ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 0012628
Fulton County
GDOT District 7 - Metro Atlanta
Johns Creek Adaptive Signal Control &
Backup Power

OFFICE Design Policy & Support

DATE April 23, 2013

FROM for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT **APPROVED CONCEPT REPORT**

Attached is the approved Concept Report for the above subject project.

Attachment

DISTRIBUTION:

Bobby Hilliard, Program Control Administrator
Genetha Rice-Singleton, State Program Delivery Engineer
Glenn Bowman, State Environmental Administrator
Cindy VanDyke, State Transportation Planning Administrator
Kathy Zahul, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Mike Bolden, State Utilities Engineer
Ken Thompson, Statewide Location Bureau Chief
Rachel Brown, District Engineer
Scott Lee, District Preconstruction Engineer
Jonathan Walker, District Utilities Engineer
Cynthia Burney, Project Manager
BOARD MEMBER - 6th Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
LIMITED SCOPE PROJECT CONCEPT REPORT

Project Type:	ITS	P.I. Number:	0012628
GDOT District:	7	County:	Fulton
Federal Route Number:	N/A	State Route Number:	SR141 and SR120

Project Description: **JOHNS CREEK ADAPTIVE SIGNAL CONTROL & BACKUP POWER**
The project will install backup power at all the traffic signal cabinets within the City's limits and adaptive signal control on SR141/Meldock Bridge Road, McGinnis Ferry Road and State Bridge Road.

Submitted for approval:

Tom Black, Director of Public Works - City of Johns Creek — DATE 3/29/2013

Tom Udell, P.E., Traffic Engineer - City of Johns Creek — DATE 3/29/2013

Cynthia Burney, P.E., GDOT Project Manager — DATE 1 Apr 13

State Program Delivery Engineer — DATE 4/1/2013

Recommendation for approval:

* Glenn Bowman/KLP — State Environmental Administrator — DATE 4-2-13

* Recommendation on file

The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Plan (RTP) and/or the State Transportation Improvement Program (STIP).

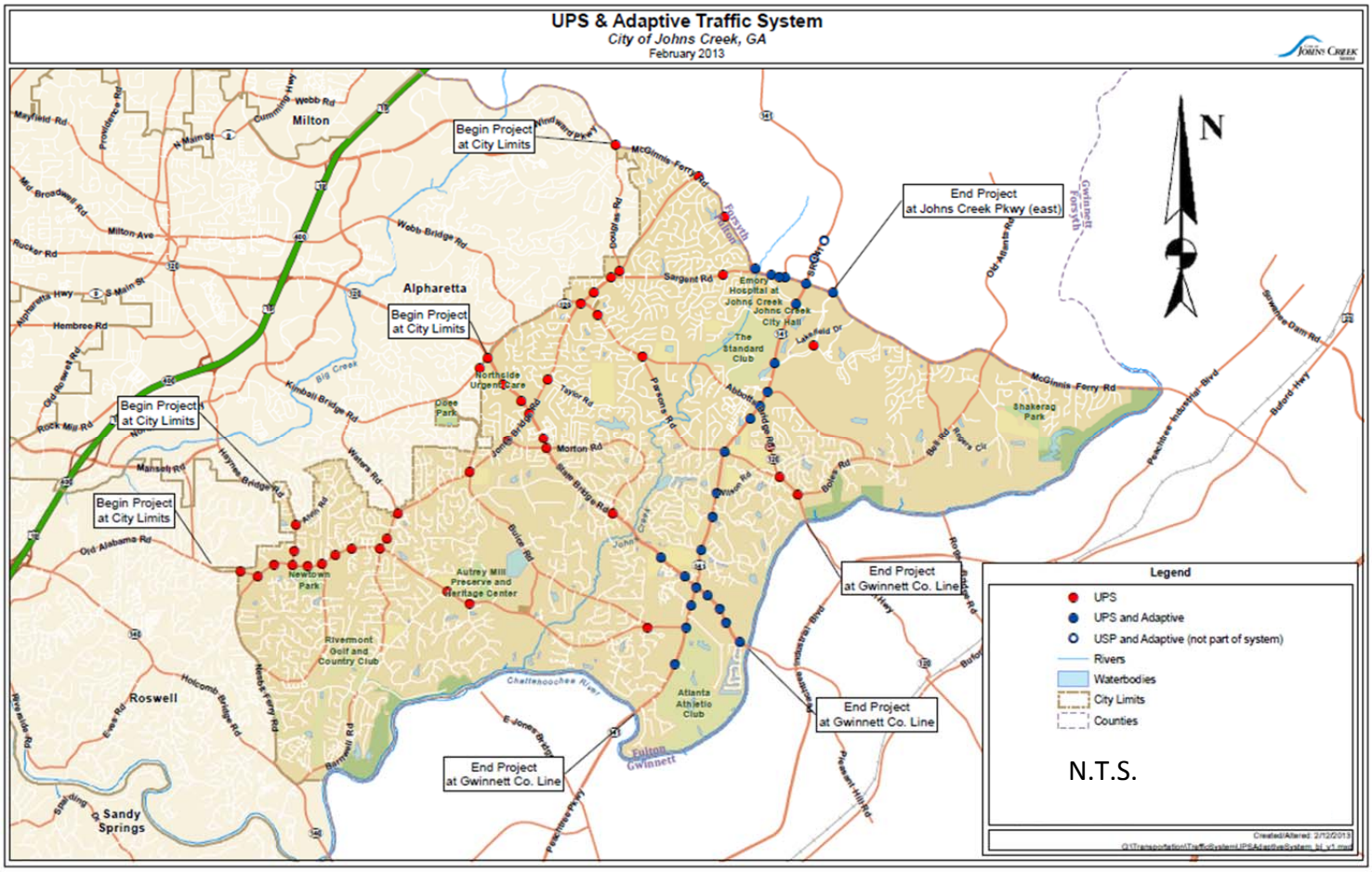
State Transportation Planning Administrator — DATE 4-3-13

Approval:

Concur: GDOT Director of Engineering — DATE 4/16/13

Approve: GDOT Chief Engineer — DATE 4-22-13

PROJECT LOCATION



Uninterupptable Power Supply Installation Locations:

1. Abbotts Bridge Road @ Boles Road
2. Abbotts Bridge Road @ Sweet Creek Road
3. Abbotts Bridge Road @ Northview High School
4. Abbotts Bridge Road @ Parsons Road
5. Abbotts Bridge Road @ Addison Way
6. Abbotts Bridge Road @ Jones Bridge Road
7. Haynes Bridge Road @ Alvin Road
8. Haynes Bridge Road @ Publix Shopping Center
9. Jones Bridge Road @ Promenade Shopping Center
10. Jones Bridge Road @ Morton Road
11. Jones Bridge Road @ Waters Road
12. Jones Bridge Road @ Buice Road
13. Jones Bridge Road @ Taylor Road
14. Jones Bridge Road @ East Fox Court
15. Jones Bridge Road @ Sargent Road
16. Jones Bridge Road @ Douglas Road
17. Johns Creek Parway at Lakefield Drive
18. Kimball Bridge Road @ Ocee Elementary School
19. McGinnis Ferry Road @ Douglas Road
20. McGinnis Ferry Road @ Jones Bridge Road
21. McGinnis Ferry Road @ Seven Oaks Parkway
22. McGinnis Ferry Road @ Sargent Road
23. McGinnis Ferry Road @ Hospital Parkway
24. McGinnis Ferry Road @ Johns Creek Parkway West
25. McGinnis Ferry Road @ LA Fitness Driveway
26. McGinnis Ferry Road @ Johns Creek Parkway East
27. Medlock Bridge Road @ McGinnis Ferry Road
28. Medlock Bridge Road @ Hospital Parkway
29. Medlock Bridge Road @ Johns Creek Parkway
30. Medlock Bridge Road @ Bell Road
31. Medlock Bridge Road @ Abbotts Bridge Road
32. Medlock Bridge Road @ Skyway Drive
33. Medlock Bridge Road @ Parsons Road
34. Medlock Bridge Road @ Wilson Road
35. Medlock Bridge Road @ Medlock Bridge Parkway
36. Medlock Bridge Road @ St. Ives Country Club
37. Medlock Bridge Road @ State Bridge Road
38. Medlock Bridge Road @ Medlock Crossing Parkway
39. Medlock Bridge Road @ Old Alabama Road
40. Medlock Bridge Road @ Bobby Jones Drive
41. Old Alabama Road @ Buice Road
42. Old Alabama Road @ Country Club of the South/Hunts Pointe Drive
43. Old Alabama Road @ Autry Mill Middle School
44. Old Alabama Road @ Jones Bridge Road
45. Old Alabama Road @ Preston Oaks Drive/Breckenridge Close
46. Old Alabama Road @ Timberstone Road/Holy Redeemer Church
47. Old Alabama Road @ Brumbelow Road/Feather Sound Court
48. Old Alabama Road @ Newtown Park/Fire Station
49. Old Alabama Road @ Haynes Bridge Road/Rod Road
50. Old Alabama Road @ Kroger/Old Alabama Crossing Shopping Center
51. Old Alabama Road @ Nesbit Ferry Road/Mt. Pisgah School
52. Old Alabama Road @ Mt. Pisgah Church West
53. Sargent Road @ Findley Road
54. State Bridge Road @ St. Georgian Place
55. State Bridge Road @ Parkway Baptist Church
56. State Bridge Road @ Home Depot
57. State Bridge Road @ Publix Shopping Center
58. State Bridge Road @ Medlock Crossing Parkway
59. State Bridge Road @ State Bridge Elementary School
60. State Bridge Road @ Twingate Drive
61. State Bridge Road @ Morton Road
62. State Bridge Road @ Abberley Township
63. State Bridge Road @ Jones Bridge Road
64. State Bridge Road @ Kroger/Saddle Brook Shopping Center
65. State Bridge Road @ Ocee Elementary School
66. State Bridge Road @ Kimball Bridge Road

Adaptive Traffic Control Installation Locations:

1. McGinnis Ferry Road @ Sargent Road
2. McGinnis Ferry Road @ Hospital Parkway
3. McGinnis Ferry Road @ Johns Creek Parkway West
4. McGinnis Ferry Road @ LA Fitness Driveway
5. McGinnis Ferry Road @ Johns Creek Parkway East
6. Medlock Bridge Road @ McGinnis Ferry Road
7. Medlock Bridge Road @ Hospital Parkway
8. Medlock Bridge Road @ Johns Creek Parkway
9. Medlock Bridge Road @ Bell Road
10. Medlock Bridge Road @ Abbotts Bridge Road
11. Medlock Bridge Road @ Skyway Drive
12. Medlock Bridge Road @ Parsons Road
13. Medlock Bridge Road @ Wilson Road
14. Medlock Bridge Road @ Medlock Bridge Parkway
15. Medlock Bridge Road @ St. Ives Country Club
16. Medlock Bridge Road @ State Bridge Road
17. Medlock Bridge Road @ Medlock Crossing Parkway
18. Medlock Bridge Road @ Old Alabama Road
19. Medlock Bridge Road @ Bobby Jones Drive
20. State Bridge Road @ St. Georgian Place
21. State Bridge Road @ Parkway Baptist Church
22. State Bridge Road @ Home Depot Driveway
23. State Bridge Road @ Publix Shopping center
24. State Bridge Road @ Medlock Crossing Parkway
25. State Bridge Road @ State Bridge Elementary School

PLANNING & BACKGROUND DATA

Project Justification Statement: The purpose of this project is to improve the operation and reliability of the traffic signals in the City of Johns Creek along the following corridors; SR141/Medlock Bridge Road, SR120/Abbotts Bridge Road/Kimball Bridge Road, McGinnis Ferry Road, State Bridge Road, Jones Bridge Road, Old Alabama Road, Sargent Road, Johns Creek Parkway and Haynes Bridge Road.

Description of the proposed project:
The project will install backup power at 66 existing traffic signal cabinets within the Johns Creek City limits as well as an adaptive traffic signal control system in 25 existing traffic signal cabinets on SR141/Meldock Bridge Road, McGinnis Ferry Road and State Bridge Road.

Federal Oversight: ☒ Exempt ☐ State Funded ☐ Other

MPO: Atlanta Regional Commission (ARC) MPO Project ID FN-281C

Regional Commission: Atlanta Regional Commission RC Project ID FN-281C

Congressional District(s): 6

Projected Traffic: *ADT or AADT*
Current Year (2013): N/A Open Year (2013): N/A Design Year (2013): N/A
Traffic Projections Performed by: N/A

Functional Classification (Mainline): Not Applicable

Is this a 3R (Resurfacing, Restoration, & Rehabilitation) Project? ☒ No ☐ Yes

Will Context Sensitive Solutions procedures be utilized? ☒ No ☐ Yes

DESIGN AND STRUCTURAL DATA – N/A

Major Structures: N/A

Major Interchanges/Intersections:

- McGinnis Ferry Road at Jones Bridge Road
- SR120/Abbotts Bridge Road at Jones Bridge Road
- SR 141/Medlock Bridge Road at Old Alabama Road
- SR 141/Medlock Bridge Road at State Bridge Road
- SR 141/Medlock Bridge Road at SR120/Abbotts Bridge Road
- SR 141/Medlock Bridge Road at McGinnis Ferry Road
- State Bridge Road at Jones Bridge Road
- Old Alabama Road at Nesbit Ferry Road
- Old Alabama Road at Haynes Bridge Road

Old Alabama Road at Jones Bridge Road

Utility Involvements: N/A. Backup Power and Adaptive Signal Control will be installed in existing signal cabinets.

Public Interest Determination Policy and Procedure recommended (Utilities)? ☒ No ☐ Yes

SUE Required: ☒ No ☐ Yes

Railroad Involvement: N/A

Complete Streets - Bicycle, Pedestrian, and/or Transit Warrants:

Warrants met: ☒ None ☐ Bicycle ☐ Pedestrian ☐ Transit

Right-of-Way:

Required Right-of-Way anticipated: ☒ No ☐ Yes ☐ Undetermined

Easements anticipated: ☒ None ☐ Temporary ☐ Permanent ☐ Utility ☐ Other

Anticipated number of impacted parcels:	0
Displacements anticipated: Total:	
Businesses:	
Residences:	
Other:	

Transportation Management Plan [TMP] Required: ☒ No ☐ Yes

If Yes: Project classified as: ☐ Non-Significant ☐ Significant

TMP Components Anticipated: ☐ TTC ☐ TO ☐ PI

Design Exceptions to FHWA/AASHTO controlling criteria anticipated: None

Design Variances to GDOT Standard Criteria anticipated: None

ENVIRONMENTAL DATA

Anticipated Environmental Document:

GEPA: ☐ **NEPA:** ☐ CE ☒ PCE

Project Air Quality:

Is the project located in a PM 2.5 Non-attainment area? ☐ No ☒ Yes

Is the project located in an Ozone Non-attainment area? ☐ No ☒ Yes

Is a Carbon Monoxide hotspot analysis required? ☒ No ☐ Yes

MS4 Compliance – Is the project located in an MS4 area? ☐ No ☒ Yes

Environmental Permits/Variances/Commitments/Coordination anticipated: None

NEPA/GEPA Comments & Information: None since improvements will be installed in existing facilities.

