separate and distinct from the Project's ITS network and is depicted in Attachment 21-3: Toll System Infrastructure Fiber Diagram. The specifications and requirements that govern the design, installation, testing and acceptance of the toll system fiber communications network shall be the same as those for the ITS fiber communications network in Section 17.

The design and installation of the Toll System Infrastructure as it relates to the Toll System fiber communications network shall be governed by the requirements and specification outlined in Section 17.2.4 unless directly addressed in Section 21 or Attachment 21-3: Toll System Infrastructure Fiber Diagram.

21.4.4 Toll System Maintenance Area

For the non-barrier mounted Toll System Sites, including all Toll System roadside toll equipment cabinets, the DB Team shall provide a vehicle access point in which maintenance personnel can safely park and exit a vehicle in order to service the roadside toll equipment cabinets and other toll equipment. The access point shall have a twelve foot (12') shoulder and be located directly adjacent to the Toll System Site or roadside toll equipment cabinets. In areas where it is demonstrated, and agreed to by GDOT and SRTA, that access cannot be provided directly adjacent, then the vehicle access point should be no more than 300 feet from the area where maintenance is performed. Maintenance personnel should be able to safely traverse between vehicle access points and maintenance areas. If a twelve foot (12') shoulder is not feasible, then there should be an area 12 feet wide or larger with a recoverable slope, flatter than 4H:1V, in which maintenance personnel can safely park and exit a vehicle in order to provide maintenance.

21.4.5 Radio Frequency Requirements

21.4.5.1 Radio Frequency Interference Requirements

Toll System Sites using radio frequency (RF) equipment shall be free from radio frequency interference. The Toll System operates on frequencies between 908 to 928 MHz and requires noise and interference below acceptable tolerances. SRTA is responsible to perform the radio frequency (RF) spectrum analysis to verify non-interference. The DB Team shall support SRTA in this effort and provide reasonable access to the Project for RF analysis data gathering, which shall be conducted after the DB Team provides a preliminary design that includes Toll System Site locations. Toll System Sites using radio frequency (RF) equipment shall not be located where interference exists. The DB Team will work with SRTA in making any required Toll System Site location changes due to RF interference.

The DB Team shall provide coordinates for all Toll System Sites where RF equipment is installed.

21.5 Toll System Infrastructure Design and Construction Requirements

Prior to beginning design efforts, the DB Team shall conduct up to two (2) Toll System design workshop(s) with GDOT and SRТА. The first workshop shall be conducted after roadway geometry is established but before beginning design efforts for the Toll System Infrastructure. DB Team shall coordinate with SRТА in determining detailed specifications for each element of work. The DB Team will incorporate SRТА's requirements into the civil and electrical installation package and submit design plans to GDOT and SRТА for review and acceptance by GDOT, as identified in the Submittal Requirements. In accordance with the requirements and suitable to accommodate installation and maintenance of the Toll System, the plans shall provide detail for all components identified as part of the Toll System Infrastructure.

The DB Team shall provide prototype toll plans corresponding to each type of location, see Attachment 21-2: Typical Toll System Site Drawings), as well as all Toll System Infrastructure items that support the project as a whole, to GDOT and SRТА for review and acceptance prior to initiating design efforts on the remaining Sites. This process is intended to identify early modifications to design plans, identify points of clarification and ultimately streamline design and design review efforts.

The design and installation of the Toll System Infrastructure as it relates to the Electrical and Grounding shall be governed by the requirements and specification outlined in Section 17.2.5 unless directly addressed in Section 21 or Attachment 21-2: Typical Toll System Site Drawings.

21.5.1 Toll System Infrastructure - Site Installation

Working with SRТА, the DB Team shall design, procure, and install various site infrastructure elements, including site work, maintenance access area, and power and communication services to support the installation of the Toll System. It is the responsibility of the DB Team to coordinate applicable design activities with SRТА, fully integrate the SRТА requirements and schedule; and to provide qualified design and technical staff that are aware of constraints and considerations within the toll system locations. The DB Team shall design and construct primary electrical services systems based upon the Toll System electrical requirements identified in these Technical Specifications. Additionally, the DB Team shall provide a fiber network design for each location.

21.5.2 Toll System Infrastructure - Sub-Grade

Based upon coordinated efforts with SRТА, the DB Team shall design and construct all Sub-Grade items to accommodate the Toll System, including but not limited to:

- Conduit and duct bank systems for fiber, communication, and electrical distribution systems;
- All sub-grade electrical power service, feeder and branch circuit conductors;

- Power and communications from service feeder to the toll equipment cabinets;
- Grounding and lightning protection systems;
- Provision for all utilities and drainage systems;
- Toll gantry and structure foundations;
- Conduits for power and communications from the toll equipment cabinet to the toll gantry or support structure routed through various junction boxes;
- Conduits for loop connections from the pavement to the toll equipment cabinets.

General Requirements:

- Power and communication cabling shall always be located in separate conduits;
- Communications duct bank conduit quantities and sizes are provided in Attachment 21-2: Typical Toll System Site Drawings;
- Sizing of power and communication junction boxes shall be sufficient to properly house all conduits and provide ample inside work space.

21.5.3 Toll System Infrastructure - At-Grade

The DB Team shall design, provide and install the various at-grade elements prior to SRTA's installation of the Toll System including, but not limited to:

General Requirements:

- Site work, power and communication services to support the installation of the toll system;
- All paving and roadway work;
- Electrical services to meet power requirements for each Toll System Site;
- Dedicated electrical power meter to provide power to the toll equipment cabinets;
- Electrical service at a meter/service panel;
- Meter/service cabinet as part of the work, per applicable standards;
- UPS load distribution panel;
Note: The DB Team shall connect electrical power to service entrance on the DIN Rail and electrify the toll equipment cabinet;
- At-Grade electrical power service, feeder and branch circuit conductors;

Loop Installation Requirements (Typical Guardrail Site):