PROJECT RESPONSIBILITIES

Project Activities:

Project Activity	Party Responsible for Performing Task(s)
Concept Development	City of Johns Creek
Design	City of Johns Creek
Right-of-Way Acquisition	None
Utility Relocation	None
Letting to Contract	City of Johns Creek
Construction Supervision	City of Johns Creek & Georgia Department of Transportation
Providing Material Pits	None
Providing Detours	None
Environmental Studies, Documents, and Permits	Georgia Department of Transportation
Environmental Mitigation	None
Construction Inspection & Materials Testing	City of Johns Creek

Lighting required: ☒ No ☐ Yes

Other projects in the area:

- Old Alabama Road improvements between Haynes Bridge Road and Nesbit Ferry Road, Local Project
- CR 119/State Bridge Road from Kimball Bridge Road to SR 141/Medlock Bridge Road (Johns Creek Median Landscaping Project) - Project ID: PI 0010653
- Jones Bridge Road widening between Waters Road and Old Alabama Road/Jones Bridge Road at Old Alabama Road Intersection Improvement, Local Project
- Jones Bridge Sidewalk project between Buice Road and Morton Road, Local Project
- CR 65/Jones Bridge Road @ CR 117/Morton Road in Johns Creek - Project ID: PI 0006907
- CR 65/Jones Bridge Road @ CR 103/Waters Road in Johns Creek - Project ID: PI 0006908
- CR 65/Jones Bridge Road @ CR 111/Buice Road in Johns Creek - Project ID: PI 0006910
- Jones Bridge Road Widening between Taylor Road and SR 120/Abbotts Bridge Road, Local Project
- Jones Bridge Road at E. Fox Northbound, Local Project
- SR 120 FM CR 78/Webb Bridge Way to SR 141 – Phase II - Project ID: PI 0007310
- SR 120; Mcginnis Ferry Rd &State Bridge Rd - ITS Sys Expansion - Project ID: PI 0012626
- Johns Creek City Hall TCC Expansion - Project ID: PI 0012627
- SR 141 FM Old Alabama Rd to State Bridge Rd – Connection Study - Project ID: PI 0012632
- SR 141; Jones Bridge;Old Alabama;McGinnis &Haynes Bridge-ITS - Project ID: PI 0010328
- SR 141 FM CR 5466/Triangle Drive to CR 119/State Bridge Road - Project ID: PI 0010875
- SR120 FM CR119/State Bridge Road to CR 65/Jones Bridge Road - Project ID: PI 0010418

- CR 72/Bell Road @ Cauley Creek - Project ID: PI 0008750
- CR 79/Parsons Road @ Johns Creek - Project ID: PI 0008751
- SR 3 @ 13 LOC; SR 8 @ 14 LOC; SR 42 @ 5 LOC & SR 141 @ 6 LOC - Project ID: PI 0010359
- Old Alabama Rd FM CR 111/Buice Rd to SR 141/Medlock BRG Rd - Project ID: PI 752660
- SR 120 FM Parsons Rd/Fulton to Peachtree Ind Blvd/Gwinnett - Project ID: PI 721000

Other coordination to date: Federal Highway Administration – Resource Center (Operations Team)

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
By Whom	City of Johns Creek	None	None	City of Johns Creek & FHWA	None	
$ Amount	0	0	0	449,198.40	0	449,198.40
Date of Estimate	4/11/2013	4/11/2013	4/11/2013	4/11/2013	4/11/2013	

*CST Cost includes: Construction, Engineering and Inspection, and Liquid AC Cost Adjustment.

ALTERNATIVES

Preferred Alternative:			
Estimated Property Impacts:	**$0**	**Estimated Total Cost:**	**$449,198.40**
Estimated ROW Cost:	**$0**	**Estimated CST Time:**	**12 months**
Rationale:			

No-Build Alternative:			
Estimated Property Impacts:	**$0**	**Estimated Total Cost:**	**$0**
Estimated ROW Cost:	**$0**	**Estimated CST Time:**	**0 Months**
Rationale:			

Alternative 1: N/A			
Estimated Property Impacts:		**Estimated Total Cost:**	
Estimated ROW Cost:		**Estimated CST Time:**	
Rationale			

Comments/additional information: None

Attachments:

1. Systems Engineering Report
2. Detailed Estimate
3. Project Framework Agreement

City of Johns Creek

Adaptive Signal Control Technology
Systems Engineering Report

Chapter 1: Scope

1.1 Document Purpose and Scope

The scope of this document covers the consideration of adaptive signal control technology (ASCT) for use within the City of Johns Creek. This document describes and provides a rationale for the expected operations of the proposed adaptive system. It documents the outcome of stakeholder discussions and consensus building that has been undertaken to ensure that the system that is implemented is operationally feasible and has the support of stakeholders.

The intended audience of this document includes: system operators, administrators, decision-makers, elected officials, other nontechnical readers and other stakeholders who will share the operation of the system or be directly affected by it.

1.2 Project Purpose and Scope

An adaptive traffic signal system is one in which some or all the signal timing parameters are modified in response to changes in the traffic conditions, in real time. The purpose of providing adaptive control in this area is to overcome local deficiencies in the current signal management system. Traffic Responsive (TR) is current running on SR141/Medlock Bridge Road which is an improvement over time of day however it is globally applied. ASCT is desired to add operational flexibility to modify splits and offset to address issues associated with variability in demand.

This project will add adaptive capabilities to the existing coordinated signal system. The adaptive capability will be deployed over multiple phases with initial phase implemented on 25 intersections on SR141/Medlock Bridge Road, State Bridge Road and McGinnis Ferry Road. The potential to access the adaptive capability will be provided to City of Johns Creek, Georgia Department of Transportation (GDOT), Forsyth County and Gwinnett County. The adaptive system will be integrated with the city's Centracs Advanced Traffic Management System and be compatible with the Regional Tactics Server, maintained by GDOT.

1.3 Procurement

The ASCT system will be procured using a best value procurement process based on responses to a request for proposals. A detailed procurement plan will be prepared after the system requirements have been determined.

Chapter 2: Referenced Documents

The following documents have been used in the preparation of this Concept of Operations and stakeholder discussions. Some of these documents provide policy guidance for traffic signal operation in this area, some are standards with which the system must comply, while others report the conclusions of discussions, workshops and other research used to define the needs of the project and subsequently identify project requirements.

References Specific to the Adaptive Locations

- Concept of Operations for related agency/facility-specific systems (City of Johns Creek ITS Master Plan)- http://www.johnscreekga.gov/JCGA/media/pdf-pw/its-master-plan.pdf
- Centracs Operations Manual
- Studies identifying operational needs (RTOP Reports)
- Regional ITS Architecture documents (GDOT Statewide ITS Architecture / ARC ITS Architecture)
- North Fulton Comprehensive Transporatation Plan
- Atlanta Regional Commision - Transportation Improvement Programs (TIP)

Systems Engineering

- Model Systems Engineering Documents for ASCT FHWA-HOP-11-027
- “Systems Engineering Guidebook for ITS”, California Department of Transportation, Division of Research & Innovation, Version 3.0, <http://www.fhwa.dot.gov/cadiv/segb/>
- "Systems Engineering for Intelligent Transportation Systems, An Introduction for Transportation Professionals", <http://ops.fhwa.dot.gov/publications/seitsguide/index.htm>
- “Developing Functional Requirements for ITS Projects”, Mitretek Systems, April 2002
- "Developing and Using a Concept of Operations in Transportation Management System, FHWA TMC Pooled-Fund Study (http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=38&new=0
- NCHRP Synthesis 307: Systems Engineering Processes for Developing Traffic Signal Systems

Adaptive Signals

- NCHRP Synthesis 403: "Adaptive Traffic Control Systems: Domestic and Foreign State of Practice" (http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_403.pdf)
- ITS, Operations, Architecture, Other
- FHWA Rule 940, Federal Register / Vol. 66, No. 5 / Monday, January 8, 2001 / Rules and Regulations, DEPARTMENT OF TRANSPORTATION, Federal Highway Administration 23 CFR Parts 655 and 940, (FHWA Docket No. FHWA-99-5899] RIN 2125-AE65 Intelligent Transportation System Architecture and Standards

- Regional ITS Architecture Guidance Document; "Developing, Using, and Maintaining an ITS Architecture for your Region; National ITS Architecture Team; October, 2001

NTCIP

- NTCIP 1202 (Latest Version) Level 2

PROCUREMENT

- GDOT Procurement Guidelines
- NCHRP 560: <http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_560.pdf>
- Special Experimental Project 14 (SEP 14): <http://www.fhwa.dot.gov/programadmin/contracts/sep_a.cfm>
- The Road to Successful ITS Software Acquisition:<http://www.fhwa.dot.gov/publications/research/operations/its/98036/rdsuccessvol2.pdf>

Chapter 3: User-Oriented Operational Description

3.1 The Existing Situation

3.1.1 Network Characteristics

3.1.1.1 Arterial

The arterial has irregularly spaced signalized intersections, and there is no "natural" cycle length that allows two-way progression. During the peak periods, the cycle length is generally determined by the needs of one or more critical intersections. The cycle length required to service traffic at the critical intersection(s) is generally close to a "natural" cycle length.

3.1.1.3 Isolated intersection or Small Group

There is one critical intersection in the project area, and the timing of adjacent intersections mainly needs to accommodate progression for the platoons serviced by the critical intersection.

3.1.1.5 Jurisdictions

The signals on SR141/Medlock Bridge Road system are owned by GDOT and operated and maintained by City of Johns Creek however the signals on State Bridge Road and McGinnis Ferry Road are owned, operated and maintained by City of Johns Creek.

3.1.2 Traffic Characteristics

3.1.2.1 Overview

The traffic characteristics are illustrated in APPENDIX A: FIGURE 1.

3.1.2.2 Peak Periods

Traffic conditions vary during the commuter peaks. E.g., During early part of the AM peak period, traffic flows predominantly in the S/B direction to accommodate commuters from Forsyth County, then later in the period it becomes balanced to a N/B flow to accommodate commuters into Tech Parkway. School related traffic also contributes to variability during AM and PM peaks. During the PM peak periods heavy S/B flows occur from the northern city limit to State Bridge Road and heavy N/B flows from the southern city limit to State Bridge Road.

3.1.2.3 Business Hours

Business hours volumes in the two directions are balanced between the peaks. During the lunchtime period, there are minor peaks, as illustrated in APPENDIX A: FIGURE 1.

3.1.2.4 Evenings

During the evenings after the PM peak, the flows are balanced tapering to light traffic conditions.

3.1.2.5 Weekends

During the weekends, the flows are light in the mornings to heavy during the mid-day and evening hours. Sundays are relatively predictable in the mornings with two Mega-Churches generating heavy flows when services end. Multiple big box stores / retail traffic are located near State Bridge Road and McGinnis Ferry Road; attracting trips from within and outside of the city limits.

3.1.2.6 Events and Incidents

Heavily directional event traffic is experienced in this area with school traffic to and from two regional High Schools and two elementary schools. Heavily directional incident-related traffic is experienced in this area as SR 141 is an alternate to SR 400 to the north and I-285 to the south.

3.1.2.7 General

Queues often overflow from turn bays at Parsons Road during the PM peak, Medlock Bridge Parkway N/B in the AM and S/B in the PM and SR120/ Abbotts Bridge Road during both the AM and PM peaks. During some times of day particularly AM and PM peaks traffic along the arterial is predominantly through traffic. During off-peak periods the origin or destination of most traffic lies within the corridor or grid. There are significant turning movements onto and off the coordinated route at SR120/Abbotts Bridge, State Bridge and Old Alabama roads. Traffic conditions change quickly when incidents or congestion occur on SR 400 or I-285.

3.1.2.8 Future Traffic Conditions

A 700 home subdivision is planned on Bell Road East of SR141/Medlock Bridge Road. There are also planned widening projects on SR120/ Abbotts Bridge Road east of SR141/Medlock Bridge Road and McGinnis Ferry Road west of SR141.

3.1.3 Signal Grouping

While the signals are relatively close, the traffic conditions vary and sometimes they would be expected to be coordinated as one group, during special situations small sections may be coordinated separately from the arterial route to accommodate egress from business parks.

3.1.4 Land Use Characteristics

3.1.4.1 Existing Land Uses

SR 141 serves a mixture of land uses, including residential, office, commercial, retail, service trades, manufacturing, education (high school, elementary school), and provides a parallel route to a freeway SR 400.

3.1.4.2 Future Land Use Changes

A Development of Regional Impact; 700 home subdivision is planned on Bell Rd east of SR 141.

3.1.4.3 Pedestrians and Public Transit

This section describes the influence of pedestrians on the signal operation. Pedestrian phases are rarely called. At lower cycle lengths the pedestrian minimums are not included in the operation. This section describes the influence of transit on the signal operation. There is an Xpress bus line during AM and PM periods operating along the route on a twice per hour schedule.

3.1.4.5 Existing Architecture

The existing system architecture is illustrated in in Appendix A.

- FIGURE 2: TMC and workstations.
- FIGURE 3: Communications infrastructure (e.g., fiber optic cable, Ethernet communications),
- FIGURE 4: Detection locations and technology (e.g., video, loops or other technology; stop line, advance or mid-block detection zones)

3.2 Limitations of the Existing system

Traffic Responsive is currently being utilized 24/7 with a total of 9 time-of-day timing plans at 130, 150 and 180 second cycle lengths with directional and balanced bias. Currently these cycle lengths are effective; however static phase lengths and offsets do not accommodate variability in demand. The adaptive system would provide flexibility to accommodate variability to improve efficiency.

3.3 Proposed Improvements to the System

This section describes in broad terms the improvements that are desirable in order to address the limitations described above. The main improvements that are desired are:

- Recognize changes in traffic conditions and react quickly and automatically to accommodate those changes.
- More efficiently accommodate rail, emergency vehicles and transit vehicles and more quickly recover from preemption and priority.
- Improve the management of queues within the network.
- Improve the productivity of staff by automating many of the routine processes.
- Keep signal timing current rather than letting its efficiency deteriorate between periodic signal re-timing efforts.

3.4 Vision, Goals and Objectives for the Proposed System

3.4.1 Vision

The vision of the ASCT system is to provide an advanced traffic control system that responds to changing traffic conditions, and reduces delays and corridor travel times, while balancing multimodal transportation needs.

3.4.2 Goals

The goals of the ASCT system are:

- Support vehicle, pedestrian and transit traffic mobility.
- Provide measurable improvements in personal mobility
- Support interoperability between agencies
- Support regional systems
- Support congestion and environment policy objectives
- Meet a timely project implementation schedule

3.4.3 User Objectives

The objectives of the adaptive system that support the stated goals are:

- To support vehicle, pedestrian and transit traffic mobility:
    - Be capable of supporting priority operations for light rail and buses
    - Allow effective use of all controller features currently in use or proposed to be used
    - Minimize adverse effects caused by preemption and unexpected events

- To support measurable improvements in personal mobility:
    - Adjust operations to changing conditions
    - Reduce delays
    - Reduce travel times
    - Provide the same level of safety provided by the existing system to vehicles, pedestrians and transit.

- To support agency interoperability:
    - Provide facilities for data exchange and control between systems
    - Allow remote monitoring and control
    - Adhere to applicable traffic signal and ITS design standards

- To support regional systems:
    - Be compliant with the regional ITS architecture
    - Allow center-to-center and system-to-system communication
    - Connect to regional traffic control systems
    - Report traffic conditions to regional traffic conditions information systems

- To support environmental objectives:
    - Reduce vehicle emissions through improvements in appropriate determinants such as vehicle stops and delays
    - To support a timely schedule:
    - Be sufficiently mature and robust that risk is low and little or no development time will be required.
    - Be ready for full operation by 10/1/2014

3.4.4 Operational Objectives

The operational objectives of the ASCT system will be to:

- Smooth the flow of traffic along coordinated routes
- Maximize the throughput of traffic along coordinated routes
- Equitably serve adjacent land uses
- Manage queues, to prevent excessive queuing from reducing efficiency
- Control operation using a combination of these objectives
- Control operation by changing the objectives under various circumstances
- For a critical isolated intersection, maximize intersection efficiency.

3.5 Strategies to be Applied by the Improved System

The adaptive coordination and control strategies that may be employed to achieve the operational objectives are:

- Provide a pipeline along a coordinated route to maximize the throughput during periods of high demand;
- Provide a pipeline along a coordinated route to smooth the flow of traffic in one or both directions;
- Distribute phase times in a way that equitably shares the green time between various movements and minimizes the risk of phase failures;
- Manage queues so they do not exceed the available storage capacity and are located so they do not affect the capacity of other movements;

3.6 Alternative Non-Adaptive Strategies Considered

3.6.1 Traffic Responsive Pattern Selection

TRPS has been operated in the past. It has been successful, but has some limitations that affect its effectiveness. Traffic Responsive is currently being utilized 24/7 with a total of 9 time-of-day timing plans at 130, 150 and 180 second cycle lengths with directional and balanced bias. Currently these

cycle lengths are effective; however static phase lengths and offsets do not accommodate variability in demand. The adaptive system would provide flexibility to accommodate variability to improve efficiency.