- SRTA will install (including saw-cuts), seal and terminate the loops, but the DB Team is responsible for all conduits, ground boxes, and pavement as depicted in the Attachment 21-2: Typical Toll System Site Drawings. Two loops will be installed for each HOT tolling zone lane. The following requirements apply:
 - The size, number and location of ground boxes for loop splices shall be confirmed by SRTA. The loop splice ground box shall be 36"x17"x30" minimum in size;

- Ground boxes installed in the Toll Collection Sites shall be surrounded by an eighteen inch (18”) concrete apron, four inches (4”) above grade and be traffic bearing;
- Loop tails will be saw-cut from the loops to the sides of the roadway at all Toll Collection Sites;
- Where the roadside ground box is located outside the roadway pavement, conduit must be installed for routing the loop tails to go from the edge of the pavement into the ground box;
- The ground box conduit must be sized one and one half inches (1-1/2”) minimum and penetrate the roadway pavement at least nine inches (9”) inside roadway edge;
- After the loop tails enter the ground box they will be spliced to shielded twisted-pair cables. All loop tails can then run to the toll equipment cabinet in the same conduit;
- Conduits shall be installed such that the total length between the longest loop lead-in cable and the toll equipment cabinet shall be no more than three-hundred (300’) feet;
- When installed the longest loop lead-in cable length to the Zone Controllers should be no more than three-hundred (300) feet;
- The loop area shall be free of pavement joint cuts and drainage infrastructure;
- Communication and electrical shall not be placed within the same ground box.

Loop Installation Requirements (Median Barrier Site):

- SRTA will install (including saw-cuts), seal and terminate the loops, but the DB Team is responsible for all conduits, ground boxes, and pavement. Two loops will be installed for each HOT tolling zone lane. The following requirements apply:
 - The loop area of the roadway shall be free of pavement joint cuts and drainage infrastructures;
 - Loop tails will be saw-cut from the loops to the sides of the roadway at all Toll Collection Sites;
 - When installed the longest loop lead-in conduit length to the equipment pad shall be no more than three-hundred (300) feet;
 - SRTA will route and install the loop tails from the roadway loops to the VES & Loops junction box mounted to the VES pole;
 - The loop tails will be installed by SRTA as follows:
 - A slot in the pavement will be cut from the loops to the barrier wall;
 - A slot in the barrier wall will be cut from the pavement to the top of the wall;
 - A hole will be bored into the top of the barrier wall where the slot reaches the wall top;
 - A short length of flexible conduit will run from the bored hole to the VES and Loop junction box on the pole;
 - The loop tails will then be routed in the saw cuts and through the conduit to the junction box.

Ground Mounted Toll Equipment Cabinets

The ground mounted toll equipment cabinets shall be dedicated for use by SRTA to house elements of the Toll System. The ground mounted toll equipment cabinets and supporting concrete pad shall meet the following requirements:

Concrete Pad Requirements:

- Shall support the toll equipment cabinets (Does not apply to structure mounted toll equipment cabinets). The pad shall have the necessary thickness to support the ground mounted toll equipment cabinets and other elements that may be placed on it (as identified during the design process) . A junction box for power and a junction box for communication shall be installed in the concrete pad. The junction boxes shall be sized 18" x 10" x 12" minimum;
- Shall be 6'x6' minimum and placed in a level area that will allow maintenance personnel to have safe access to the interior cabinet from both the front and back doors. This area should also be graded to drain away from the cabinet.

Toll Equipment Cabinet Requirements:

- Type C Cabinet – Model 332 housing sized 64" h x 24" w x 30" d (exterior dimensions).

Internal Rail Requirements:

- PAIRS OF 19" EIA STANDARD;
- Holes tapped for 10x32 threads;
- Rails fully adjustable from front to rear.

General Requirements:

- Front and rear lockable doors;
- NEMA 4 Rating;
- Sun shield, top minimum;
- Internal insulation 3.3R minimum;
- Externally mounted 4k BTU A/C;
 - A/C must be outdoor rated.
- Cabinet can be bare metal or painted. If painted the cabinet must have a 15 year warranty on the paint. Paint color must be white color and approved by GDOT/SRTA;
- The DB Team shall insulate the toll equipment cabinets, add an HVAC system to each toll equipment cabinet and make all necessary adjustments to the toll equipment cabinet, electrical infrastructure and drains to remove condensation from the toll equipment cabinets.

Electrical service shall be provided and installed, meeting the following requirements:

- Load center with breakers for four circuits minimum;

- 20A, 120VAC circuit – UPS (1000W load), terminated to a L5-20 receptacle in the equipment enclosure;
- 20A, 120VAC circuit – Service power, terminated to a 5-20 quad receptacle in the equipment enclosure;
- A/C circuit, direct wired;
- Spare, 120VAC circuit.

Grounding Requirements:

- Toll System infrastructure shall be ground and per IAW SP 797 Hub Paragraph L, Page 7, Outside Grounding Requirements.

A Transfer Switch Requirements:

- Has an attachment for connecting a portable generator;
- Provides portable generator power to all circuits;
- The transfer switch and attachments are sized to support the combined UPS and A/C load;
- The load center and transfer switch can be mounted to a pole on the equipment pad, externally mounted to the equipment enclosure, or mounted inside the equipment enclosure but accessible from outside the enclosure without opening the front and rear lockable doors. The mounting location must not interfere with operation of the front and rear lockable doors. If mounted to or in the enclosure, the load center and transfer switch must only occupy one side of the enclosure.

Transient Voltage Surge Suppression Requirements:

- Shall be located either in the load center or in a protected enclosure in the equipment enclosure;
- Shall protect against surges on the utility and generator power.

Communication Specifications:

- SRTA roadway fiber terminated to a patch panel at the top of the rack;
- 3U of rack space will be provided for the SRTA fiber termination and patch panel.

21.5.4 Toll System Infrastructure – Above-Grade

The DB Team shall design, procure and install the various above-grade elements including but not limited to:

- Toll gantries, structures and support infrastructure (e.g. toll gantry columns and toll gantry trusses) to support the Toll System as identified in Attachment 21-2: Typical Toll System Site Drawings and Attachment 17-2: Roll Plots.
- The structures at the Toll System Sites shall support the Toll System equipment. The equipment will be attached to DB Team provided mounting structures which shall be securely attached to the various structures. Section 21.4.2.2 and

Attachment 21-2: Typical Toll System Site Drawings provide detail for the required mounting structures.