3.6.2 Complex Coordination Features

The following features are currently used in coordination patterns. These features will need to remain available in fallback operation should the ASCT fail.

- Multiple (repeat) phases or phase re-service
- Variable phase sequence
- Omit phase under some circumstances
- Detector switching
- Coordinate different phases at different times
- Coordinate turning movement phases
- Coordinate beginning or end of green
- Early release of hold
- Hold the position of uncoordinated phases
- Late phase introduction
- Rest-in-walk
- Dynamic max
- Double cycle or half cycle

Chapter 4: Operational Needs

4.1 Network Characteristics

- The ASCT shall control a minimum of 75 signals concurrently.
- The ASCT shall support groups of signals.
- The boundaries surrounding signal controllers that operate in a coordinated fashion shall be defined by the user.
- The ASCT shall control a minimum of 10 groups of signals.
- The size of a group shall range from 1 to 30 signals.
- Each group shall operate independently
- The boundaries surrounding signal controllers that operate in a coordinated fashion shall be altered by the system according to a time of day schedule. (For example: this may be achieved by assigning signals to different groups or by combining groups.)
- The boundaries surrounding signal controllers that operate in a coordinated fashion shall be altered by the system according to traffic conditions
- The boundaries surrounding signal controllers that operate in a coordinated fashion shall be altered by the system when commanded by the user.

4.2 Type of Operation

4.2.1 General

4.2.1.1 Mode of Operation

- The ASCT shall operate non-adaptively during the presence of a defined condition.
- The ASCT shall operate non-adaptively when adaptive control equipment fails.
- The ASCT shall operate non-adaptively when a user-specified detector fails.
- The ASCT shall operate non-adaptively when the number of failed detectors connected to a signal controller exceeds a user-defined value.
- The ASCT shall operate non-adaptively when the number of failed detectors in a group exceeds a user-defined value.
- The ASCT shall operate non-adaptively when a user-defined communications link fails.
- The ASCT shall operate non-adaptively when a user manually commands the ASCT to cease adaptively controlling a group of signals.
- The ASCT shall operate non-adaptively when a user manually commands the ASCT to cease adaptive operation.
- The ASCT shall operate non-adaptively in accordance with a user-defined time-of-day schedule.
- The ASCT shall operate non-adaptively when commanded by an external system process.

The ASCT shall alter the adaptive operation to achieve required objectives in user-specified conditions. (The alteration may be made by adjusting parameters or by directly controlling the state of signal controllers.)

- When current measured traffic conditions meet user-specified criteria, the ASCT shall alter the state of the signal controllers, maximizing the throughput of the coordinated route.
- When current measured traffic conditions meet user-specified criteria, the ASCT shall alter the state of signal controllers providing equitable distribution of green times.
- When current measured traffic conditions meet user-defined criteria, the ASCT shall alter the state of signal controllers providing two-way progression on a coordinated route.
- The ASCT shall provide maximum and minimum phase times.
- The ASCT shall provide a user-specified maximum value for each phase at each signal controller.
- The ASCT shall not provide a phase length longer that the maximum value.
- The ASCT shall detect repeated phases that do not serve all waiting vehicles. (These phase failures may be inferred, such as by detecting repeated max-out.)
- The ASCT shall alter operations, to minimize repeated phase failures.
- The ASCT shall determine the order of phases at a user-specified intersection. (The calculation will be based on the optimization function.)
- The ASCT shall provide coordination along a route.
- The ASCT shall coordinate along a user-defined route.
- The ASCT shall determine the coordinated route based on traffic conditions.
- The ASCT shall determine the coordinated route based on a user-defined schedule.
- The ASCT shall store xx user-defined coordination routes.
- The ASCT shall implement a stored coordinated route by operator command.
- The ASCT shall implement a stored coordinated route based on traffic conditions.
- The ASCT shall implement a stored coordinated route based on a user-defined schedule.
- The ASCT shall not prevent the use of phase timings in the local controller set by agency policy.

4.2.1.2 Allowable Phases

- The ASCT shall not alter the order of phases at a user-specified intersection.

4.2.1.3 Oversaturation

- The ASCT shall detect the presence of queues at pre-configured locations.
- When queues are detected at user-specified locations, the ASCT shall execute user-specified adaptive operation strategy.
- When queues are detected at user-specified locations, the ASCT shall omit a user-specified phase at a user-specified signal controller.

- The ASCT shall meter traffic into user-specified bottlenecks by storing queues at user-specified locations.
- The ASCT shall store queues at user-specified locations.
- The ASCT shall maintain capacity flow through user-specified bottlenecks.
- When queues are detected at user-specified locations, the ASCT shall limit the cycle length of the group to a user-specified value.

4.2.2 Sequence-based Adaptive Coordination

- The ASCT shall select cycle length based on a time of day schedule.
- The ASCT shall calculate phase lengths for all phases at each signal controller to suit the current coordination strategy.
- The ASCT shall calculate offsets to suit the current coordination strategy for the user-specified reference point for each signal controller along a coordinated route within a group.
- The ASCT shall apply offsets for the user-specified reference point of each signal controller along a coordinated route.
- The ASCT shall calculate a cycle length for each cycle based on its optimization objectives (as required elsewhere, e.g., progression, queue management, equitable distribution of green).
- The ASCT shall limit cycle lengths to user-specified values.
- The ASCT shall limit cycle lengths to a user-specified range.
- The ASCT shall calculate optimum cycle length according to the user-specified coordination strategy.
- The ASCT shall limit changes in cycle length to not exceed a user-specified value.
- The increased limit shall be user-defined.
- The ASCT shall adjust offsets to minimize the chance of stopping vehicles approaching a signal that have been served by a user-specified phase at an upstream signal.

4.2.4 Single intersection adaptive operation

- Use this section if non-coordinated adaptive coordination is likely to provide acceptable operation in your situation.
- The ASCT shall calculate a cycle length of a single intersection, based on current measured traffic conditions. (The calculation is based on the optimization objectives.)
- The ASCT shall calculate optimum phase lengths, based on current measured traffic conditions. (The calculation is based on the optimization objectives.)
- The ASCT shall limit the difference between the length of a given phase and the length of the same phase during its next service to a user-specified value.
- When queues are detected at user-specified locations, the ASCT shall execute user-specified timing plan/operational mode.

- The ASCT shall calculate phase order, based on current measured traffic conditions. (The calculation is based on the optimization objectives.)

4.2.5 Phase-based adaptive coordination

- The ASCT shall alter the state of the signal controller for all phases at the user-specified intersection.
- The ASCT shall calculate the time at which a user-specified phase shall be green at an intersection.
- When demand is present, the ASCT shall implement a user-specified maximum time between successive displays of each phase at each intersection.
- The ASCT shall alter the operation of the non-critical intersections to minimize stopping of traffic released from user-specified phases at the user-specified critical intersection.
- The ASCT shall alter the operation of the non-critical intersections to minimize stopping of traffic arriving at user-specified phases at the user-specified critical intersection.
- The ASCT shall adjust the state of the signal controller so that vehicles approaching a signal that have been served during a user-specified phase at an upstream signal do not stop.

4.2.6 Responsiveness

- The ASCT shall limit the change in consecutive cycle lengths to be less than a user-specified value.
- The ASCT shall limit the change in phase times between consecutive cycles to be less than a user-specified value. (This does not apply to early gap-out or actuated phase skipping.)
- The ASCT shall limit the changes in the direction of primary coordination to a user-specified frequency.
- When a large change in traffic demand is detected, the ASCT shall respond more quickly than normal operation (e.g. skip immediately to a “flush Plan”), subject to user-specified limits.
- The ASCT shall select cycle length from a list of user-defined cycle lengths.

4.3 External/Internal Interfaces

The ASCT shall support external interfaces according to the referenced interface control documents and the following detailed requirements. Interface data flows should be documented in your ITS architecture. Interface requirements include:

- Information layer protocol
- Application layer protocol
- Lower layer protocol
- Data aggregation
- Frequency of storage

- Frequency of reporting
- Duration of storage

The ASCT shall send the following to the Centracs System and GDOT Regional Tactics Server:

- operational data
- control data
- monitoring data
- coordination data
- performance data

The ASCT shall receive commands from the Centracs system and GDOT Regional Tactics Server. The ASCT shall implement the following commands from the Centracs system when commanded:

- Specified cycle length
- Specified direction of progression
- Specified adaptive strategy

4.4 Crossing Arterials and Boundaries

- The ASCT shall conform its operation to an external system's operation.
- The ASCT shall alter its operation to minimize interruption of traffic entering the system. (This may be achieved via detection, with no direct connection to the other system.)
- The ASCT shall operate a fixed cycle length to match the cycle length of an adjacent system.
- The ASCT shall alter its operation based on data received from another system.
- The ASCT shall support adaptive coordination on crossing routes.

4.5 Access and Security

The ASCT shall be implemented with a security policy that addresses the following selected elements:

- Local access to the ASCT
- Remote access to the ASCT
- System monitoring
- System manual override
- Development
- Operations
- User login
- User password
- Administration of the system
- Signal controller group access

- Access to classes of equipment
- Access to equipment by jurisdiction
- Output activation
- System parameters
- Report generation
- Configuration
- Security alerts
- Security logging
- Security reporting
- Database
- Signal controller
- Agency TMC
- Other agency TMC
- Local controller cabinets
- Remote locations via internet

The ASCT shall comply with the agency's security policy as described in the Intelligent Transportation System Master Plan. The ASCT shall not prevent access to the local signal controller database, monitoring or reporting functions by Centracs or the GDOT Regional Tactics Server.

4.6 Data Log

The ASCT shall log the following events:

- Time-stamped vehicle phase calls
- Time-stamped pedestrian phase calls
- Time-stamped emergency vehicle preemption calls
- Time-stamped transit priority calls
- Time-stamped railroad preemption calls
- Time-stamped start and end of each phase
- Time-stamped controller interval changes
- Time-stamped start and end of each transition to a new timing plan

The ASCT shall export its systems log in the following formats:

- MS Excel
- Text
- CSV
- Open source SQL database

The ASCT shall store the event log for a minimum of 90 days

The ASCT shall store results of all signal timing parameter calculations for a minimum of 90 days.

The ASCT shall store the following measured data in the form used as input to the adaptive algorithm for a minimum of 90 days:

- volume
- occupancy
- queue length
- phase utilization
- arrivals in green
- green band efficiency

The ASCT system shall archive all data automatically after a user-specified period not less than 30 days. The ASCT shall provide data storage for a system size of 75 signal controllers. The data to be stored shall include the following:

- Controller state data
- Reports
- Log data
- Security data
- ASCT parameters
- Detector status data
- The ASCT shall calculate and report relative data quality including:
- The extent data is affected by detector faults

The ASCT shall report comparisons of logged data when requested by the user:

- Day to day,
- Hour to hour
- Hour of day to hour of day
- Hour of week to hour of week
- day of week to day week
- Day of year to day of year

The ASCT shall store data logs in a standard database. The ASCT shall report stored data in a form suitable to provide explanations of system behavior to public and politicians and to troubleshoot the system. The ASCT shall store the following data in 1 minute increments:

- volume
- occupancy
- queue length

4.7 Advanced Controller Operation

- When specified by the user, the ASCT shall serve a vehicle phase more than once for each time the coordinated phase is served.
- The ASCT shall provide a minimum of 4 phase overlaps.
- The ASCT shall accommodate a minimum of 8 phases at each signal
- The ASCT shall accommodate a minimum of 2 rings at each signal.
- The ASCT shall accommodate a minimum of 2 phases per ring
- The ASCT shall provide a minimum of 10 different user-defined phase sequences for each signal.
- Each permissible phase sequence shall be user-assignable to any signal timing plan.
- Each permissible phase sequence shall be executable by a time of day schedule.
- Each permissible phase sequence shall be executable based on measured traffic conditions
- The ASCT shall not prevent a phase/overlap output by time-of-day.
- The ASCT shall not prevent a phase/overlap output based on an external input.
- The ASCT shall not prevent phases from being designated as coordinated phases.
- The ASCT shall have the option for a coordinated phase to be released early based on a user-definable point in the phase or cycle.
- The ASCT shall not prevent the controller from displaying flashing yellow arrow left turn or right turn.
- The ASCT shall not prevent the local signal controller from performing actuated phase control using extension/passage timers as assigned to user-specified vehicle detector input channels in the local controller.
- The ASCT shall operate adaptively using user-specified detector channels.
- When adaptive operation is used in conjunction with normal coordination, the ASCT shall not prevent a controller serving a cycle length different from the cycles used at adjacent intersections.

4.8 Pedestrians

- When a pedestrian phase is called, the ASCT shall execute pedestrian phases up to 30 seconds before the vehicle green of the related vehicle phase.
- When a pedestrian phase is called, the ASCT shall accommodate pedestrian crossing times during adaptive operations.
- When a pedestrian phase is called, the ASCT shall accommodate pedestrian crossing times then resume adaptive operation.
- The ASCT shall execute user-specified exclusive pedestrian phases during adaptive operation.

- The ASCT shall execute pedestrian recall on user-defined phases in accordance with a time of day schedule.
- The ASCT shall begin a non-coordinated phase later than its normal starting point within the cycle when all of the following conditions exist:
    - The user enables this feature
    - Sufficient time in the cycle remains to serve the minimum green times for the phase and the subsequent non-coordinated phases before the beginning of the coordinated phase
    - The phase is called after its normal start time
    - The associated pedestrian phase is not called
- When specified by the user, the ASCT shall not prevent the execution of pedestrian recall on pedestrian phase adjacent to coordinated phases.
- When the pedestrian phases are on recall, the ASCT shall accommodate pedestrian timing during adaptive operation.
- The ASCT shall not inhibit negative vehicle and pedestrian phase timing.

4.9 Special Functions

- The ASCT shall set a specific state for each special function output based on the occupancy on a user-specified detector.
- The ASCT shall set a specific state for each special function output based on the current cycle length.
- The ASCT shall set a specific state for each special function output based on a time-of-day schedule.

4.10 Detection

The ASCT shall be compatible with the following detector type:

- Loops
- Radar
- Video

4.11 Railroad and EV Preemption

- The ASCT shall maintain adaptive operation at non-preempted intersections during emergency vehicle preemption.
- The ASCT shall resume adaptive control of signal controllers when preemptions are released.

- The ASCT shall execute user-specified actions at non-preempted signal controllers during preemption. (E.g., inhibit a phase, activate a sign, display a message on a DMS)
- The ASCT shall operate normally at non-preempted signal controllers when special functions are engaged by a preemption event. (Examples of such special functions are a phase omit, a phase maximum recall or a fire route.)
- The ASCT shall release user-specified signal controllers to local control when one signal in a group is preempted.
- The ASCT shall not prevent the local signal controller from operating in normally detected limited-service actuated mode during preemption.

4.12 Transit Priority

- The ASCT shall continue adaptive operations of a group when one of its signal controllers has a transit priority call.
- The ASCT shall advance the start of a user-specified green phase in response to a transit priority call.
- The advance of start of green phase shall be user-defined.
- Adaptive operations shall continue during the advance of the start of green phase.
- The ASCT shall delay the end of a green phase, in response to a priority call.
- The delay of end of green phase shall be user-defined.
- Adaptive operations shall continue during the delay of the end of green phase.
- The ASCT shall permit at least 4 exclusive transit phases.
- Adaptive operations shall continue when there is an exclusive transit phase call.
- The ASCT shall control vehicle phases independently of the following:
    - LRT only phases
    - Bus only phases
- The ASCT shall interface with external bus transit priority system through preemption units installed in the signal cabinets
- The ASCT shall accept a transit priority call from:
    - a signal controller/transit vehicle detector;
    - an external system.

4.13 Failure Events and Fallback

4.13.1 Detector Failure

- The ASCT shall take user-specified action in the absence of valid detector data from 2 vehicle detectors within a group.
    - The ASCT shall release control to central system control.

  - The ASCT shall release control to local operations to operate under its own time-of-day schedule.
- The ASCT shall use the following alternate data sources for operations in the absence of the real-time data from a detector:
  - Data from a user-specified alternate detector.
  - Stored historical data from the failed detector.
- The ASCT shall switch to the alternate source in real time without operator intervention.
- In the event of a detector failure, the ASCT shall issue an alarm to user-specified recipients. (This requirement may be fulfilled by sending the alarm to a designated list of recipients by a designated means, or by using an external maintenance management system.
- In the event of a failure, the ASCT shall log details of the failure in a permanent log.
- The permanent failure log shall be searchable, archivable, and exportable.

4.13.2 Communications Failure

- The ASCT shall execute user-specified actions when communications to one or more signal controllers fails within a group.
- In the event of loss of communication to a user-specified signal controller, the ASCT shall release control of all signal controllers within a user-specified group to local control.
- The ASCT shall switch to the alternate operation in real time without operator intervention.
- In the event of communications failure, the ASCT shall issue an alarm to user-specified recipients. (This requirement may be fulfilled by sending the alarm to a designated list of recipients by a designated means, or by using an external maintenance management system.
- The ASCT shall issue an alarm within 2 minutes of detection of a failure.
- In the event of a communications failure, the ASCT shall log details of the failure in a permanent log.
- The permanent failure log shall be searchable, archivable and exportable.

4.13.3 Adaptive Processor Failure

- The ASCT shall execute user-specified actions when adaptive control fails:
- The ASCT shall release control to central system control.
- The ASCT shall release control to local operations to operate under its own time-of-day schedule.
- In the event of adaptive processor failure, the ASCT shall issue an alarm to user-specified recipients. (This requirement may be fulfilled by sending the alarm to a designated list of recipients by a designated means, or by using an external maintenance management system.
- The permanent failure log shall be searchable, archivable and exportable.

- During adaptive processor failure, the ASCT shall provide all local detector inputs to the local controller.

4.14 Software

- The vendor's adaptive software shall be fully operational within the following platform:
    - Windows-PC,
    - Linux,
    - Mac-OS,
- The ASCT shall fully satisfy all requirements when connected with detectors from manufacturer
    - EDI loop detectors (or equivalent)
    - Iteris, Traficon, Econolite video detectors
    - Other TS2 Compliant detectors
- The ASCT shall fully satisfy all requirements when connected with Econolite ASC-3 (2070 or rack mount) controllers

4.15 Training

- The vendor shall provide the following training.
    - The operations of the adaptive system.
    - Troubleshooting the system.
    - Preventive maintenance and repair of equipment.
    - System configuration.
    - Administration of the system.
    - System calibration.
- The vendor's training delivery shall include: printed course materials and references, electronic copies of presentations and references.
- The vendor's training shall be delivered at Johns Creek TCC

4.16 Maintenance, Support and Warranty

The Maintenance Vendor shall provide maintenance according to a separate maintenance contract. That contract should identify repairs necessary to preserve requirements fulfillment, responsiveness in effecting those repairs, and all requirements on the maintenance provider while performing the repairs.

The Vendor shall provide routine updates to the software and software environment necessary to preserve the fulfillment of requirements for a period of 5 years. Preservation of requirements fulfillment especially includes all IT management requirements as previously identified. The Vendor shall warrant the system to be free of defects in materials and workmanship for a minimum period of 1 year. Warranty is defined as correcting defects in materials and workmanship (subject to other language included in the purchase documents). Defect is defined as any circumstance in which the material does not perform according to its specification.

4.17 Schedule

- The ASCT shall set the state of external input/output states according to a time-of-day schedule.
- The ASCT output states shall be settable according to a time-of-day schedule
- The ASCT operational parameters shall be settable according to a Time of Day schedule
- 4.18 Performance Measurement, Monitoring and Reporting
- The ASCT shall report measures of current traffic conditions on which it bases signal state alterations.
- The ASCT shall report all intermediate calculated values that are affected by calibration parameters.
- The ASCT shall maintain a log of all signal state alterations directed by the ASCT.
- The ASCT log shall include all events directed by the external inputs.
- The ASCT log shall include all external output state changes.
- The ASCT log shall include all actual parameter values that are subject to user-specified values.
- The ASCT shall maintain the records in this ASCT log for a 36 month period.

Chapter 5: Envisioned Adaptive System Overview

5.1 Size and grouping

The agency has plans to adaptively control a total of 75 intersections. The system will control intersections in groups that are defined by the operator. A group of intersections may be comprised of simply one intersection, or up to the total number of intersections that are sufficiently close to warrant coordination under the prevailing traffic conditions.

During some traffic conditions, there may be separate groups of intersections operating with different characteristics (e.g., different cycle lengths, some coordinated some not, offset in different directions). During periods when traffic conditions are similar or operating characteristics (such as cycle length) are similar, or traffic volumes on the coordinated route are heavier, different groups may be formed or specified by the operator. The group of intersections at Old Alabama Road is 3.8 miles away from the group of intersections at SR 141 / Medlock Bridge Road. These two groups of intersections will always operate entirely independently.

5.2 Operational objectives

The system, or the operator, will select the appropriate coordination objective, depending on the current traffic conditions. For example, during commuter peaks the primary objective may be to maximize the throughput along the road in the peak direction. Then during the business hours the objective may be to balance delays between traffic associated with the adjacent activity and traffic simply traveling through the system.

During moderate to light traffic conditions, one or more phases may be omitted (e.g., a protected phase if protected/permissive left turns are operated), in order to more efficiently serve other movements, provided it is safe to do so. This may be accomplished through a time of day schedule or based on the measured traffic conditions.

Within these operational objectives, the ASCT system will change its operation to accommodate the rise and fall of volumes through the peaks and the changing patterns of flow throughout the day and week. However, there is also a stochastic element to traffic in the short term, with the number of arrivals for a phase varying from cycle to cycle, and pedestrians not being present on all phases in all cycles. It is therefore desirable for the system to have some local tactical control. While vehicle-actuated coordination typically allows phases to run longer or shorter from cycle to cycle to match the actual number of vehicles using the phase, the system will also allow the operator to decide where the unused time will be used. If a phase is to be skipped, the operator

can specify that the spare time will be added to the existing phase, the following phase or the next coordinated phase.

At a small group of intersections, with the user defining one as being critical, while the adjacent intersections require a lower cycle length or progression must be provided for specific phases to minimize the formation of queues on the approaches to the critical intersection, the phase lengths of the critical intersection will be determined by the system based on the current traffic conditions. The operation of the adjacent intersections will then be set so that platoons departing the critical intersection are progressed through the non-critical intersections, or platoons arriving at the critical intersection do so at a time when they will have little or no delay waiting for the appropriate phase.

5.3 Fallback operation

The system will have a fallback state that allows coordination using a common cycle length for all signals within a coordinated group.

5.4 Crossing routes and adjacent systems

A coordinated group will be able to include more than one coordinated route, such as two crossing arterials. The system will be able to maintain coordination along both roads.
The agency needs the adaptive system to maintain coordination with another adjacent system either by sensing arriving traffic or by using constraints on cycle length.
The system will accept data from a neighboring system that allows it to stay in coordination with the adjacent system while still operating in adaptive mode.

5.5 Operator access

Operators, traffic engineering and maintenance staff will be assigned different levels of authority, and access to equipment for which they are authorized, based on their roles and responsibilities. This will allow them to control, view, monitor and analyze the operation of the system as appropriate.
The system will be connected to the agency's LAN, allowing access to all authorized users.
The system will allow access by authorized users outside the agency

5.6 Complex coordination and controller operation

The agency will use the following complex coordination and controller features:

- the ability to repeat a phase, such as running a left turn phase before and after its opposing through movement;
- provision for the required number of rings, phases, phases per ring, and overlap phases;
- the ability to operate different phase sequences based on different traffic conditions or by time-of-day;
- the ability to omit a phase under some traffic conditions or based on external input to allow a shorter cycle length to operate, or to provide additional time to other phases;
- the ability to use flashing yellow protected/permissive and permissive only phasing
- The ability to maintain coordination with external movements by preventing phases from being skipped, or by omitting phases, based on time-of-day, external input or when certain phase sequences are in operation.
- The agency will permit phases or overlaps by time-of-day schedule or external input.
- the ability to designate phases as coordinated phases;
- the ability to separately monitor each lane on an approach and take different action depending on the conditions measured in each lane;
- the ability to allow the coordinated phase to terminate early if the coordinated platoon is short;
- the ability to introduce a non-coordinated phase later than its normal starting point within a cycle, if it can be served with minimum green within the remaining time available;
- protected/permissive and permissive only phasing
- The agency may operate external devices using discrete signal outputs from the ASCT including occupancy on a detector, cycle length, and time-of-day.

5.7 Organizations Involved

City of Johns Creek, Georgia Department of Transportation, City of Alpharetta, Forsyth County and Gwinnett County.

Chapter 6: Adaptive Operational Environment

The system will be operated and monitored from City of Johns Creek TCC, GDOT TMC, RTOP Corridor Manager off site location. An operator will be able to have full access to the system from each local controller or on-street master. The central server equipment will be housed at the City of Johns Creek in an air-conditioned environment.

- Equipment compatibility constraints
- The central server will be a standard platform (maintained by the agency IT Department) and able to be replaced independently from the software.
- The agency selection of controller will not be constrained by the adaptive software.
- The agency prefers specific inductive loop and video detector technology.
- The agency prefers to use the following controller types.:
    - Econolite ASC-3 2070 controllers
    - Econolite ASC-3 rack mount controllers

The operators will already be experienced in setting up and fine tuning traditional coordinated signal systems. They will require training specific to the adaptive system, sufficient to allow them to set up, adjust and fine tune all aspects of the system. Complaints or requests for changes in operation will be handled by the in-house operators on an as-needed basis.

Maintenance of all field equipment will be performed by in-house or contract staff. Funding for maintenance of the adaptive system will come from the city's annual signal maintenance budget. Replacement or repair of defective or failed equipment will be covered for one year by the manufacturers' warranties. The labor cost of replacement during this period will be included in the purchase price. The agency expects maintenance of parts and equipment for a period of 5 years will be included in the purchase price. The agency expects maintenance of all adaptive system software for a period of 5 years will be included in the purchase price. The agency expects to operate this system using the latest software for a period of 5 years. The agency will seek technical support from the vendor for assistance in using the adaptive software for 5 years.

Operations and maintenance staff will have the ability to log in to the system from remote locations via the internet, and have full functionality consistent with their access level. The ASCT's operation will be able to be customized to suit the different situations that will be experienced in the different areas where it will operate. The agency's experienced operators will be able to write customized routines using the ASCT's Application Programming Interface (API). The vendor will be able to provide customized routines that take advantage of the ASCT's API. The ASCT will be fully compatible with the City of Johns Creek Centracs central ATMS system and ASC-3 signal controllers.

Chapter 7: Adaptive Support Environment

7.1 Institutions and Stakeholders

- City of Johns Creek
- GDOT
- Gwinnett County
- Forsyth County

7.2 Facilities

The city of Johns Creek currently operates a Traffic Control Center (TCC) housed in the offices at City Hall. The TCC is currently connected to 41 signals, 32 City of Johns Creek, 2 Georgia DOT, and 7 Forsyth County on Tactics. The signals are on Medlock Bridge Road/SR 141, State Bridge Road, and McGinnis Ferry Road. Three 47" LCD screens display 19 CCTV cameras along Medlock Bridge Road/SR 141 and State Bridge Road. There will not be a satellite location for the TCC. The TCC is located within City Hall. The area is air conditioned with a separate air conditioned server room. The staffing requirements fall under the Director of Public Works. The Johns Creek City Fire Marshall is responsible for the fire control facilities. The building facilities fall under the operation of TPA Realty. The traffic operations staff will be responsible for the security of the TCC.

7.3 System Architecture Constraints

The adaptive processor/server will be protected within the agency's firewalls. The Traffic Department will provide resources, equipment and system management so that operators will have appropriate access to the system locally, from within the agency's LAN and from remote locations.

The communications media available for use by the system will be the city's ITS fiber network.
The adaptive system will operate within the local ITS Architecture of the City of Johns Creek. It will interact with the Regional ITS Architecture through the Georgia DOT Regional Tactics Server or its successor.

7.4 Utilities

Electrical service is provided through he building operations. Internet and telecommunications are provided by the city's IT Department.

7.5 Equipment

Equipment and personnel to maintain the system are contracted through the city.

7.6 Computing hardware

The initial deployment of ATCS will be accommodated using the present server and workstation configurations. There is a project to expand and upgrade the TCC that will ensure future deployments will be accommodated.

7.7 Software

The Traffic Department staff will be responsible for managing upgrades and licensure of all software in use by the department.

7.8 Personnel

The city's traffic operations currently cover the AM and PM peak periods. During these times on of the city's Traffic Superintendents mans the TCC, monitoring traffic operations and watching for incidents. The current staff mans the TCC from 7:00-9:00 AM and 4:00-6:00 PM. The city is in the process of hiring an ITS and Signals Engineer. The duties of the new position will be to assist the Traffic Services Manager in the management of the ITS, Signals, and ATCS. A Signal crew works from 8:00AM to 5:00PM Monday through Friday. Additionally, the city will contract with an ITS contractor to provide on call services.

7.9 Operating procedures

The Traffic services Manager will be responsible for system backups. Routine backups will occur daily and weekly backups will be managed off site.

7.10 Maintenance

Signal system maintenance is handled through a city hired contractor.

7.11 Disposal

All disposal of materials will be overseen by the city's solid waste department. Any items that can be recycled will be, including electronic components. Hazardous wastes will be handled appropriately.

Chapter 8: Operational Scenarios

8.1 Overview

The following operational scenarios describe how the system is expected to operate under various conditions. The proposed ASCT system is expected to be able to manage the following operational scenarios and issues envisioned for both the current and future project locations. Scenarios are described for the following operational conditions:

- Typical heavy congested conditions
- Typical heavy uncongested conditions
- Moderate balanced flows
- Light balanced flows
- Demand affecting event
- Capacity affecting event
- Fault conditions (communications, detection, adaptive processor)
- Signal priority and preemption
- Pedestrians
- Installation

8.2 Typical Heavy (congested) Traffic

8.2.1 Example: Arterial Road with Diamond interchange N/A

8.2.2 Example: Arterial with one critical intersection N/A

8.2.3 Example: Arterial with several critical intersections

8.2.3.1 Road network

The section of Medlock Bridge Road/SR 141 to be coordinated using ASCT has sixteen signalized intersections. It is a four lane arterial road with raised median, and exclusive left turn lanes at each intersection. Two intersections State Bridge Road and McGinnis Ferry Road are arterial roads that accommodate regional traffic rather than providing local access. There are nearby signals on the cross streets that require coordination with this critical intersection. One intersection provides access to a major shopping district. These are all eight-phase intersections with protected left turns on all approaches. The remaining intersections provide access to local businesses and residential areas. Most intersections have protected left turns on Medlock Bridge Road/SR 141 and permissive

left turns on the side streets. Medlock Bridge Road/SR 141 Road/SR 141 is classified by GDOT as a corridor of regional significance.

8.2.3.2 Traffic conditions

At times when traffic conditions are very heavy, one of the two key intersections is the critical intersection. This varies depending on the level of demand on the two crossing arterials or activity in the shopping district. When traffic is very heavy, it is typically heaviest on Medlock Bridge Road/SR 141 in one direction, southbound during the AM peak and northbound during the PM peak. In these conditions, Medlock Bridge Road/SR 141 carries higher volumes than the crossing arterials.

8.2.3.3 Operational objectives

The operational objectives for this arterial under these conditions are to:

- Maximize the throughput along Medlock Bridge Road/SR 141
- Accommodate the traffic at the critical intersection with a minimum of phase; and
- Provide smooth flow along the arterial through other intersections.