- An accessible opening (watertight wire-way/cable tray) in the toll gantry column will be a minimum of 12"x 12" to accommodate the toll system equipment cables. The cables shall be readily accessible at all points both horizontal and vertical;
- A 24"x24"x12" watertight cable tray securely fastened to and supported by the top of the bottom truss chord of the toll gantries shall be required. A 24"x24"x12" enclosed watertight junction box shall be installed on the end of the wire way to accommodate connection of the conduits extending up through the column;
- The lightning and surge protection devices for all toll gantry equipment will be tied to the toll gantry and the tolling site ground array;
- AVI readers provide the signal to the antennas. Details regarding the mounting of AVI readers and cabinets, and the associated maximum conduit length requirements are provided in Attachment 21-2: Typical Toll System Site Drawings.
- Sizing of power and communication junction boxes shall be sufficient to properly house all conduits and provide ample inside work space.

Pole Mounted Toll Equipment Cabinets

The pole-mount equipment cabinets shall be installed by the DB Team and dedicated for use by SRTA to house elements of the AVI scan sites, Toll Rate CMS sites, and SRTA CCTV stand-alone sites. The DB Team shall insulate the pole-mount equipment cabinets, add an HVAC system to each pole-mount equipment cabinet and make all necessary adjustments to the pole-mount equipment cabinet, electrical infrastructure and drains to remove condensation from the pole-mount equipment cabinets. The pole-mount equipment cabinets shall meet the following specifications:

Work Area Requirements:

- For pole mounted cabinets located in areas with slopes steeper than 1V:6H, a level workplace for maintenance will need to be provided. This area should be paved and graded to drain away from the cabinet.

Toll Equipment Cabinet Requirements:

- Type A Cabinet – Model 336 stretch (336S) housing sized 46" h x 24" w x 23" d (exterior dimensions).
 - Internal rails:
 - 2 pairs of 19" EIA standard;
 - Holes tapped for 10x32 threads;
 - Rails fully adjustable from front to rear.
 - Front and rear lockable doors;
 - NEMA 4 Rating;
 - Sun shield, top minimum;
 - Internal insulation 3.3R minimum;
 - Externally mounted 500 BTU A/C;
 - A/C must be outdoor rated.
 - Cabinet can be bare metal or painted.

- If painted the cabinet must have a 15 year warranty on the paint;
- Paint color must be white color and approved by GDOT/SRTA.
- Include cabinet mounting brackets for mounting to gantry pole.

Electrical service shall be provided and installed, meeting the following requirements:

- Load center with breakers for four circuits minimum
 - 20A, 120VAC circuit – UPS (250W load), terminated to a L5-20 receptacle in the equipment enclosure
 - 20A, 120VAC circuit – Service power, terminated to a 5-20 quad receptacle in the equipment enclosure
 - A/C circuit, direct wired
- Transfer switch and attachment for connecting a portable generator:
 - Transfer switch provides generator power to all circuits;
 - Transfer switch and attachments sized to support UPS and A/C load;
 - Transfer switch and load center can be integrated in one unit.
- The load center and transfer switch can be mounted to the same pole as the equipment enclosure, externally mounted to the equipment enclosure, or mounted inside the equipment enclosure but accessible from outside the enclosure without opening the front and rear lockable doors. The mounting location must not interfere with operation of the front and rear lockable doors;
- Transient Voltage Surge Suppression:
 - Located either in the load center, or in a protected enclosure in the equipment enclosure;
 - Protects against surges on the utility and generator power.
- Grounding:
 - Design, install, route, ground and bond the grounding system per IAW SP 797 Hub Paragraph L, Page 7, Outside Grounding Requirements.

Communication Specifications:

- SRTA roadway fiber terminated to a patch panel at the top of the rack;
- DB Team to provide patch panel at the top of the rack;
- 3U of rack space will be provided for the SRTA fiber termination and patch panel.

21.5.5 Toll System Hub Buildings

The design and installation of the Toll System Infrastructure as it relates to the Hub Building shall be governed by the requirements and specification outlined in Section 17 unless directly addressed in Section 21.

The requirements below are for the SRTA Toll System Infrastructure only and are in addition to the infrastructure required for the ITS System.

Electrical service shall be provided and installed, meeting the following requirements:

- 40A (minimum), 240V electrical power at shelter main load center for SRTA equipment
- Breaker space for two 20A 240V circuits.

Transfer switch requirements:

- Transfer switch and attachments shall be provided and sized to support entire building load.

Space requirements:

- Floor space for two 4-post equipment racks to be used for the SRTA Toll System equipment only.

SRTA roadway fiber terminated to a patch panel in one of the SRTA racks:

- DB team to provide two 4-post 42 U equipment racks for use by SRTA;
- DB Team to provide patch panel in the rack;
- 3U of rack space will be provided for the SRTA fiber termination and patch panel.

HVAC Unit Requirements:

- Redundant AC units
- SRTA Toll System equipment heat load: 10,000 btu/hr

21.5.6 Toll System Power Loads and Heat Dissipation

The design and installation of the Toll System Infrastructure as it relates to the Electrical and Grounding shall be governed by the requirements and specification outlined in Section 17.2.5 unless directly addressed in Section 21 or Attachment 21-2: Typical Toll System Site Drawings.

21.6 Toll System Infrastructure - Turnover to SRTA

The turnover of all Toll System Sites and Toll System Infrastructure shall be completed as per the requirements of the DBA, Exhibit 9.

Prior to each turnover, the DB Team shall provide draft Toll System Infrastructure as-built plans for each Toll System Site to be reviewed by GDOT and SRTA and used by SRTA in preparing for the Toll System installation.

21.6.1 Site Acceptance Checklist

To assist the DB Team with ensuring that each Toll System Site is ready to be turned over to SRTA, the DB Team shall submit to GDOT and SRTA for review, modification and/or acceptance a proposed Toll System Site Acceptance Checklist. The checklist

shall be completed on-site and witnessed by GDOT and SRTA. Issues found during on-site review of the Site Acceptance Checklist shall be resolved by the responsible party prior to turnover of the Toll System Site. The DB Team shall build upon and add specific details, based upon Final Plans, to the minimum Attachment 21-4: Toll System Site Acceptance Checklist for the hand-off from the DB Team to SRTA.