8.2.3.4 Coordination and signal timing strategies

The signal timing strategies used by the system to accommodate this situation are:

- Determine the critical intersection
- At the critical intersection, select phase times that eliminate phase failures
- At the critical intersection, select phase sequence that eliminates queue overflow in left turn bays
- At the critical intersection, distribute green time to maximize the throughput on Medlock Bridge Road/SR 141.
- At the non-critical intersections, provide sufficient time to serve all turning and side street traffic without phase failures.
- At the non-critical intersections, provide green on the arterial road phases in a manner that minimizes the stops for through traffic along the arterial.

8.2.3.5 Summary of operation

Under these conditions, the ASCT system will determine the critical intersection and select a phase arrangement and calculate phase times that accommodate traffic at that intersection. It will then set the timing at the other intersections to provide a green band in the direction of heaviest traffic along the arterial, to minimize the number of stops in that direction. The green time for the non-arterial phases at those intersections will be set to accommodate the traffic using those phases, while allocating the remaining time to the arterial road. The system will determine the sequence of

phases on the arterial (lead-lead, lead-lag or lag-lag) that minimizes the stops in the non-coordinated direction under these conditions.

8.2.4 Example: Crossing arterials N/A

8.2.5 Example: Grid network N/A

8.3 Typical Heavy (Uncongested) Traffic

8.3.1 Example: Isolated Intersection N/A

8.4 Moderate balanced flows

8.4.1 Arterial road with irregular spacing

8.4.1.1 Road network

The section of Medlock Bridge Road/SR 141 to be coordinated using ASCT has sixteen signalized intersections. It is a four lane arterial road with raised median, and exclusive left turn lanes at each intersection. Two intersections State Bridge Road and McGinnis Ferry Road are arterial roads that accommodate regional traffic rather than providing local access. There are nearby signals on the cross streets that require coordination with this critical intersection. One intersection provides access to a major shopping district. These are all eight-phase intersections with protected left turns on all approaches. The remaining intersections provide access to local businesses and residential areas. Most intersections have protected left turns on Medlock Bridge Road/SR 141 and permissive left turns on the side streets. There is no regular spacing between the intersections and therefore no "resonant" cycle length. Medlock Bridge Road/SR 141 is classified by the MPO as an arterial road of regional significance.

8.4.1.2 Traffic conditions

During business hours traffic uncongested and the flows along Medlock Bridge Road/SR 141 are similar in both directions. At lunch time there is an increase in traffic turning into and out of the several side streets that service local shops and restaurants. There is little pedestrian activity except at Cross Street where there are bus stops and local shops. There is enough side street and turning movement traffic that most signal phases are called every cycle. The left turn volumes are sufficiently high that they need protected turn phases to provide sufficiently capacity and prevent phase failures.

8.4.1.3 Operational objectives

The operational objectives for this condition are to:

- Provide smooth flow along Medlock Bridge Road/SR 141; and
- Provide signal timing that prevents phase failures at all intersections.

8.4.1.4 Coordination and signal timing strategies

The coordination approach for these conditions is provide progression, maximizing bandwidth while providing two-way coordination. This can be done at a resonant cycle length of 80 seconds. The strategies applied while maintaining this cycle length are:

- At each intersection, provide sufficient time to serve all turning and side street traffic without phase failures
- At each intersection, select phase times (or offsets) that provide smooth flow along the arterial in both directions.
- At each intersection, select phase sequence that provides smooth flow along the arterial
- At the specified intersection, select phase times that will accommodate frequent use of all pedestrian phases.
- At other intersections, select phase times that will accommodate occasional use of pedestrian phases.

8.4.1.5 Summary of Operation

The critical intersection will determine the minimum cycle length that can be used for the entire group. This cycle length will accommodate all phases and all pedestrian movements. Provided it is not higher than the 150 second cycle length, the system will set the cycle length to be 150 seconds. It will detect the balanced flows and select offsets that provide a reasonable compromise between the two directions of travel. At the non-critical intersections, the non-coordinated phases will be set to accommodate pedestrians and vehicles, and all spare time will allocated to the coordinated phases to maximize the bandwidth for progression bands along the road. During periods (such as lunch time) when there is more turning traffic associated with local retail activity) extra time will be provided to those phases within the overall cycle length, at the expense of the coordinated phases on Medlock Bridge Road/SR 141.

8.5 Light Balanced Flows

8.5.1 Arterial Road

8.5.1.1 Road network

The section of Medlock Bridge Road/SR 141 to be coordinated using ASCT has sixteen signalized intersections. It is a four lane arterial road with raised median, and exclusive left turn lanes at each

intersection. Two intersections State Bridge Road and McGinnis Ferry Road are arterial roads that accommodate regional traffic rather than providing local access. There are nearby signals on the cross streets that require coordination with this critical intersection. One intersection provides access to a major shopping district. These are all eight-phase intersections with protected left turns on all approaches. The remaining intersections provide access to local businesses and residential areas. Most intersections have protected left turns on Medlock Bridge Road/SR 141 and permissive left turns on the side streets. Medlock Bridge Road/SR 141 is classified by the MPO as an arterial road of regional significance.

8.5.1.2 Traffic conditions

During some periods of the weekdays and weekends traffic is light but predominantly passing along the arterial. There is little pedestrian activity and little side street and turning movement traffic. The left turn volumes are sufficiently light that they do not need protected turn phases to provide sufficiently capacity, and can normally be accommodated by permissive phases. There is a resonant cycle length of 45 seconds that will provide two-way coordination when the protected left turn phases are omitted.

8.5.1.3 Operational objectives

The operational objectives for this condition are to:

- Provide smooth flow along Medlock Bridge Road/SR 141; and
- Provide signal timing that prevents phase failures at all intersections.

8.5.1.4 Coordination and signal timing strategies

The coordination approach for this condition is to provide progression along the arterial, maximizing bandwidth while providing two-way coordination. The timing strategies applied to do this are:

- At each intersection, provide sufficient time to serve all turning and side street traffic without phase failures;
- At each intersection, select phase times (or offsets) that provide smooth flow along the arterial in both directions;
- At each intersection, omit protected turning phases to minimize the impact of occasional turning vehicles on other traffic;
- At each intersection, select phase times that will accommodate occasional use of pedestrian phases.

8.5.1.5 Summary of Operation

During light traffic conditions, protected left turn phases will be omitted and a cycle length of 130 seconds implemented. If traffic volumes decrease (such as during late nights), the 130 second cycle

length and two-way coordination will be maintained unless the volumes fall below a minimum threshold, in which case the signals will be set to operate in free, vehicle-actuated mode. If traffic increases to the extent that it can no longer be accommodated within the 130 second cycle length, or left turning volumes can no longer be accommodated without the protected left turns, then a longer cycle length will be implemented and a new coordination strategy selected to match the current traffic conditions.

8.6 Demand affecting event

8.6.1 High travel day (e.g., Mothers' Day, Superbowl)

During periods of major activity within or close to the ASCT's area of operation, the traffic characteristics are often similar to the peak periods, either oversaturated or unsaturated. The system will behave in a similar fashion to those periods, and the detection system will determine whether unsaturated or oversaturated conditions prevail. If there is heavily directional traffic before or after the activity, the system will determine the predominant direction and coordinate accordingly, with an appropriate cycle length and offset. If the event traffic is not as heavy as peak hours, but the traffic on the corridor is still highly directional, then the system will recognize this and provide coordination predominantly in the heaviest direction, even though the cycle length may be similar to business hours (with balanced flows) cycle lengths.

The entire corridor may be set by the operator to operate as one or more coordinated groups under this condition, or the system may have the freedom to operate it as one or more groups subject to user-specified criteria, such as similar required cycle lengths in different parts of the corridor, or the volume of traffic at key locations exceeds a threshold.

8.7 Capacity affecting event

8.7.1 Weather event

8.7.2 Incident within the system (construction, maintenance, fire)

When an incident occurs on the coordinated route and temporarily reduces the capacity of the route (such as emergency vehicles stopped, unscheduled construction/maintenance, or traffic crash), there will typically be congestion upstream of the blockage, and lighter than normal traffic downstream. In such a situation, it is appropriate for the downstream signals to operate with different characteristics from the upstream signals.

If the blockage is in the peak direction, then it may be appropriate to coordinate in the opposite direction if that traffic is similar to or greater than the normal peak direction. If the blockage is in the non-peak direction, there may be no need to depart from the normal operation.

While intersections upstream from the blockage may register increased congestion, the appropriate response would not be to increase the capacity in the congested direction. On the contrary, the approach should be to match the capacity for phases in the direction towards the bottleneck to the actual capacity of the bottleneck, and prevent this movement from adversely affecting cross street traffic and the flow in the non-affected direction.

The system will recognize the presence of an abnormal obstruction and modify the signal operation to react to the changed traffic conditions in an efficient manner.

8.8 Fault Conditions

8.8.1 Communications Fault Condition

If a communication failure prevents the adaptive system from continuing to control one or more intersections within a defined group, all signals within the group will revert to an appropriate, user-specified fallback mode of operation, either time-of-day operation or free operation. The fallback mode will be specified by the user based on location and time of day. All communication failure alarms will be automatically transmitted to maintenance and operations staff for appropriate attention.

8.8.2 Detection Fault Condition

The system will recognize a detector failure and take appropriate action to accommodate the missing data. For a local detector failure, the local controller will place a soft recall or maximum recall (to be user-specified) on the appropriate phase, and issue an alarm. For a detector that influences the adaptive operation (e.g., a system detector), the system will use data from an alternate (user-specified) detector, such as in an adjacent lane or at an appropriate upstream or downstream location. If the number of detector failures within a specified group exceeds a user-specified threshold, the system will cease adaptive operation and go to a fallback operation specified by the user (such as time-of-day operation or free operation). The fallback operation will be specified by the user based on location and time of day. All detector failure alarms will be automatically transmitted to maintenance and operations staff for appropriate attention.

8.9 Priority and Preemption

8.9.1 Railroad Preemption N/A

8.9.3 Bus Signal Priority

8.9.3.1 EXAMPLE BUS PRIORITY SCENARIO.

Bus priority will be provided at critical intersections on a bus route. The input requesting priority will come from the local priority system.

The system will have the capability to extend the existing green if that will serve the bus, introduce an early green by shortening or skipping other phases, or run a phase called exclusively by the bus.

The decision to provide priority will be determined within the local controller, based on user-definable and settable rules. These rules will include such items as: length of time or number of cycles since last priority was provided, and priority level if there are competing requests.

8.9.4 Emergency Vehicle Preemption

When an intersection responds to EV preemption, other signals within the coordinated group continue to operate adaptively. The preempted signal returns to adaptive control once the preemption is released.

8.10 Scheduled Events

The system will recognize the increasing traffic as patrons arrive for the event and adopt an appropriate mode of operation. During the event, when there is little associated traffic, the system will recognize the traffic conditions and operate normally, then recognize the changing traffic pattern as patrons begin to leave the event and adopt the appropriate mode of operation until the traffic clears. The system will then return to normal operation.

8.11 Pedestrians

Pedestrian crossing times must be accommodated. When side street traffic is light and no pedestrian is present, a vehicle may arrive on the side street shortly after the point at which its phase would normally be initiated. Typically it would then wait an entire cycle before being served. However, it is often possible to serve one or two side street vehicles within the remaining green time. So the system will be able to start a phase later than normal when there is no pedestrian call for that phase, provided it can be completed before the time the phase would normally end.

8.12 Installation

During installation and fine tuning, the operator will calibrate all the user-defined values in the system. In order to understand the response of the system to changes in traffic conditions, it is necessary to examine the results of intermediate calculations, in addition to the overall outputs and changes of state commanded by the system.

For example, if a cycle length is calculated based on a calculated parameter, such as level of saturation of detectors in critical lanes on critical movements, then the state of that calculated

parameter must be available for inspection for each detector. This will allow the operator to properly calibrate each detector, and then separately calibrate the parameters in the cycle length calculation or look-up table. This would also allow an operator to identify a faulty detector that is causing an incorrect measure to be calculated, even though the detector has failed; or identify a detector on which traffic behavior is different from other detectors on that phase, such as a left turn lane that has a heavy U-turn volume.