The sites shall be complete, free of debris, and ready for Toll System installation and integration at the time they are turned over to SRTA and include all parts of the Toll System Infrastructure detailed herein, including all hub buildings, electrical service and completed/terminated fiber network. Fiber backbone and laterals shall be completely installed and accepted prior to turnover. Splices to the Toll System fiber backbone or laterals shall not occur after turnover without prior approval of SRTA.

Prior to turnover, the DB Team shall capture a video log(s) of each Toll System Site and Hub Buildings for future reference regarding the condition of the infrastructure. A copy of the video log(s) shall be provided to GDOT at turnover to SRTA.

21.6.2 Toll System Implementation Coordination

As stated herein, the DB Team shall turnover all Tolling System Sites, to SRTA for installation, integration and testing of the Toll System. The DB Team shall not hinder SRTA's to access these locations after they are turned over. Accommodations shall include, at a minimum, convenient access to the Managed Lanes in relation to the Toll System Sites and Hub Buildings, and provide space for SRTA to safely park at least two work vehicles without interfering with DB Team operations. If SRTA discovers some work product that was incorrectly installed or missing even though it was not identified through the Toll System Site Acceptance Checklist review process, the DB Team shall make all necessary repairs, replacements or adjustments within five (5) calendar Days of being notified. If needed, the DB Team shall work at multiple sites in parallel so as to not delay SRTA's progress, avoid missing the Substantial Completion deadline and delay Open to Tolling. The DB Team shall coordinate schedules with SRTA to avoid confusion and ensure that each party will not interrupt the efforts of the other. Based upon SRTA's construction and implementation efforts the DB Team shall expect to have no or limited access through one or more Toll System Sites for certain durations of time (for example, when inductive loops are placed in the pavement). SRTA will notify the DB Team two weeks in advance of these "black out" dates.

For installation of the Toll System equipment the DB Team shall ensure that SRTA has access to and control of each Toll System Site including 500 feet upstream and 200 feet downstream from the location.

If the DB Team needs access to a Toll System installation area after turnover to SRTA, the DB Team shall request access from SRTA. Requests for access shall be coordinated as part of the recurring coordination meetings.

All splicing activities or modifications to the fiber network by the DB Team that occur after the initial Communication Hub(s), fiber backbone, and laterals have been turned over shall require coordination in the construction meetings with GDOT and SRTA.

21.7 Testing and Acceptance

The DB Team shall support GDOT and SRTA with testing as described herein to ensure that the Project, Toll Systems and operational procedures are ready for Open to Tolling.

21.7.1 Toll System On-Site Integration and Commissioning Testing

At the conclusion of SRTA's Toll System implementation and integration efforts, SRTA must successfully complete On-Site Integration and Commissioning Testing. This testing will generally involve local testing to ensure that the Toll System equipment is operating properly and the Communication Network is fully operational from the Toll System to SRTA's back office toll collection system, and from SRTA's back office toll collection system to the Toll System.

The DB Team's traffic control requirements during the Toll System On-Site Integration and Commissioning Testing are provided in Section 18.4.1.

21.7.2 End-To-End Testing

SRTA shall be responsible for coordinating the End-to-End Testing. The DB Team shall support End-to-End Testing by ensuring that there will be no Managed Lane or Tolling site access or availability conflicts between GDOT, SRTA and their affiliated contractors and the DB Team's staff; providing temporary advance signing as required by Section 18.4.1 stating that the Managed Lanes are closed and testing is occurring; providing a safe environment free of obstacles and unauthorized personnel on the Managed Lanes; providing access to the Managed Lanes for authorized GDOT and SRTA staff and contractors; and repairing any issues found with the DB Team's work efforts within one (1) calendar Day unless otherwise accepted by GDOT.

The DB Team shall not expect to have access to nor conduct work within the Managed Lanes during the End-to-End Testing, with the exception of providing services as described above. SRTA may, at its own discretion, provide DB Team access to the Managed Lanes to conduct work outside the services described above.

The DB Team's traffic control requirements during End-to-End Testing are provided in Section 18.4.1.

21.7.3 Operational Performance Testing

Although SRTA may successfully complete the On-Site Integration and Commissioning Testing and the End-to-End Testing, SRTA will utilize the first forty-five (45) calendar Days to perform Operational Performance Testing which occurs after Open to Tolling

and involves analyzing actual transactions. In the event that any issues related to the DB Team's work are identified, the DB Team shall make all necessary repairs, replacements or adjustments within two (2) calendar Days of being notified at no additional to cost to GDOT or SRTA.

The DB Team has no traffic control requirements during Operational Performance Testing.

21.7.4 Acceptance

Final acceptance of the DB Team's Toll System Infrastructure work will not be given until the later of forty-five (45) calendar Days after Open to Tolling or all issues are resolved.

21.8 Maintenance and Warranty

The DB Team shall:

- Prior to Final Acceptance, maintain the Toll System Infrastructure
- Prior to Final Acceptance, provide a listing and all original documentation related to manufacturers maintenance and warranty agreements related to the Toll System Infrastructure.
- Prior to Final Acceptance, provide a listing of all maintenance and warranty items (including, item description; model number; serial number; location; maintenance or warranty term; manufacturer or provider contact information, and all original documentation in both electronic and hardcopy form) related to manufacturers maintenance and warranty agreements for all items provided as part of the Toll System Infrastructure.

Prior to Final Acceptance, register SRTA as the owner with all maintenance and warranty providers.

22 SOUND BARRIERS

22.1 General

No additional requirement

23 SUBMITTALS

23.1 General

No additional requirement

23.2 Design Submittals and Progress of Design Work

The DB Team shall provide Project Submittals detailed in Table 23-1: Master Submittal List below. Each required Submittal shall be delivered to GDOT in conformance of the review times provided below. The times provided are specifically for the review period required for GDOT to comment and GDOT to subsequently accept if all requirements of the DB Documents are met. Accuracy, completeness, and time spent to address GDOT comments are the responsibility of the DB Team. Not all submittals listed in Table 23-1 may be required for the Project and some submittals may be combined into a single submittal such as the management plans; DB Team shall coordinate with GDOT in determining if submittals may be omitted or combined.

ABBREVIATIONS FOR TABLE

ASC	Point File for Survey Data
AR	As Required
DTM	Digital Terrain Model
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
MP	Microsoft Project
MS	MicroStation File – Electronic
NA	Not Applicable
NTP	Notice to Proceed
PAS	Per Approved Schedule
PDF	Adobe PDF – One complete file and individual plan sheet files meets GDOT Electronic Plans Process

Table 23-1: Master Submittal List

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
Volume 1						
EXB 1	1	Schedule of Values	AR, PDF	1	Within 15 Days from NTP 1	14
Volume 2						
11	2	Design Exceptions or Design Variances	AR, PDF	1	Within 60 Days from NTP 1	60
Volume 3						
2	3	Schematic Plan of Project	AR, PDF	1	At time of proposal submission	NA
23	3	Construction Phasing Plan (coordinate with ROW Acquisition Plan)	AR, PDF	1	Within 30 Days from NTP 1	30
23	3	Submittal Schedule	AR, P6, PDF	1	Within 30 Days from NTP 1	30
23	3	Design Submittal Guide / Index	AR, PDF	1	Prior to first design submittal	14
23	3	Updates to Design Submittal Guide / Index	AR, PDF	1	Updates required with subsequent submittals	14
2	3	Interim (optional) Design Submittal(s)	AR, PDF	1	Per approved Submittal Schedule	14
23	3	Design and Construction Quality Records	AR, PDF	1	Always auditable; Submit at project completion	NA
2	3	Initial Project Design Data Book	AR, HC, PDF	3, 1	Within 30 Days from NTP 1	30
2	3	Updates to Project Design Data Book (Preliminary Plan Submittal)	AR, HC, PDF	1, 1	Include with Preliminary Plans Submittal	30
2	3	Updates to Project Design Data Book (Interim Design and other Design Submittals)	AR, HC, PDF	1, 1	Include with Design Submittal	14
2	3	Updates to Project Design Data Book (Final Plans Submittal)	AR, HC, PDF	1, 1	Include with Final Plans Submittal	45
2	3	Updates to Project Design Data Book	AR, HC, PDF	1, 1	Include with Plan Revisions During Construction	14

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
		(Plan Revisions During Construction)				
2	3	Final Project Design Data Book	AR, HC, PDF	3, 1	Include with Record Drawings (As-Built Plans) Submittal	14
23	3	Design Review meeting minutes	AR, PDF	1	within 7 days of Design Review meetings	7
Management Plans						
2	3	<i>Project Management Plan and any updates</i>	<i>AR, PDF</i>	<i>1</i>	<i>See Section 2 of Volume 3</i>	<i>60</i>
2	3	Design Quality Management Plan	AR, PDF	1	Within 30 Days from NTP 1	30
2	3	Construction Quality Management Plan	AR, PDF	1	See Section 2 of Volume 3	30
2	3	Safety Plan	AR, PDF	1	See Section 2 of Volume 3	30
2	3	Quality Management Plan	AR, PDF	1	Within 30 Days from NTP 1	30
2	3	Monthly Status Reports (includes cost, schedule, quality, status, etc.)	AR, PDF	1	Monthly	NA
2	3	DB Team Internal Quality Audits	AR, PDF	1	As needed	NA
2	3	DB Team Non-Conformance Reports	AR, PDF	1	As needed	NA
3	3	GDOT–DB Team Communications Plan	AR, PDF	1	Within 30 Days from NTP 1	30
3	3	DB Team Input for Public Information and Communications Plan (PICP)	AR, PDF	1	within 10 Days of Receipt from GDOT	14
3	3	DB Team Reviews of Public Information Materials	AR, PDF	1	As needed	14
3	3	Public Information and Communication Report	AR, PDF	1	Monthly	NA
3	3	Development Assistance for Project -Related Information for Project Website	AR, PDF	1	As needed	NA
Schedules						
2	3	Preliminary Baseline Schedule	AR, HS, P6, PDF	1, 3, 1	With Proposal	NA
2	3	120 Day Schedule	HC, P6, PDF	3, 1, 1	NTP 1+14 days, monthly until Project Baseline is Accepted	14
2	3	Project Baseline Schedule	AR, P6, PDF	1, 3, 1, 1	Within 90 Days from NTP 1	30
2	3	Revisions to Project Baseline Schedule	AR, P6, PDF	1, 3, 1, 1	As required	30

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
2	3	Monthly Schedule Update	AR, P6, PDF	1, 1, 1	Monthly	7
Existing Infrastructure						
2	3	Construction Maintenance Limits Plan	AR, PDF	1	Within 150 Days from NTP 1	30
2	3	Pre-Construction Photos and Videos	AR, PDF	1	Within 180 Days from NTP 1, prior to construction	30
Environmental						
4	3	GDOT - Led Governmental Approvals	AR, PDF	1	As needed, per the approved Submittal Schedule	Table 4-1
4	3	Environmental Management System (EMS)	AR, PDF	1	See Section 4 of Volume 3	30
4	3	Environmental Compliance and Mitigation Plan (ECMP)	AR, PDF	1	See Section 4 of Volume 3	30
4	3	Environmental Protection Training Plan (EPTP)	AR, PDF	1	See Section 4 of Volume 3	30
4	3	Hazardous Materials Management Plan (HMMP)	AR, PDF	1	See Section 4 of Volume 3	30
4	3	Environmental Communication Plan (CP)	AR, PDF	1	See Section 4 of Volume 3	30
4	3	Construction Monitoring Plan (CMP)	AR, PDF	1	See Section 4 of Volume 3	30
4	3	UST and Hazardous Waste Site Investigation Report	AR, PDF	1	See Section 4 of Volume 3	30
4	3	Section 404, CWA, permit	AR, PDF	1	**	Table 4-1
4	3	Water Quality Certification (concurrently with the USACE Nationwide Permit)	AR, PDF	1	**	Table 4-1
4	3	Applications to Regulatory Agencies, Application revisions, supplements	AR, PDF	1	As needed	***
Utilities						
6	3	Supplemental verification of Overhead/Subsurface Utility Engineering (SUE) Investigations - QL-B	AR, MS PDF	1	NTP (1) + 45 Calendar Days (Or as Determined by State Subsurface Utilities Engineer at the SUE Kick-Off meeting which is concurrent with the first utility coordination meeting)	NA
6	3	SUE Utility Impact Analysis "UIA"	AR, PDF	1	NTP 1 + 120 Calendar Days (Or as Determined by State Subsurface	NA