APPENDIX A

FIGURE 1: Traffic Characteristics

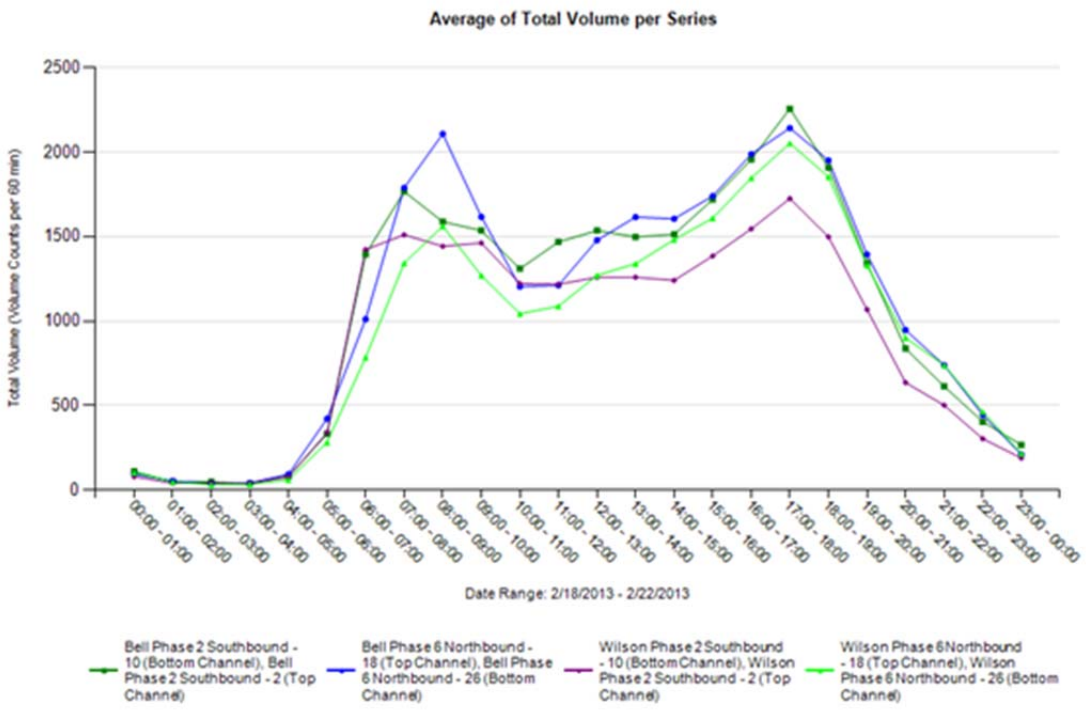


FIGURE 2: Existing Architecture

TMC and workstations

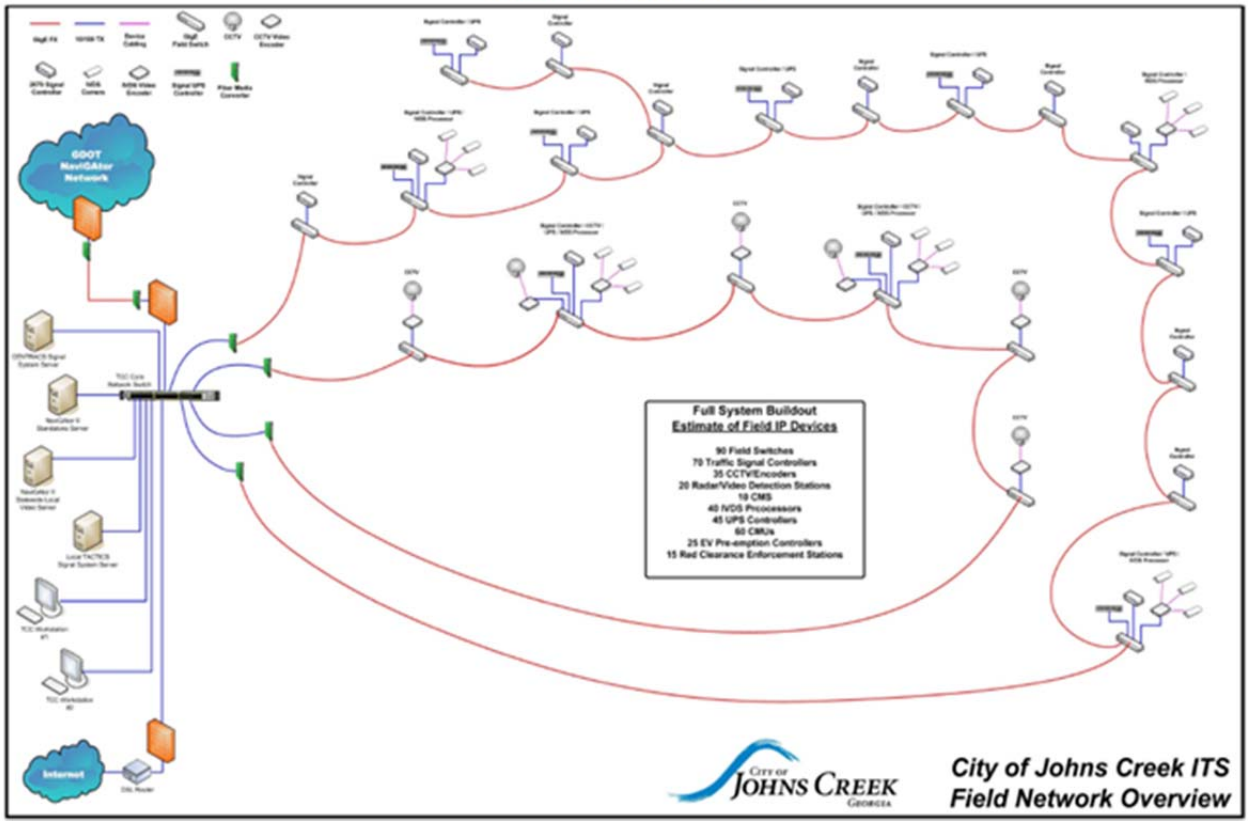


FIGURE 3: Existing Architecture
Communications infrastructure

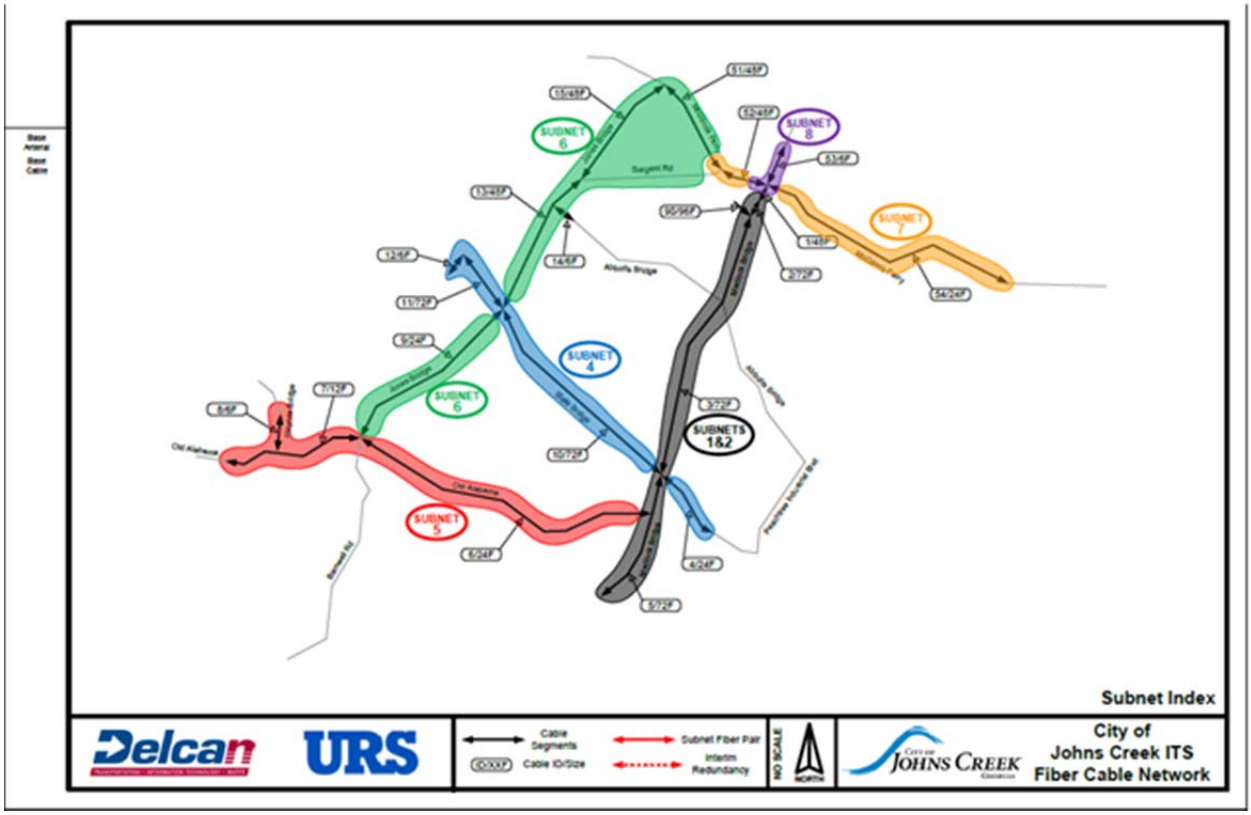
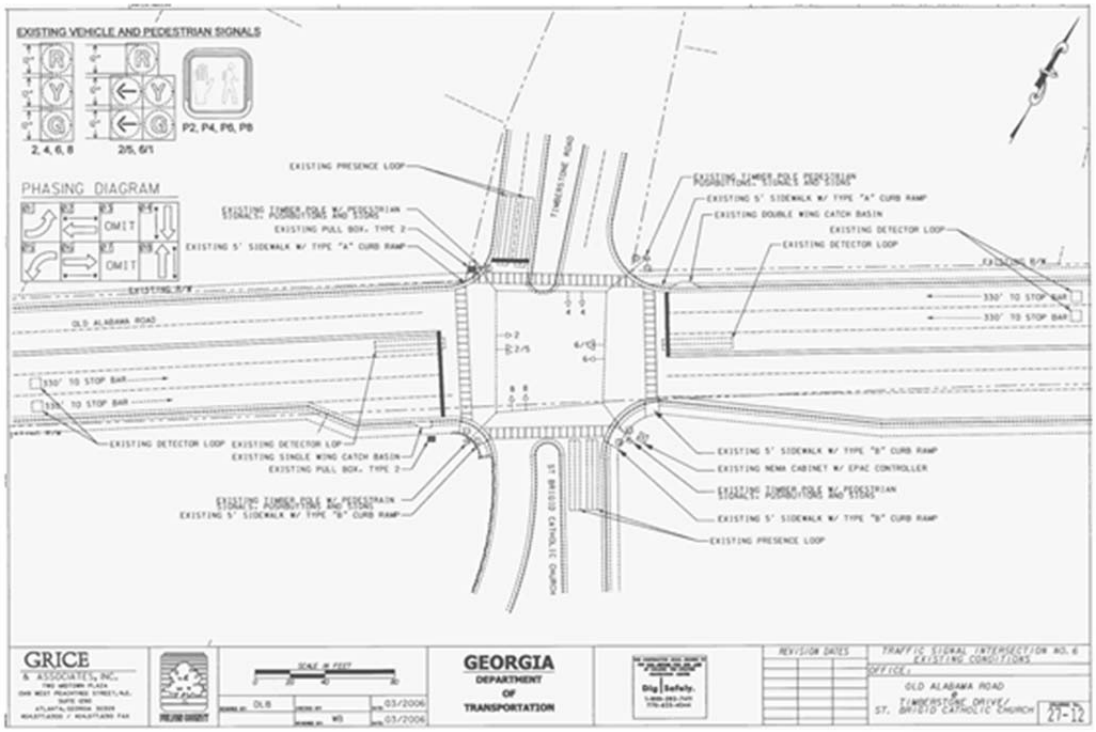


FIGURE 4: Existing Architecture

Detection locations and technology

(Typical Detection)



DETAILED ESTIMATE
DATE: 4/11/2013

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
150-1000	TRAFFIC CONTROL - PI NO. 0012628	LS	1	$38,808.00	$38,808.00
647-9998	LICENSE FOR ADAPTIVE TRAFFIC SIGNAL CONTROL SYSTEM 75 INTERSECTIONS)	LS	1	$50,000.00	$50,000.00
647-9999	ADAPTIVE TRAFFIC SIGNAL CONTROL SYSTEM (25 INTERSECTIONS)	LS	1	$42,000.00	$42,000.00
999-7200	UNITERRUPTIBLE POWER SUPPLY SYSTEM WITH CABINETS	EA	66	$4,500.00	$297,000.00
				SUBTOTAL	$427,808.00
				5% ENGINEERING AND INSPECTION	$21,390.40
				TOTAL	**$449,198.40**

AGREEMENT

BETWEEN

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

AND

THE CITY OF JOHNS CREEK

FOR

TRANSPORTATION FACILITY IMPROVEMENTS

This Framework Agreement is made and entered into this _____ day of _____, 20__, by and between the DEPARTMENT OF TRANSPORTATION, an agency of the State of Georgia, hereinafter called the "DEPARTMENT", and the **CITY OF JOHNS CREEK,** acting by and through its Mayor and City Council, hereinafter called the "LOCAL GOVERNMENT".

WHEREAS, the LOCAL GOVERNMENT has represented to the DEPARTMENT a desire to improve the transportation facility described in Attachment "A", attached and incorporated herein by reference and hereinafter referred to as the "PROJECT"; and

WHEREAS, the LOCAL GOVERNMENT has represented to the DEPARTMENT a desire to participate in certain activities including the funding of certain portions of the PROJECT and the DEPARTMENT has relied upon such representations; and

WHEREAS, the DEPARTMENT has expressed a willingness to participate in certain activities of the PROJECT as set forth in this Agreement; and

WHEREAS, the DEPARTMENT has provided an estimated cost to the LOCAL GOVERNMENT for its participation in certain activities of the PROJECT; and

WHEREAS, the Constitution authorizes intergovernmental agreements whereby state and local entities may contract with one another "for joint services, for the provision of services, or for the joint or separate use of facilities or equipment; but such contracts must deal with activities, services or facilities which the parties are authorized by law to undertake or provide." Ga. Constitution Article IX, §III, ¶I(a).

NOW THEREFORE, in consideration of the mutual promises made and of the benefits to flow from one to the other, the DEPARTMENT and the LOCAL GOVERNMENT hereby agree each with the other as follows:

1. The LOCAL GOVERNMENT has applied for and received "Qualification Certification" to administer federal-aid projects. The GDOT Local Administered Project (LAP) Certification Committee has reviewed, confirmed and approved the certification for the LOCAL GOVERNMENT to develop federal project(s) within the scope of its certification using the DEPARTMENT'S Local Administered Project Manual procedures. The LOCAL GOVERNMENT shall contribute to the PROJECT by funding all or certain portions of the PROJECT costs for the preconstruction engineering (design) activities,

hereinafter referred to as "PE", all reimbursable utility relocations, all non-reimbursable utilities owned by the LOCAL GOVERNMENT, railroad costs, right of way acquisitions and construction, as specified in Attachment "A", affixed hereto and incorporated herein by reference. In addition, the September 17, 2010 Planning Office memorandum titled "Preliminary Engineering Oversight for Project Managers/Project Delivery Staff", outlines the five (5) conditions when the LOCAL GOVERNMENT will be requested to fund the PE oversight activities at 100%, and is enclosed as Attachment "C" and incorporated herein by reference. Expenditures incurred by the LOCAL GOVERNMENT prior to the execution of this AGREEMENT or subsequent funding agreements shall not be considered for reimbursement by the DEPARTMENT. PE expenditures incurred by the LOCAL GOVERNMENT after execution of this AGREEMENT shall be reimbursed by the DEPARTMENT once a written notice to proceed is given by the DEPARTMENT.

2. The DEPARTMENT shall contribute to the PROJECT by funding all or certain portions of the PROJECT costs for the PE, right of way acquisitions, reimbursable utility relocations, railroad costs, or construction (specified in Attachment "A") affixed hereto and incorporated herein by reference, and none of the five (5) conditions apply from the Planning Office memorandum dated September 17, 2010 (specified in Attachment "C").

3. The DEPARTMENT shall provide a PE Oversight Estimate to the LOCAL GOVERNMENT, if appropriate, appended as Attachment "D" and incorporated by reference as if fully set out herein. The LOCAL GOVERNMENT will be responsible for

providing payment, which represents100% of the DEPARTMENT's PE Oversight Estimate at the time of the Project Framework Agreement execution.

If at any time the PE Oversight funds are depleted within $5,000 of the remaining PE Oversight balance and project activities and tasks are still outstanding, the LOCAL GOVERNMENT shall, upon request, make additional payment to the DEPARTMENT. The payment shall be determined by prorating the percentage complete and using the same estimate methodology as provided in Attachment "D". If there is an unused balance after completion of all tasks and phases of the project, then pending a final audit, the remainder will be refunded to the sponsor.

4. It is understood and agreed by the DEPARTMENT and the LOCAL GOVERNMENT that the funding portion as identified in Attachment "A" of this Agreement only applies to the PE. The Right of Way and Construction funding estimate levels as specified in Attachment "A" are provided herein for planning purposes and do not constitute a funding commitment for right of way and construction. The DEPARTMENT will prepare LOCAL GOVERNMENT Specific Activity Agreements for funding applicable to other activities when appropriate.

Further, the LOCAL GOVERNMENT shall be responsible for repayment of any expended federal funds if the PROJECT does not proceed forward to completion due to a lack of available funding in future PROJECT phases, changes in local priorities or

cancellation of the PROJECT by the LOCAL GOVERNMENT without concurrence by the DEPARTMENT.

5. In accordance with Georgia Code 32-2-2, The LOCAL GOVERNMENT shall be responsible for all costs for the continual maintenance and operations of any and all sidewalks and the grass strip between the curb and sidewalk within the PROJECT limits. The LOCAL GOVERNMENT shall also be responsible for the continual maintenance and operation of all lighting systems installed to illuminate any roundabouts constructed as part of this PROJECT. Furthermore, the LOCAL GOVERNMENT shall also be responsible for the maintaining of all landscaping installed as part of any roundabout constructed as part of this PROJECT.

6. Both the LOCAL GOVERNMENT and the DEPARTMENT hereby acknowledge that Time is of the Essence. It is agreed that both parties shall adhere to the schedule of activities currently established in the approved Transportation Improvement Program/State Transportation Improvement Program, hereinafter referred to as "TIP/STIP". Furthermore, all parties shall adhere to the detailed project schedule as approved by the DEPARTMENT, attached as Attachment "B" and incorporated herein by reference. In the completion of respective commitments contained herein, if a change in the schedule is needed, the LOCAL GOVERNMENT shall notify the DEPARTMENT in writing of the proposed schedule change and the DEPARTMENT shall acknowledge the change through written response letter; provided that the DEPARTMENT shall have final authority for approving any change.

If, for any reason, the LOCAL GOVERNMENT does not produce acceptable deliverables in accordance with the approved schedule, the DEPARTMENT reserves the right to delay the PROJECT's implementation until funds can be re-identified for right of way or construction phases, as applicable.

7. The LOCAL GOVERNMENT shall certify that the regulations for "CERTIFICATION OF COMPLIANCES WITH FEDERAL PROCUREMENT REQUIREMENTS, STATE AUDIT REQUIREMENTS, and FEDERAL AUDIT REQUIREMENTS" are understood and will comply in full with said provisions.