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
					Utilities Engineer at the SUE Kick-Off meeting which is concurrent with the first utility coordination meeting)	
6	3	Overhead/Subsurface Utility Engineering (SUE) Investigations - QL-A	AR,MS,PDF	Plans: 2 for each Utility Owner +3 for Dept. and MS files	UIA + 45 Calendar Days	NA
6	3	Overhead/Subsurface Utilities Engineering (SUE) Information to Utilities for Review (URPN Letter 1a - SUE Submit to Utility Companies Revise)	FS,HS,PDF, MS	Plans: 2 for each Utility Owner +3 for Dept. and MS files	NTP 1 + 5 Calendar Days (Or as Determined by District Utilities Engineer at SUE Kick-Off meeting)	5 days for Dept. + 30 days for each Utility Owner
6	3	Relocated Utility Plans (URPN Letter 2 - 2nd Submission Letter (Existing and Proposed))	FS,HS,PDF, MS	3, 1	Concurrently w/ Accepted SUE Verification by Utility Owner	5 days for Dept. + 90 days for each Utility Owner
6	3	Utility Retention Request	AR, PDF	1	As needed	14
6	3	Preliminary Utility Status Report (URPN Letter 6 - Notice to Proceed with Permit)	HC, PDF	Agreement s: 3 hard	NTP 1 + 180 Days Concurrently w/ Accepted Relocated Utility Plans	10- days +

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
				copy, 1 electronic pdf Plans: 2 for each Utility Owner + 3 for Dept. and MS files		5 days
6	3	Utility Plans/Agreements (Utility NTP Letter)	Plans/ Agreements HS,PDF,MS	1, 3, 1, 1		Agreeme nts: 30 days for Dept. + 60 days for each Utility Owner Plans: 30 days
6	3	Utility A/O Claims of Real Property Interests	AR, PDF	1	See Section 6 of Volume 3	14
6	3	Utility Adjustment Field Modification Procedure	AR, PDF	1	Prior to submittal of any Utility Work Plan	14
6	3	Utility As-Built Plans	FS, HS, PDF, MS	1	Concurrently w/Accepted Construction As-Built Plans	Plans: 30 days Departm ent 30 days for Utility Owners

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
6	3	All Utility Meeting Minutes	AR, PDF	1	Within 7 days of Utility Meeting	7
Right of Way						
7	3	ROW Acquisition Plan (coordinate with Construction Phasing Plan)	AR, PDF	1	Within 30 Days from NTP 1, Update Quarterly	30
7	3	ROW plans approval GDOT/FHWA	AR, HS, PDF	3, 1	Within 60 Days from NTP 1	45
7	3	Relocation benefits package check review	AR, PDF	1	Per the approved Submittal Schedule	****
7	3	Negotiation settlement amount approval	AR, PDF	1	Per the approved Submittal Schedule	15
7	3	Administrative Appeals Hearings	AR, PDF	1	As needed	****
7	3	Review of Condemnation Petition	AR, PDF	1	As needed	****
7	3	Parcel Acquisition Packages (plat, appraisal, legal description, etc.)	AR, PDF	1	Per the approved Submittal Schedule, 10 Max	14
7	3	Facility ROW Surveying and Mapping	AR, PDF	1	Per the approved Submittal Schedule	14
7	3	Revisions to Existing and Proposed ROW Plans	AR, PDF	1	See Section 7 of Volume 3	30
7, 10	3	Demolition and Abandonment Plan	AR, PDF	1	Within 180 Days from NTP 1, prior to construction	30
Geotechnical						
8	3	Geotechnical Reports	AR, PDF	1	See Section 8 of Volume 3	30
8	3	Soils Reports	AR, PDF	1	See Section 8 of Volume 3	30
23	3	WFI (Wall Foundation Investigation)	AR, PDF	1	**	30
23	3	BFI (Bridge Foundation Investigation)	AR, PDF	1	**	30
8	3	Pavement Evaluation Report	AR, PDF	1	See Section 8 of Volume 3	30
8	3	Blasting Plan	AR, PDF	1	As needed	30
8	3	Pavement Design Reports	AR, PDF	1	See Section 8 of Volume 3	30
Survey						
9	3	Survey Control Package	AR, ASC, PDF	1	Per the approved Submittal Schedule	30
9	3	Property Owner Notification Letters	AR, PDF	1	As needed	10
9	3	Bound Field Notes	AR, PDF	1	Prior to Project Completion	14

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
9	3	Topographic Mapping	AR, DTM, PDF	1	See Section 9 of Volume 3	14
Grading/Roadway						
10, 11	3	Preliminary Grading/Roadway Plans (60%)	AR, PDF	1	Per the approved Submittal Schedule	14
10, 11	3	Final Grading/Roadway Plans (100%)	AR, PDF	1	Per the approved Submittal Schedule	14
11	3	Vibration Control Plan	AR, PDF	1	See Section 11 of Volume 3	14
11	3	Technical Data For Longitudinal Emergency Access Gate System	AR, PDF	1	See Section 11 of Volume 3	14
11	3	Emergency access configuration/interval	AR, PDF	1	Per the approved Submittal Schedule	14
Lighting/Electric/Power						
11,17,21	3	Preliminary Lighting/Electrical Plans (60%)	AR, PDF	1	Per the approved Submittal Schedule	14
11,17,21	3	Final Lighting/Electrical Plans (100%)	AR, PDF	1	Per the approved Submittal Schedule	14
11	3	Lighting Inventory Information	AR, PDF	1	See Section 11 of Volume 3	30
11	3	Lighting Studies / Calculations	AR, PDF	1	See Section 11 of Volume 3	30
11	3	Third Party Requests for Lighting	AR, PDF	1	See Section 11 of Volume 3	30
11,17,21	3	Electrical Power Calculations	AR, PDF	1	See Section 17 of Volume 3	14
17,21	3	Electrical System Operations and Maintenance Manuals	AR, PDF	1	See Section 17 of Volume 3	14
17,21	3	Electrical System Training Plan	AR, PDF	1	See Section 17 of Volume 3	14
11,17,21	3	Electrical Design Voltage Drop Calculations	AR, PDF	1	See Section 17 of Volume 3	14
Drainage						
12	3	Drainage Design Report (Phased)	AR, PDF	1	Per the approved Submittal Schedule	30
12	2	Storm Sewer Drainage Report(s)	AR, PDF	1	Per the approved Submittal Schedule	14
12	3	Annual Outfall Inspection Report	AR, PDF	1	Within 30 days of Annual DB Team Inspection	30
12	3	Post-Construction Evaluation Report	AR, PDF	1	See Section 12 of Volume 3	30
Structures/Bridges						
13	3	Operating and Inventory Ratings for each structure	AR, PDF	1	Per the approved Submittal Schedule	14

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
13	3	Corridor Structure Type Study Report	AR, PDF	1	Within 30 days of NTP 1	30
13	3	Preliminary Bridge Layouts	AR, FS, HS, PDF	2, 6, 1	**	14
13	3	Preliminary Wall Layouts	AR, FS, HS, PDF	2, 6, 1	**	14
13	3	Final Bridge Plans	AR, FS, HS, PDF	2, 6, 1	**	30
13	3	Final Wall Plans	AR, FS, HS, PDF	2, 6, 1	**	30
Rail						
14	3	Draft RR Agreement(s)	AR, PDF	1	Prior to submission to RR - for GDOT comment	14
14	3	Final RR Agreement(s)	AR, PDF	1	See Section 14 of Volume 3	Per RR
14	3	RR Right of Entry Agreement(s)	AR, PDF	1	Prior to DB Team entry on/impact to RR ROW	14
14	3	All Documents/Correspondence Submitted to RR(s)	AR, PDF	1	See Section 14 of Volume 3	14
14	3	RR Shoring Plans	AR, PDF	1	See Section 14 of Volume 3	14
14	3	RR Demolition, Erection, Hoisting Plan	AR, PDF	1	See Section 14 of Volume 3	14
14	3	RR Insurance Policies	AR, PDF	1	See Section 14 of Volume 3	NA
Signing, Pavement Marking and Signalization						
16	3	Preliminary Signing & Marking, Signal Plans (per phase)	AR, FS, HS, PDF	2, 6, 1	Per the approved Submittal Schedule	45
16	3	Final Signing & Marking, Signal Plans	AR, FS, HS, PDF	2, 6, 1	Per the approved Submittal Schedule	45
16	3	Preliminary Permanent Signing Unveiling Plan	AR, PDF	1	120 Days prior to open to Traffic	21
16	3	Final Permanent Signing Unveiling Plan	AR, PDF	1	60 Days prior to open to Traffic	14
16	3	Traffic Signal Permitting /Engineering Study (per phase)	AR, PDF	1	Per the approved Submittal Schedule	30
16	3	New Sign requests	AR, PDF	1	As needed	14

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
16	3	Overhead Sign Support Structures Concept Plans	AR, PDF	1	Per the approved Submittal Schedule	14
16	3	Overhead Sign Support Structures Final Plans	AR, PDF	1	Per the approved Submittal Schedule	14
16	3	Traffic Signal Timing Plans	AR, PDF	1	Per the approved Submittal Schedule	14
16	3	Traffic Signal O & M Documentation	AR, PDF	1	Per the approved Submittal Schedule	14
ITS, Network, Toll and Gates						
17/21	3	ITS & Toll System Design Workshop	AR, PDF	1	Following approved Preliminary Grading/Roadway Plans (60%), prior to Prototype ITS design efforts	NA
17	3	Prototype Preliminary Toll-Related ITS and ITS Plans	AR, PDF	1	Per the approved Submittal Schedule	21
17	3	Prototype Final Toll-Related ITS and ITS Plans	AR, PDF	1	Per the approved Submittal Schedule	21
17	3	Preliminary Toll-Related ITS and ITS Plans	AR, FS, HS, PDF	2, 6, 1	Per the approved Submittal Schedule	30
17	3	Final Toll-Related ITS and ITS Plans	AR, FS, HS, PDF	2, 6, 1	Per the approved Submittal Schedule	30
17	3	3D Visualization (ITS) Model	AR,	1	Per the approved Submittal Schedule Prior to Preliminary Plans	30
17/21	3	Site Acceptance Checklist (Initial)	AR, PDF	1	Per the approved Submittal Schedule With Final Design Plan Delivery	30
17	3	ITS Maintenance and Repair Plan	AR, PDF	1	30 Days from NTP 1	30
17	3	ITS Responsive and Diagnostic Repair Plan	AR, PDF	1	30 Days from NTP 1	30
17	3	Fiber Duct Validation Report	AR, PDF	1	90 Days from NTP 1	NA
17/21	3	Operational Performance Test Plan & Procedures, including Access Control System	AR, PDF	1	972 Days from NTP 1	60
17	3	Installation and Integration Plan	AR, PDF	1	972 Days from NTP 1	90
17/21	3	Site Acceptance Checklist (Final)	AR, PDF	1	1032 Days from NTP 1	14
17	3	ITS Devices, Systems, Documentation for GDOT and SRTA Integration Efforts	AR, PDF	1	365 Days prior to open to Tolling	60
17	3	Address for WAN Communication Hub(s)	AR, PDF	1	90 Days prior to Turnover to Toll SI	14