8. The LOCAL GOVERNMENT shall accomplish the PE activities for the PROJECT. The PE activities shall be accomplished in accordance with the DEPARTMENT's Plan Development Process hereinafter referred to as "PDP", the applicable guidelines of the American Association of State Highway and Transportation Officials, hereinafter referred to as "AASHTO", the DEPARTMENT's Standard Specifications Construction of Transportation Systems, and all applicable design guidelines and policies of the DEPARTMENT to produce a cost effective PROJECT. Failure to follow the PDP and all applicable guidelines and policies will jeopardize the use of Federal Funds in some or all categories outlined in this agreement, and it shall be the responsibility of the LOCAL GOVERNMENT to make up the loss of that funding. The LOCAL GOVERNMENT's responsibility for PE activities shall include, but is not limited to the following items:

a. Prepare the PROJECT Concept Report and Design Data Book in accordance with the format used by the DEPARTMENT. The concept for the PROJECT shall be developed to accommodate the future traffic volumes as generated by the LOCAL GOVERNMENT as provided for in paragraph 7b and approved by the DEPARTMENT. The concept report shall be approved by the DEPARTMENT prior to the LOCAL GOVERNMENT beginning further development of the PROJECT plans. It is recognized by the parties that the approved concept may be updated or modified by the LOCAL GOVERNMENT as required by the DEPARTMENT and re-approved by the DEPARTMENT during the course of PE due to updated guidelines, public input, environmental requirements, Value Engineering recommendations, Public Interest Determination (PID) for utilities, utility/railroad conflicts, or right of way considerations.

b. Prepare a Traffic Study for the PROJECT that includes Average Daily Traffic, hereinafter referred to as "ADT", volumes for the base year (year the PROJECT is expected to be open to traffic) and design year (base year plus 20 years) along with Design Hour Volumes, hereinafter referred to as "DHV", for the design year. DHV includes morning (AM) and evening (PM) peaks and other significant peak times. The Study shall show all through and turning movement volumes at intersections for the ADT and DHV volumes and shall indicate the percentage of trucks on the facility. The Study shall also include signal warrant evaluations for any additional proposed signals on the PROJECT.

c. Prepare environmental studies, documentation reports and complete Environmental Document for the PROJECT along with all environmental re-

evaluations required that show the PROJECT is in compliance with the provisions of the National Environmental Policy Act or the Georgia Environmental Policy Act as per the DEPARTMENT's Environmental Procedures Manual, as appropriate to the PROJECT funding. This shall include any and all archaeological, historical, ecological, air, noise, community involvement, environmental justice, flood plains, underground storage tanks, and hazardous waste site studies required. The completed Environmental Document approval shall occur prior to Right of Way funding authorization. A re-evaluation is required for any design change as described in Chapter 7 of the Environmental Procedures Manual. In addition, a re-evaluation document approval shall occur prior to any Federal funding authorizations if the latest approved document is more than 6 months old. The LOCAL GOVERNMENT shall submit to the DEPARTMENT all studies, documents and reports for review and approval by the DEPARTMENT, the FHWA and other environmental resource agencies. The LOCAL GOVERNMENT shall provide Environmental staff to attend all PROJECT related meetings where Environmental issues are discussed. Meetings include, but are not limited to, concept, field plan reviews and value engineering studies.

d. Prepare all PROJECT public hearing and public information displays and conduct all required public hearings and public information meetings with appropriate staff in accordance with DEPARTMENT practice.

e. Perform all surveys, mapping, soil investigations and pavement evaluations needed for design of the PROJECT as per the appropriate DEPARTMENT Manual.

f. Perform all work required to obtain all applicable PROJECT permits, including, but not limited to, Cemetery, TVA and US Army Corps of Engineers permits, Stream Buffer Variances and Federal Emergency Management Agency (FEMA) approvals. The LOCAL GOVERNMENT shall provide all mitigation required for the project, including but not limited to permit related mitigation. All mitigation costs are considered PE costs. PROJECT permits and non-construction related mitigation must be obtained and completed 3 months prior to the scheduled let date. These efforts shall be coordinated with the DEPARTMENT.

g. Prepare the stormwater drainage design for the PROJECT and any required hydraulic studies for FEMA Floodways within the PROJECT limits. Acquire of all necessary permits associated with the Hydrology Study or drainage design.

h. Prepare utility relocation plans for the PROJECT following the DEPARTMENT's policies and procedures for identification, coordination and conflict resolution of existing and proposed utility facilities on the PROJECT. These policies and procedures, in part, require the Local Government to submit all requests for existing, proposed, and relocated facilities to each utility owner within the project area. Copies of all such correspondence, including executed agreements for reimbursable utility/railroad relocations, shall be forwarded to the DEPARTMENT's Project Manager and the District Utilities Engineer and require that any conflicts with the PROJECT be resolved by the LOCAL GOVERNMENT. If it is determined that the PROJECT is located on an on-system route or is a DEPARTMENT LET PROJECT, the LOCAL GOVERNMENT and the District Utilities Engineer shall ensure that permit applications are approved for each utility company in conflict with

the project. If it is determined through the DEPARTMENT's Project Manager and State Utilities Office during the concept or design phases the need to utilize Overhead/Subsurface Utility Engineering, hereinafter referred to as "SUE", to obtain the existing utilities, the LOCAL GOVERNMENT shall be responsible for acquiring those services. SUE costs are considered PE costs.

i. Prepare, in English units, Preliminary Construction plans, Right of Way plan and Final Construction plans that include the appropriate sections listed in the Plan Presentation Guide, hereinafter referred to as "PPG", for all phases of the PDP. All drafting and design work performed on the project shall be done utilizing Microstation V8i and InRoads software respectively using the DEPARTMENT's Electronic Data Guidelines. The LOCAL GOVERNMENT shall further be responsible for making all revisions to the final right of way plans and construction plans, as deemed necessary by the DEPARTMENT, for whatever reason, as needed to acquire the right of way and construct the PROJECT.

j. Prepare PROJECT cost estimates for construction, Right of Way and Utility/railroad relocation along with a Benefit Cost, hereinafter referred to as "B/C ratio" at the following project stages: Concept, Preliminary Field Plan Review, Right of Way plan approval (Right of Way cost only), Final Field Plan Review and Final Plan submission using the applicable method approved by the DEPARTMENT. The cost estimates and B/C ratio shall also be updated annually if the noted project stages occur at a longer frequency. Failure of the LOCAL GOVERNMENT to provide timely and accurate cost estimates and B/C ratio may delay the PROJECT's

implementation until additional funds can be identified for right of way or construction, as applicable.

k. Provide certification, by a Georgia Registered Professional Engineer, that the Design and Construction plans have been prepared under the guidance of the professional engineer and are in accordance with AASHTO and DEPARTMENT Design Policies.

l. Provide certification, by a Level II Certified Design Professional that the Erosion Control Plans have been prepared under the guidance of the certified professional in accordance with the current Georgia National Pollutant Discharge Elimination System.

m. Provide a written certification that all appropriate staff (employees and consultants) involved in the PROJECT have attended or are scheduled to attend the Department's PDP Training Course. The written certification shall be received by the Department no later than the first day of February of every calendar year until all phases have been completed.

9. The Primary Consultant firm or subconsultants hired by the LOCAL GOVERNMENT to provide services on the PROJECT shall be prequalified with the DEPARTMENT in the appropriate area-classes. The DEPARTMENT shall, on request, furnish the LOCAL GOVERNMENT with a list of prequalified consultant firms in the appropriate area-classes. The LOCAL GOVERNMENT shall comply with all applicable state and federal regulations for the procurement of design services and in accordance

with the Brooks Architect-Engineers Act of 1972, better known as the Brooks Act, for any consultant hired to perform work on the PROJECT.

10. The DEPARTMENT shall review and has approval authority for all aspects of the PROJECT provided however this review and approval does not relieve the LOCAL GOVERNMENT of its responsibilities under the terms of this agreement. The DEPARTMENT will work with the FHWA to obtain all needed approvals as deemed necessary with information furnished by the LOCAL GOVERNMENT.

11. The LOCAL GOVERNMENT shall be responsible for the design of all bridge(s) and preparation of any required hydraulic and hydrological studies within the limits of this PROJECT in accordance with the DEPARTMENT's policies and guidelines. The LOCAL GOVERNMENT shall perform all necessary survey efforts in order to complete the hydraulic and hydrological studies and the design of the bridge(s). The final bridge plans shall be incorporated into this PROJECT as a part of this Agreement.

12. The LOCAL GOVERNMENT unless otherwise noted in Attachment "A" shall be responsible for funding all LOCAL GOVERNMENT owned utility relocations and all other reimbursable utility/railroad costs. The utility costs shall include but are not limited to PE, easement acquisition, and construction activities necessary for the utility/railroad to accommodate the PROJECT. The terms for any such reimbursable relocations shall be laid out in an agreement that is supported by plans, specifications, and itemized costs of the work agreed upon and shall be executed prior to certification by the

DEPARTMENT. The LOCAL GOVERNMENT shall certify via written letter to the DEPARTMENT's Project Manager and District Utilities Engineer that all Utility owners' exsiting and proposed facilities are shown on the plans with no conflicts 3 months prior to advertising the PROJECT for bids and that any required agreements for reimbursable utility/railroad costs have been fully executed. Further, this certification letter shall state that the LOCAL GOVERNMENT understands that it is responsible for the costs of any additional reimbursable utility/railroad confilcts that arise during construction.

13. The DEPARTMENT will be responsible for all railroad coordination on DEPARTMENT Let and/or State Route (On-System) projects; the LOCAL GOVERNMENT shall address concerns, comments, and requirements to the satisfaction of the Railroad and the DEPARTMENT. If the LOCAL GOVERNMENT is shown to LET the construction in Attachment "A" on off-system routes, the LOCAL GOVERNMENT shall be responsible for all railroad coordination and addressing concerns, comments, and requirements to the satisfaction of the Railroad and the DEPARTMENT for PROJECT.

14. The LOCAL GOVERNMENT shall be responsible for acquiring a Value Engineering Consultant for the DEPARTMENT to conduct a Value Engineering Study if the total estimated PROJECT cost is $10 million or more. The Value Engineering Study cost is considered a PE cost. The LOCAL GOVERNMENT shall provide project related design data and plans to be evaluated in the study along with appropriate staff to present and answer questions about the PROJECT to the study team. The LOCAL

GOVERNMENT shall provide responses to the study recommendations indicating whether they will be implemented or not. If not, a valid response for not implementing shall be provided. Total project costs include PE, right of way, and construction, reimbursable utility/railroad costs.

15. The LOCAL GOVERNMENT, unless shown otherwise on Attachment "A", shall acquire the Right of way in accordance with the law and the rules and regulations of the FHWA including, but not limited to, Title 23, United States Code; 23 CFR 710, et. Seq., and 49 CFR Part 24 and the rules and regulations of the DEPARTMENT. Upon the DEPARTMENT's approval of the PROJECT right of way plans, verification that the approved environmental document is valid and current, a written notice to proceed will be provided by the DEPARTMENT for the LOCAL GOVERNMENT to stake the right of way and proceed with all pre-acquisition right of way activities. The LOCAL GOVERNMENT shall not proceed to property negotiation and acquisition whether or not the right of way funding is Federal, State or Local, until the right of way agreement named "Contract for the Acquisition of Right of Way" prepared by the DEPARTMENT's Office of Right of Way is executed between the LOCAL GOVERNMENT and the DEPARTMENT. Failure of the LOCAL GOVERNMENT to adhere to the provisions and requirements specified in the acquisition contract may result in the loss of Federal funding for the PROJECT and it will be the responsibility of the LOCAL GOVERNMENT to make up the loss of that funding. Right of way costs eligible for reimbursement include land and improvement costs, property damage values, relocation assistance expenses and contracted property management costs. Non reimbursable right of way

costs include administrative expenses such as appraisal, consultant, attorney fees and any in-house property management or staff expenses. The LOCAL GOVERNMENT shall certify that all required right of way is obtained and cleared of obstructions, including underground storage tanks, 3 months prior to advertising the PROJECT for bids.

16. The DEPARTMENT unless otherwise shown in Attachment "A" shall be responsible for Letting the PROJECT to construction, solely responsible for executing any agreements with all applicable utility/railroad companies and securing and awarding the construction contract for the PROJECT when the following items have been completed and submitted by the LOCAL GOVERNMENT:

a. Submittal of acceptable PROJECT PE activity deliverables noted in this agreement.
b. Certification that all needed rights of way have been obtained and cleared of obstructions.
c. Certification that the environmental document is current and all needed permits and mitigation for the PROJECT have been obtained.
d. Certification that all Utility/Railroad facilities, existing and proposed, within the PROJECT limits are shown, any conflicts have been resolved and reimbursable agreements, if applicable, are executed.

If the LOCAL GOVERNMENT is shown to LET the construction in Attachment "A", the LOCAL GOVERNMENT shall provide the above deliverables and certifications and

shall follow the requirements stated in Chapters 10, 11, 12 and 13 of the DEPARTMENT"s Local Administered Project Manual. The LOCAL GOVERNMENT shall be responsible for providing qualified construction oversight with their personnel or by employing a Consultant firm prequalified in Area Class 8.01 to perform construction oversight. The LOCAL GOVERNMENT shall be responsible for employing a GDOT prequalified consultant in area classes 6.04a and 6.04b for all materials testing on the PROJECT, with the exception of field concrete testing. All materials testing, including field concrete testing shall be performed by GDOT certified technicians who are certified for the specific testing they are performing on the PROJECT. The testing firm(s) and the individual technicians must be submitted for approval prior to Construction.

17. The LOCAL GOVERNMENT shall provide a review and recommendation by the engineer of record concerning all shop drawings prior to the DEPARTMENT review and approval. The DEPARTMENT shall have final authority concerning all shop drawings.

18. The LOCAL GOVERNMENT agrees that all reports, plans, drawings, studies, specifications, estimates, maps, computations, computer files and printouts, and any other data prepared under the terms of this Agreement shall become the property of the DEPARTMENT if the PROJECT is being let by the DEPARTMENT. This data shall be organized, indexed, bound, and delivered to the DEPARTMENT no later than the advertisement of the PROJECT for letting. The DEPARTMENT shall have the right to

use this material without restriction or limitation and without compensation to the LOCAL GOVERNMENT.

19. The LOCAL GOVERNMENT shall be responsible for the professional quality, technical accuracy, and the coordination of all reports, designs, drawings, specifications, and other services furnished by or on behalf of the LOCAL GOVERNMENT pursuant to this Agreement. The LOCAL GOVERNMENT shall correct or revise, or cause to be corrected or revised, any errors or deficiencies in the reports, designs, drawings, specifications, and other services furnished for this PROJECT. Failure by the LOCAL GOVERNMENT to address the errors, omissions or deficiencies within 30 days of notification shall cause the LOCAL GOVERNMENT to assume all responsibility for construction delays and supplemental agreements caused by the errors and deficiencies. All revisions shall be coordinated with the DEPARTMENT prior to issuance. The LOCAL GOVERNMENT shall also be responsible for any claim, damage, loss or expense, to the extent allowed by law that is attributable to errors, omissions, or negligent acts related to the designs, drawings, specifications, and other services furnished by or on behalf of the LOCAL GOVERNMENT pursuant to this Agreement.

20. The DEPARTMENT shall be furnished with a copy of all contracts and agreements between the LOCAL GOVERNMENT and any other agency or contractor associated with construction activities. The DEPARTMENT's Project Manager shall be the primary point of contact unless otherwise specified.

21. The LOCAL GOVERNMENT shall provide the DEPARTMENT with a detailed project schedule that reflects milestones, deliverables with durations for all pertinent activities to develop critical path elements. An electronic project schedule shall be submitted to the Project Manager after execution of this agreement.

This Agreement is made and entered into in FULTON COUNTY, GEORGIA, and shall be governed and construed under the laws of the State of Georgia.

The covenants herein contained shall, except as otherwise provided, accrue to the benefit of and be binding upon the successors and assigns of the parties hereto.

IN WITNESS WHEREOF, the DEPARTMENT and the LOCAL GOVERNMENT have caused these presents to be executed under seal by their duly authorized representatives.

DEPARTMENT OF TRANSPORTATION

BY: _____
Commissioner

ATTEST:

_____
Treasurer

LOCAL GOVERNMENT NAME

BY: _____
Mike Bodker
Mayor, City of Johns Creek

Signed, sealed and delivered this 15 day of March, 2013, in the presence of:

_____
Witness

CORRINE AIDEL LINDO
MY COMMISSION EXPIRES
NOTARY PUBLIC
OCTOBER 20, 2014
DOUGLAS COUNTY, GEORGIA

_____
Notary Public

This Agreement approved by Local Government, the 7th day of March, 2013

Attest

_____
Joanie Jones, City Clerk

FEIN: 11-3793525

Revised: 12/2011

Attachment "A" Funding Sources and Distribution

Project No.: 0012628 Sponsor: City of Johns Creek

Project # 0012628 Johns Creek

Attach "Project Manager" Project Charging Form for Approval

Preliminary Engineering Phase I

	Preliminary Engineering - Phase I[1]					GDOT Oversight for PE (Phase I)[2]			Preliminary Engineering Grand Total (Phase I)	
	Percentage	PE Amount	Maximum PE Participation Amount ($)	Participant	PE Activity Sponsor	Percentage	Amount	Participant	Percentage	Amount
1	#DIV/0!	$0.00	$0.00	Federal	Local Government	#DIV/0!	$0.00	Federal	#DIV/0!	$0.00
2	#DIV/0!	$0.00	$0.00	State		#DIV/0!	$0.00	State	#DIV/0!	$0.00
3	#DIV/0!	$0.00	N/A	Local		#DIV/0!	$0.00	Local	#DIV/0!	$0.00
4	#DIV/0!	$0.00	$0.00	Other		#DIV/0!	$0.00	Other	#DIV/0!	$0.00
Total	#DIV/0!	$0.00				#DIV/0!	$0.00		#DIV/0!	$0.00

Right of Way Phase II

	Right of Way - Phase II[3]					
	Percentage	ROW Amount	Maximum ROW Participation Amount ($)	Participant	Acquisition By:	Acquisition Fund By:
1	#DIV/0!	$0.00	$0.00	Federal	Local Government	Local Government
2	#DIV/0!	$0.00	$0.00	State		
3	#DIV/0!	$0.00	N/A	Local		
4	#DIV/0!	$0.00	$0.00	Other		
Total	#DIV/0!	$0.00				

Utility Phase IV

Utility Relocation - Phase IV	
Utility Funding By:	Railroad Funding By:
Local Government	Local Government
100%	100%

Construction Phase III

	Construction - Phase III[3]				
	Percentage	CST Amount	Maximum CST Participation Amount ($)	Participant	Letting By:
1	80%	$360,000.00	$360,000.00	Federal	Local Govt
2	0%	$0.00	$0.00	State	
3	20%	$90,000.00	N/A	Local	
4	0%	$0.00	$0.00	Other	
Total	100%	$450,000.00			

Construction Oversight Phases V & VI

GDOT Oversight for CST (Phase III)[2]	
Testing (Phase V) Funding By:	Inspection (Phase VI) Funding By:
Local Government	Local Government
100%	100%

Summary of Phases I Through III

	Grand Total - All Phases I through III			
	Percentage	TOTAL Amount	Maximum Participation Amount ($)	Participant
1	80%	$360,000.00	$360,000.00	Federal
2	0%	$0.00	$0.00	State
3	20%	$90,000.00	N/A	Local
4	0%	$0.00	$0.00	Other
Total	100%	$450,000.00		

[1]The maximum allowable GDOT participating amounts for PE phase are shown above. The local government will only be reimbursed the percentage of the accrued invoiced amounts up to but not to exceed the maximum amount indicated.

[2]GDOT Oversight for PE (Phase I) is detailed in Attachment "D".

[3]Right-of-Way and Construction amounts shown are for budget planning purposes only.

NOTE: Separate GDOT P.O.s will be established for each funding phase.

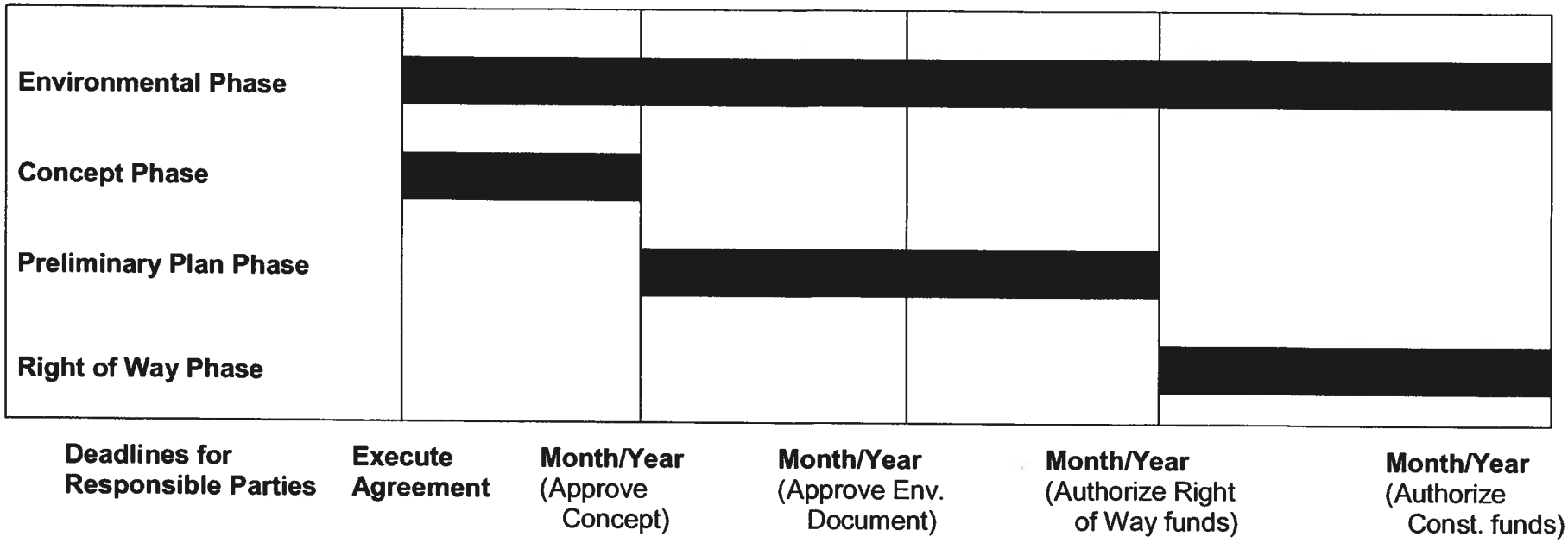
Revised: 12/2011

The GDOT Oversight check shall be remitted to the District Planning and Programming Engineer along with the signed Project Framework Agreement (PFA).

ATTACHMENT "B" Project Timeline

PI # 0012628 – City of Johns Creek

Proposed Project Timeline



Annual Reporting Requirements

The Local Government shall provide a written status report to the Department's Project Manager with the actual phase completion date(s) and the percent complete/proposed completion date of incomplete phases. The written status report shall be received by the Department no later than the first day of February of every calendar year until all phases have been completed.

Revised: 12/2011

ATTACHMENT "C"

D.O.T. 66

Project #0012628 Johns Creek

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE **OFFICE** Planning

DATE September 17, 2010

FROM Angela T. Alexander, State Transportation Planning Administrator

TO Todd I. Long, PE, PTOE, Director of Planning
Gerald M. Ross, PE, Chief Engineer/Deputy Commissioner

SUBJECT Preliminary Engineering Oversight for Project Managers/Project Delivery Staff

Note: This memo supersedes the previous PE Oversight Memo, dated August 17, 2010. PE Oversight funding for Safe Route to School (SRTS) projects are eligible for PE Oversight funds, paid for with funding from the SRTS program. No other changes were made to the memo.

As you are aware, the Department is unable to continue funding PE oversight with 100% motor fuel funds due to the decline in motor fuel revenues. As a result, the Department needs an established procedure detailing the circumstances under which the Department will fund PE oversight with federal-aid funds (matched with state motor fuel funds) and when the Department will request that the local government/project sponsor fund the Department's expenses associated with PE oversight. The PE Oversight funds will be used to fund staff man-hours and any other associated expenses incurred by any GDOT employee working on the project. Please note that the process detailed below applies equally to routes both on and off the state highway system.

GDOT Funds PE Oversight with Federal-Aid:

The Department will fund PE oversight with federal-aid funds (and matching motor fuel funds), only if a subsequent project phase (ROW, UTL, CST) is programmed within the first 4 active years of the currently approved TIP/STIP. The source of federal-aid funds to be used for the PE oversight activities is as follows:

1) Projects on the National Highway System will use NHS funds (L050) to finance GDOT's PE oversight expenses

2) Projects *not* on the National Highway System but eligible for Surface Transportation Program (STP) funds, will follow one of the scenarios below:

   a) Projects in urban areas between 5,000 and 199,999 in population will use L200 funds (with MPO approval, if applicable)

   b) Projects in urban areas with a population greater than 200,000 will use L230 funds (with MPO approval)

   c) Projects in rural areas with a population less than 5,000 will use L250 funds

   d) The Department may, at the joint discretion of the Chief Engineer and Director of Planning, apply L240 funds to any federal-aid eligible project

3) Projects which have received an earmark in federal legislation, will use a portion of the earmark funding for GDOT's PE oversight expenses, pending MPO approval if applicable. (Note: earmark funded projects could receive PE oversight funding regardless of the funding being programmed within the first 4 active years of a currently approved TIP/STIP).

4) Projects funded with Safe Route to School (SRTS) funds will use SRTS funds to finance GDOT's PE oversight expenses, regardless of whether or not a subsequent phase of the project appears in the STIP/TIP.

GDOT Requests Local Government/Project Sponsor to Fund PE Oversight:

The Department will request that the local government fund PE oversight with 100% local funds under the following conditions:

1) A subsequent phase of the project is not programmed within the first 4 active years of the Currently approved TIP/STIP

2) The MPO has elected to not approve the use of L200 or L230 funds for GDOT's PE oversight expenses

3) The project is funded with CMAQ funds

4) The project is funded with an earmark identified in federal legislation and the local government/entity which secured the earmark (or MPO, if applicable) declines to allow GDOT to use a portion of the earmark for PE oversight expenses

5) The project is currently funded entirely with local funds; however, the local government intends to secure federal funding at a future date

Once the PE oversight process is implemented, it will be the responsibility of the GDOT Project Manager to work with the GDOT Office of Financial Management to establish an appropriate amount of federal-aid funded PE oversight funding, or work with the local government to secure locally sourced PE oversight funds.

If you approve of this process, please sign below. Once an acceptable process is developed and approved by both the Chief Engineer and Director of Planning, we will provide the finalized process to the Office of Program Control for distribution to the GDOT Project Managers and incorporation into future Project Framework Agreements. If you have any questions, please contact Matthew Fowler at 404-631-1777.

Approved: _____ 9/27/10
Todd I. Long, PE, PTOE, Director of Planning — Date

Approved: _____ 10/7/20
Gerald M. Ross, PE, Chief Engineer/Deputy Commissioner — Date

ATA:MF

ATTACHMENT "D"

GDOT Oversight Estimate for Locally Administered Project

Monday, March 25, 2013 10:16 AM

PI Number 0012628 **Project Number**

County Fulton **Project Length** 0.100 **Miles**

Project Manager Burney, Cynthia **Project Cost** $ 450,000.00

Project Type Intelligent Transportation System (ITS)

Project Description Johns Creek Adaptive Signal Control and Backup Power

Expected Life of Project .50 **Years**

Project Phase	Oversight Hours		Oversight Cost
1. Project Initiation	0	$	00.00
2. Concept Development	0	$	00.00
3. Database Preparation*	0	$	00.00
4. Preliminary Design	0	$	00.00
5. Environmental	0	$	00.00
6. Final Design	0	$	00.00
Travel Expenses		$	-
Total Oversight Estimate	**0**	**$**	**00.00**
Percentage of Project Cost	.00%		

W:\\DPPE\PFA\LOCAL PE\JOHNS CREEK\Zero Oversight Estimate for 0012628

ATTACHMENT "E"
GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Name of Contracting Entity: City of Johns Creek

Contract No. and Name: _____

_____

By executing this affidavit, the undersigned person or entity verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm, or entity which is contracting with the Georgia Department of Transportation has registered with, is authorized to participate in, and is participating in the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.

The undersigned person or entity further agrees that it will continue to use the federal work authorization program throughout the contract period, and it will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the undersigned with the information required by O.C.GA. § 13-10-91(b).

The undersigned person or entity further agrees to maintain records of such compliance and provide a copy of each such verification to the Georgia Department of Transportation within five (5) business days after any subcontractor is retained to perform such service.

#100011
E-Verify / Company Identification Number

02/13/2008
Date of Authorization

Signature of Authorized Officer or Agent

Mary Ann Haskins
Printed Name of Authorized Officer or Agent

HR & Support Services Director
Title of Authorized Officer or Agent

03/14/2013
Date

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE
14th DAY OF March, 2013

Joan Jones
Notary Public

[NOTARY SEAL]

My Commission Expires: 12/22/14

JOAN JONES
NOTARY PUBLIC
HENRY COUNTY, GEORGIA

Revised: 12/2011

ATTACHMENT "F"

TITLE VI INTRODUCTION

As a sub-recipient of federal funds from Georgia Department of Transportation, all municipalities are required to comply with Title VI of the Civil Rights Act of 1964 which provides that:

"No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, or be denied the benefits of, or be subjected To discrimination under any program or activity receiving federal assistance under This title or carried out under this title."

Additionally, the Civil Rights Restoration Act of 1987, expanded the definition of the terms "programs and activities" to include all programs or activities of federal recipients, subrecipients, and contractors, whether or not such programs and activities are federally assisted.

The provisions of Title VI apply to all contractors, subcontractors, consultants and suppliers. And is a condition for receiving federal funds. All sub recipients must sign Title VI assurances that they will not discriminate as stated in Title VI of the Civil Rights Act of 1964.

In the event that the sub recipient distributes federal aid funds to second tier entity, the sub-recipient shall include Title VI language in all written documents and will monitor for compliance. If, these assurances are not signed, the City or County government may be subjected to the loss of federal assistance.

All sub recipients that receive federal assistance must also include Federal Highways Administrations 1273 in their contracts. The FHWA 1273 sets out guidance for ensuring non discrimination and encouraging minority participation and outreach.

Enclosed you will find Title VI acknowledgment form and the Title VI assurances. The Title VI acknowledgment form and Title VI assurances must be signed by your local government official if it has not been signed.

ATTACHMENT "F"

TITLE VI ACKNOWLEDGEMENT FORM

The City of Johns Creek assures that no person shall on the grounds or race, color, national origin or sex as provided by Title VI of the Civil Rights Act of 1964, and the Civil Rights Restoration Act of 1987 be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any City or County sponsored program or activity. The City of Johns Creek assures that every effort will be made to ensure non discrimination in all of its programs or activities, whether those programs are federally funded or not.

Assurance of compliance therefore falls under the proper authority of the City Council or the County Board of Commissioners. The Title VI Coordinator or Liaison is authorized to ensure compliance with provisions of this policy and with the Law, including the requirements of 23 Code of Federal Regulations (CFR) 200 and 49 CFR 21.

Mary Ann Haskins
Official Name and Title HR & Support Services Director

3/14/2013
Date

Citations:
Title VI of the Civil Rights Act of 1964; 42 USC 2000d to 2000d-4;42 USC 4601to 4655;23 USC 109(h); 23 USC 324; DOT Order 1050.2; EO 12250; EO 12898; 28CFR 50.3

Other Nondiscrimination Authorities Expanded the range and scope of Title VI coverage and applicability

The 1970 Uniform Act (42 USC 4601)
Section 504 of the 1973 Rehabilitation Act (29 USC 790)
The 1973 Federal-aid Highway Act (23 USC 324)
The 1975 Age Discrimination Act (42 USC 6101)
Implementing Regulations (49 CFR 21 & 23 CFR 200)
Executive Order 12898 on Environmental Justice (EJ)
Executive Order 13166 on Limited English Proficiency (LEP)

Revised: 12/2011