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
17	3	Operational Performance Test Report - Part I (all toll and toll-related ITS sites)	AR, PDF	1	45 Days prior to Turnover to Toll SI	30
17	3	User Manuals	AR, PDF	1	1322 Days from NTP 1	60
17	3	Training Plan	AR, PDF	1	90 Days prior to End-to-End Testing	45
17	3	Operational Performance Test Report - Part II (all other ITS sites)	AR, PDF	1	45 Days Prior to End-to-End Testing	30
8,21	3	Toll Zone Pavement Design	AR, PDF	1	**	30
17	3	Final As-Builts	AR, FS, HS, PDF	2, 6, 1	30 Days After to Substantial Completion	60
17	3	Manufacturer Equipment Documentation/Manufacturer Warranties	AR, PDF	1	256 Days prior to Substantial Completion	14
Traffic Control						
18	3	Transportation Management Plan	AR, PDF	1	Within 120 Days from NTP 1	30
18	3	Traffic Control Plans (each Phase)	AR, PDF	1	Per the approved Submittal Schedule	14
18	3	GP lane closure or reduced widths	AR, PDF	1	Must also meet PICP for public coordination timing	30
Maintenance During the Design-Build Period						
2,23	3	Construction Limits Maintenance Phasing Plan	AR, FS, HS, PDF	2, 6, 1	Prior to given Phase, approval before construction	14
Tolling						
17/21	3	Site Acceptance Checklist (Initial)	AR, PDF	1	Per the approved Submittal Schedule With Final Design Plan Delivery	30
21	3	FCC Application Information	AR, PDF	1	Per the approved Submitted Schedule	30
21	3	Software Development and Integration Plan - (Phase II submittal-see Section 21)	AR, PDF	1	702 Days from NTP 1	30
17/21	3	Site Acceptance Checklist (Final)	AR, PDF	1	1032 Days from NTP 1	14
21	3	Final As-Builts	AR, PDF	1	39 Days prior to Substantial Completion	60
Additional Submittals						
23	3	Preliminary Plans (60%) (complete set)	AR, FS, HS,	6, 10, 1	**	30

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
			PDF			
23	3	Interim Design	AR, FS, HS, PDF	6, 10, 1	**	30
23	3	Final Plans (100%) per Construction Phase (complete set)	AR, FS, HS, PDF	6, 10, 1	**	45
23	3	Notice of Intent (NOI) with final/signed Erosion Control Plans	AR, PDF	1	**	14
23	3	Shop Drawings	AR, PDF	1	**	14
23	3	Temporary Works - where public safety may be affected	AR, PDF	1	**	14
23	3	Plan Revisions During Construction	AR, PDF	1	**	14
23	3	Record Drawings (As-Built Plans) per Construction Phase	AR, FS, HS, PDF	6, 10, 1	**	14
23	3	Final Revised Right of Way Plans per Construction Phase	AR, FS, HS, PDF	6, 10, 1	**	30
23	3	Drainage Plans	AR, FS, HS, PDF	2, 6, 1	**	30
23	3	Hydraulic and Hydrology Report	AR, PDF	1	**	30
23	3	Pavement Joints and Elevations	AR, PDF	1	**	14
23	3	Restoration/Mitigation	AR, PDF	1	**	14
23	3	Grading Plans	AR, FS, HS, PDF	2, 6, 1	**	14
23	3	Landscaping and Permanent Erosion Control Plans	AR, FS, HS, PDF	2, 6, 1	**	14
23	3	Temporary Erosion Control Plans	AR, FS, HS, PDF	2, 6, 1	**	14
23	3	Intersection Design Studies	AR, PDF	1	**	14
23	3	Photo Metrics Plan	AR, FS, HS, PDF	2, 6, 1	**	30
23	3	Draft Design Specifications, Reports, Whitepapers, etc.	AR, PDF	1	**	14

Section	Volume	Submittal Item	Format	Quantity	Delivery Date	Review Period* (Days)
23	3	FinalDesign Specifications, Reports, Whitepapers, etc.	AR, PDF	1	**	14
23	3	Site observation compliance report	AR, PDF	1	See Section 23 of Volume 3	14
All	All	Meeting Minutes	AR, PDF	1		14

*Review period is the period required for the generation of comments or the review time to determine the sufficiency of the document and the state or status of the document per Section 23.3. Multiple review periods shall be planned for "Accepted by GDOT" status.

If a submittal is not listed the review time shall be 30 days.

** Based upon the accepted Baseline Schedule

*** Time of review will be based upon actual impact to project

**** See Technical Provisions

BOLDED and *Italicized* = requires FHWA review and approval

ABBREVIATIONS TABLE	
ASC	Point File for Survey Data
AR	As Required
DTM	Digital Terrain Model
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
MP	Microsoft Project
MS	MicroStation 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

23.2.1 Construction Phasing and Additional Submittal Requirements

No additional requirement

23.3 Submittals Process

No additional requirement

23.4 Shop Drawings and Temporary Works Submittals

No additional requirement

23.4.1 General

No additional requirement

23.4.2 Work Items Requiring Shop Drawings

No additional requirement

23.4.3 Schedule of Submittals

No additional requirement

23.4.4 Style, Numbering, and Material of Submittals

No additional requirement

23.4.5 Submittals and Copies

No additional requirements

23.4.6 Processing of Shop Drawings

No additional requirements

23.4.7 Other Requirements for Shop Drawings for Bridges

No additional requirements

23.4.8 Modifications on Construction

No additional requirements

23.5 As-Built Plans

No additional requirements

Georgia Department of Transportation

Technical Provisions For Design-Build Agreement P.I. No. XXXXXXXX

Project Name

VOLUME 2 ATTACHMENTS

Table of Contents

Attachment 6-1	<u>Utility Name</u> MOU
Attachment 6-2	<u>Utility Name</u> MOU
Attachment 6-3	<u>Utility Name</u> MOU
Attachment 6-4	<u>Utility Name</u> MOU
Attachment 6-5	<u>Utility Name</u> MOU

Georgia Department of Transportation

Technical Provisions

For

Design-Build Agreement

P.I. No. XXXXXXX

Project Name

Attachment 6-1

UTILITY NAME MOU